RUSHING TO GEORGIA: MIGRATION AND RENTAL AFFORDABILITY IN 2022–2023

By

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RUShing to Georgia: Migration and Rental Affordability in 2022–2023

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Vienna, 09 June 2025 Tatiana Voronova

Abstract

Russia's 2022 invasion of Ukraine triggered a substantial migration wave to Georgia, increasing the population by approximately 6.5%. Its economic implications, particularly for rental affordability, remain understudied. This thesis investigates changes in rents and wages following the migration, focusing on the association between the arrival of predominantly remote-working Russian migrants and rental market dynamics. Using monthly and quarterly data from 2016 to 2023, the analysis applies Ordinary Least Squares (OLS) and two-way fixed effects models to estimate changes in rent growth, wage growth, and rental affordability. The results indicate a significant increase in rent growth following the migration, especially in Tbilisi. Although wages also increased, there is suggestive evidence of a decline in affordability in the capital. These findings highlight the vulnerability of urban housing markets to sudden demand shocks and support the case for stronger rental regulation.

Acknowledgements

I am deeply grateful to my supervisor, Marc, and his dog Tessa, for their guidance and for generously tolerating countless unplanned and often chaotic meetings throughout this project. I also want to thank my peers, Isıl Oral and Anna Bazhenova, for their constant support, feedback, and brainstorming sessions that kept this thesis alive. More than anyone, I thank my dog, Belka. Without her unconditional love, I would have accomplished absolutely nothing.

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1 Introduction

This paper investigates the economic relationship between the 2022–2023 Russian migration wave to Georgia and changes in local rents and wages. During this period, Georgia received approximately 239,000 migrants (excluding Georgian nationals), increasing the country's population by about 6.5% (Geostat, 2017). The influx was followed by a sharp increase in housing costs: in Tbilisi, the rent component of the Consumer Price Index rose by 33% in a single month, between April and May 2022 (National Statistics Office of Georgia, 2024). The composition of this migration differs from the flows typically examined in the literature.

Most migrants arrived following Russia's invasion of Ukraine in February 2022. About half of them, approximately 115,000, were Russian nationals (Geostat, 2017). Survey evidence indicates that this group was largely composed of young, highly educated professionals. Roughly one-third were employed in the IT sector, and more than half continued working remotely for Russian companies after relocating abroad (Kamalov et al., 2023; Krawatzek et al., 2023; Kuleshova et al., 2023; Ok Russians, 2022). This profile distinguishes them from more typical refugee or labor migration groups and is important for understanding their potential economic impact on host countries.

Many Russian migrants were uncertain about their long-term plans and viewed Georgia as a temporary stop rather than a final destination (Kuleshova et al., 2023). Combined with their ability to work remotely, this meant that many did not enter the local labor market. Georgia's immigration regime, which allows Russian nationals to stay without a visa and imposes no employment requirements, further enabled this detachment. As a result, the migration wave was marked by limited labor market integration but strong participation in the rental housing sector, adding pressure to rents. This raises a broader concern: when migrants bring income

from abroad but do not engage in local labor markets, housing demand becomes decoupled from local wages, posing challenges for affordability that existing migration models and policy tools may not fully address.

The main question this paper asks is: *How did rents and wages change following the migration inflow triggered by the war in Ukraine?*

Much of the existing literature on migration and economics focuses on low-skilled workers or refugees moving from the Global South to the Global North. In those cases, migrants typically have limited purchasing power and participate in both labor and rental markets equally. Studies in this context find that immigration has small but positive effects on average native wages, and rent growth is similar to population growth: around a 0.5–1% rise in rents for every 1% increase in population (Saiz, 2006; Akbari and Aydede, 2012; Cochrane and Poot, 2021; Greulich et al., 2004; Card, 2007). There are a few studies that suggest migration involving high-skilled or labor-detached groups can lead to significantly larger rent effects (Helfer et al., 2023), with broader implications for housing affordability (Moos et al., 2010).

This study contributes to that emerging literature by examining the case of Georgia, which presents a particularly sharp test of this dynamic: a sudden, large-scale, high-skilled, high-income migration wave into a small, lower-income economy, with limited labor market integration. To explore this dynamic, the study tests three hypotheses. First, the onset of the war and the resulting inflow of migrants were associated with a significant increase in rent growth, due to the pressure migrants placed on the housing market. Second, that rent pressures were most pronounced in Tbilisi, the likely destination for the majority of migrants. Third, that rents increased faster than wages, leading to a decline in rental affordability. These hypotheses are evaluated using both city-level and national data. Ordinary Least Squares (OLS) and two-way

fixed effects (TWFE) models are used to estimate associations between migration and changes in rents and wages. The methodology section provides additional details.

This study highlights the policy and welfare challenges triggered by the migration wave caused by Russia's invasion of Ukraine, particularly in Eastern Europe and Central Asia. Among the most affected destination countries were Armenia, Georgia, and Serbia, relatively small states that received a large number of Russian migrants (Kasyanchuk and Prokopenko, 2024). Each reported a significant strain on local rental markets, following the influx (Sargsyan, 2024; Shoshiashvili, 2022; Antonijević, 2023). These countries lacked regulatory mechanisms to protect renters or manage sudden demand shocks. The Georgian case, therefore, offers insight into the vulnerabilities faced by economically open but institutionally unprepared host countries. I focus on Georgia due to the availability of aggregated migration data, which provides information on the number of arrivals.

This study also contributes to broader debates on how housing markets respond to migration, particularly in the context of digital nomadism and touristification. When migrants earn income abroad but spend locally, housing demand can become detached from local labor market conditions, widening the gap between earnings and rents (Moos et al., 2010). These dynamics are evident in cities like Lisbon and Barcelona, where affluent, mobile foreigners have contributed to gentrification, rising rents, and displacement (Mendes, 2021; Yrigoy, 2016). While Georgia is not a textbook example of lifestyle-driven digital nomadism, the Russian migration wave shares key features: a relatively affluent, mobile population that drove up housing demand without proportional labor market integration. As such, Georgia offers an early indicator of the affordability pressures that labor-detached migration can create, and underscores the need for policy responses that address this emerging dynamic.

In summary, this study finds that the 2022–2023 Russian migration wave is associated with significant increases in rent growth rates in Georgia, with the sharpest effects concentrated in Tbilisi. While wages rose slightly, they did not keep pace with rents in the capital, with suggestive evidence of a decline in affordability. To address these pressures, Georgia should introduce clearer rental regulations to prevent large spikes in rents and employ mechanisms to protect tenants from frequent increases in times of exogenous shocks.

The remainder of this thesis is structured as follows. Section 2 reviews the existing literature on migration, labor markets, and housing affordability, with a focus on high-skilled and labor-detached migration. Section 3 presents the data sources and empirical methodology used to analyze rent and wage dynamics in Georgia. Section 4 discusses the main findings, including national and city-level results on rent growth, wage trends, and affordability [1]. Section 5 concludes with policy recommendations.

2 Literature Review

Migration and its economic impact have long been central to academic and policy debates. While early studies focused primarily on labor market competition, more recent work shows that the effects of immigration are highly context-dependent, varying across skill levels, sectors, and geographies. This literature review begins by examining the classic debate on labor market outcomes, particularly the contrasting findings on wage effects for native workers. It then turns to evidence on housing markets, highlighting how both affordability pressures and residential preferences contribute to native out-migration. The review concludes by considering how recent shifts, especially remote work and high-income migration, have decoupled housing

[1] The code and datasets used in this paper are available at `https://github.com/tdvoronova/masters-thesis`

demand from local labor markets, pointing to a new migration dynamic.

A central debate in migration studies concerns the impact of immigration on local labor markets, particularly on wages. One of the earliest theoretical contributions, by Johnson (1980), argues that immigration primarily redistributes welfare rather than uniformly benefiting or harming local communities. According to this view, influx of migrants tends to increase the incomes of high-skilled natives and capital owners, while lowering wages for low-skilled native workers, resulting in a positive average effect overall, but with unequal distribution across groups.

This idea forms the starting point for much of the later debate, which has mostly focused on how migration affects the wages of low-skilled natives. One of the most influential and widely debated disagreements in this area is between David Card and George J. Borjas, who represent two contrasting perspectives on the labor market impacts of immigration. Card's work is often cited as evidence that immigration does not significantly harm native workers, while Borjas argues that it can, especially for low-skilled groups.

In his influential study of the Mariel Boatlift, Card (1990) finds no significant wage impact on low-skilled natives after a sudden 7% increase in Miami's labor force due to the arrival of mostly low-skilled Cuban immigrants. Borjas (2017), however, challenges this finding by using a different comparison group. While Card compares Cuban workers in Miami, Borjas focuses on high school dropouts, the group most similar to the incoming migrants, and finds wage declines of 10 to 30%, arguing that broader group definitions can mask negative effects. As a result, much of the debate has centered on how to define the native groups most affected by immigration, and whether average outcomes obscure distributional consequences. Despite methodological differences, many studies converge on the view that immigration has either small or moderately negative effects on wages for low-skilled natives (Altonji and Card, 1991;

Card, 2001; Ottaviano and Peri, 2007; Borjas et al., 1991; Borjas, 2003).

While the debate between Card and Borjas focuses on identifying the right comparison group, others argue this view is too narrow. Ottaviano and Peri (2007) propose a general equilibrium approach, showing that immigrants and natives are not perfect substitutes, even within similar skill groups. As a result, immigration affects the entire wage distribution, not just direct competitors. They find small losses for the least educated, but mostly neutral or positive effects for U.S.-born workers overall. Iftikhar and Zaharieva (2018) find similar patterns in Germany: low-skilled natives that directly compete with migrants see slight wage declines, while high-skilled natives benefit. These empirical findings reinforce theoretical point that immigration redistributes income, often to the advantage of higher-skilled groups.

Another key debate that informs this paper is how immigration's effects depend on the geographic level of analysis. Some studies focus on city-level impacts (Altonji and Card, 1991; Card, 1990), but others argue that local estimates may underestimate the true effect of immigration, since affected natives can relocate, diluting observed wage changes (Borjas et al., 1996; Filer, 1992). National-level studies, which account for both movers and stayers, tend to find larger effects. Supporting this, Kugler and Yuksel (2008) shows that when internal mobility is accounted for, some apparent wage gains disappear, suggesting that failing to track movement can obscure the full impact of immigration. However, the extent to which immigration actually causes native out-migration remains contested. Card (2001), for instance, finds little evidence that similarly skilled natives relocate in response to immigration. These findings underscore the importance of analyzing both local and national trends. This study adopts that approach by estimating wage and rent changes at both city and national levels.

While much of the literature focuses on wages, immigration also affects the cost of living

through its influence on housing markets. Butcher and Card (1991), Gonzalez and Ortega (2013), and Mussa et al. (2017) each find that immigrant inflows are associated with rising housing costs in both rental and ownership markets, particularly in urban areas. Focusing on low-skilled migration, Saiz (2006), Cochrane and Poot (2021), and Akbari and Aydede (2012) estimate that a 1% increase in population due to immigration leads to a 0.5–1% rise in rents and housing prices. Because these rent increases are usually accompanied by similar wage trends, the rent burden, the share of income spent on housing, tends to remain relatively stable (Greulich et al., 2004; Card, 2007). However, other studies suggest that this proportional relationship does not always hold. Revisiting the Mariel Boatlift, Saiz (2003) finds that rents in Miami rose by 8% following a 9% increase in the renter population, even though wages showed little to no change. This case illustrates how immigration can raise housing costs without improving incomes, thereby increasing the rent burden and reducing affordability.

Some natives, particularly higher-income households, may relocate not due to affordability pressures, but because they prefer to avoid living in immigrant-dense areas. This type of selective out-migration can reduce demand in certain neighborhoods, while increasing pressure elsewhere, leading to increasing average rents (Sá, 2015; Saiz and Wachter, 2011; Xu et al., 2021; Balkan et al., 2018; Accetturo et al., 2014). These patterns reshape the geography of housing demand and illustrate how immigration can have uneven effects across space, amplifying affordability challenges. Any assessment of immigration's impact must therefore consider both wages and rents and how their interaction shapes native mobility and well-being (Ottaviano and Peri, 2012).

The empirical evidence discussed above primarily concerns migration from lower- to higher-income countries, where migrants typically integrate into local labor markets. In these cases, the impact of immigration is mediated through changes in both wages and rents. The picture

changes when migrants come from higher-income countries, or when they are detached from local labor markets. In Switzerland, for example, Helfer et al. (2023) examine the effects of high-skilled immigration from EU-15 countries and find that a 1% increase in the foreign population is associated with a 7.4–8% increase in rents, far exceeding estimates from studies focused on low-skilled migration. Similarly, Ottaviano and Peri (2006) and Ottaviano and Peri (2012) analyze the aggregate effects of immigration and show that cities with a higher share of foreign-born residents tend to experience increases in both wages and rents, with rent growth outpacing wage growth. Specifically, Ottaviano and Peri (2012) estimate that a 4% increase in a city's labor force due to immigration is associated with a 3.8% rise in native wages and a 7.6% increase in rents. While wage growth closely tracks population growth, rent increases are nearly twice as large. This suggests that higher-skilled migrants put more pressure on the housing market than low-skilled migrants.

Furthermore, the effects might change even more when migrants do not participate in local labor markets. Moos et al. (2010) examine this in Vancouver, where policies that attract wealthy immigrants have led to a decoupling of the housing market from the local labor market. The impact of migrants who arrive with substantial wealth or continue earning income abroad is mediated less through wages and more through housing demand. As a result, local housing prices can rise much faster than local incomes, creating significant affordability challenges.

Similar concerns appear in research on transnational touristification and gentrification of urban spaces, particularly driven by the rise of the sharing economy and platforms like Airbnb. In many cities, the expansion of short-term rentals has been linked to higher housing costs and displacement of residents, prompting growing debates about its regulation (Wachsmuth and Weisler, 2018; Mendes, 2021; Shan et al., 2023; Yrigoy, 2016). The COVID-19 pandemic further intensified the decoupling of housing and labor markets. As remote work became

widespread, individuals began to relocate within countries and, later, across borders. In the United States, this dynamic produced what Ramani and Bloom (2021); Brueckner et al. (2023) term the "Donut Effect": remote workers moved out of central business districts, increasing housing demand and prices in suburban areas. In the post-COVID era, as more people work remotely, the potential for leisure-led transnational migration has become more plausible and presents new challenges for local communities.

These shifts are particularly important for understanding how new migration patterns, driven by changes in work and mobility, affect local economies. As remote-earning and labor-detached migration becomes more common, it generates effects that differ from traditional labor migration and presents new policy challenges. Building on these insights, the following section outlines the data and methods used to analyze how the 2022–2023 Russian migration wave was associated with changes in rents and wages in Georgia.

3 Data and Methodology

This section outlines the data sources and methodology used to analyze the changes in rents and wages in Georgia following the 2022–2023 Russian migration wave. First, I describe the key variables and the data transformation process used to measure rent and wage growth. Next, I present the analytical framework that guides the study's hypotheses, focusing on the relationships between migration, rent, and wage dynamics. Finally, I detail the empirical strategy used to test these hypotheses.

3.1 Key Variables and Data Transformation

This study uses monthly and quarterly data covering the period from January 2016 to December 2023. All data are sourced from the National Statistics Office of Georgia (GeoStat) and the National Bank of Georgia. The two outcome variables are the rent growth rate and the real wage growth rate, measured at both the national and city levels. Six cities are included in the sample based on data availability: Tbilisi, Batumi, Kutaisi, Zugdidi, Gori, and Telavi.

Rent data come from the rent component of the Consumer Price Index (CPI), reported monthly with 2012 as the base year. Both the rent CPI and total CPI are converted into monthly percentage growth rates using the standard formula:

$$\text{Growth Rate}_t = \frac{x_t - x_{t-1}}{x_{t-1}} \times 100 \tag{1}$$

where x_t denotes the index value in month t. These transformations are used to calculate rent growth and inflation at the city and national levels. The inflation rate is included as a control variable in all rent regressions. The rent component is not excluded from the total CPI, as its weight is relatively small and does not introduce multicollinearity or bias.

Mortgage interest rates are included as a control at the national level to account for credit conditions in the housing market. These are reported monthly by the National Bank of Georgia as annual weighted averages for mortgage loans denominated in Georgian lari (GEL).

Wage data are available quarterly at the regional level as average nominal monthly earnings. These are first deflated using the CPI to calculate real wages, and then transformed into quarterly real wage growth rates using the same percentage change formula. Since real wages are already adjusted for inflation, no additional inflation control is applied in regressions that use

this variable.

Each city in the sample is matched to its corresponding administrative region as follows: Tbilisi (Tbilisi), Batumi (Adjara), Kutaisi (Imereti), Zugdidi (Samegrelo-Zemo Svaneti), Telavi (Kakheti), and Gori (Shida Kartli). This structure allows for consistent comparisons between rent and wage trends across time and geographic units.

3.2 Analytical Framework

This paper is guided by three main hypotheses. The first hypothesis of this paper is that the onset of the war in Ukraine, and the resulting migration inflow, is associated with a significant acceleration in rent growth rates in Georgia, as a sudden population increase would be expected to put pressure on the housing market. Due to the lack of rent price data, I do not estimate rent elasticities as in Saiz (2006) or Helfer et al. (2023). Instead, I test for temporal breaks in monthly rent growth using two migration proxies: a binary variable for the post-war period and a pair of dummies capturing the spring and winter migration waves from Russia. These specifications allow me to estimate average changes in rent growth following the onset of the war and to examine short-term responses to Russian migration.

First, I use a binary variable `War` for the post-invasion period, coded as 1 from April 2022 onward. This timing reflects the onset of sustained migration pressure following the February 24, 2022 invasion of Ukraine, while allowing a one-month lag for the housing market to respond. For wage models using quarterly data, the period begins in Q2 2022. The window of analysis is based on migration data from Russia, as Russian nationals represented the majority of new arrivals—over 60,000 in 2022 and approximately 52,000 in 2023. As shown in Figure 1, net migration from Russia turned negative in 2024. Therefore, the analysis is restricted to the

2022–2023 period, when inflows were highest and most relevant to housing outcomes.

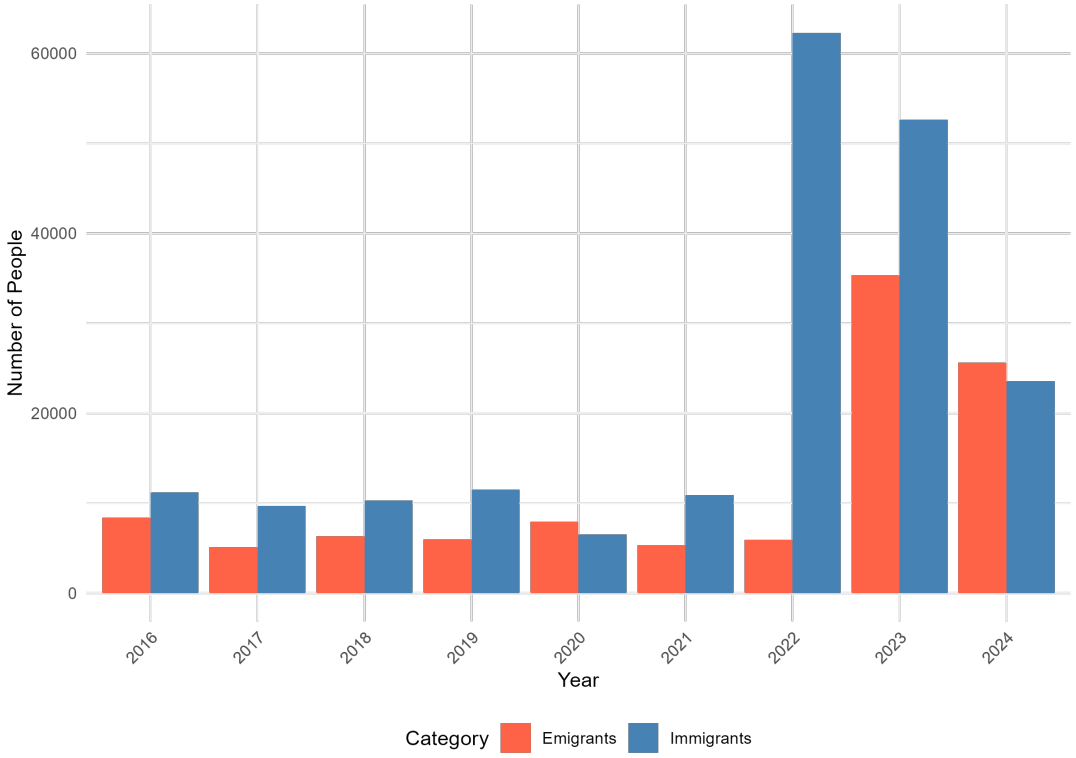

Figure 1: Russian Immigrants and Emigrants in Georgia, 2016–2024. Source: GeoStat

Secondly, to capture short-term dynamics more precisely, I define two additional migration indicators. The first, `Spring Shock`, covers the period from April to June 2022, following the invasion. The second, `Winter Shock`, spans October 2022 to January 2023, corresponding to Russia's announcement of military mobilization. These periods are informed by external media reporting (Reuters, 2022; Francis, 2022; Gilchrist, 2022) and are constructed based on visible peaks in monthly money transfers from Russia, which I use as an additional proxy for migration. As shown in Figure 2, these peaks align with the timing of the invasion and the mobilization announcement, and are used to define the shock windows. The dashed lines in the figure indicate the periods included in the analysis.

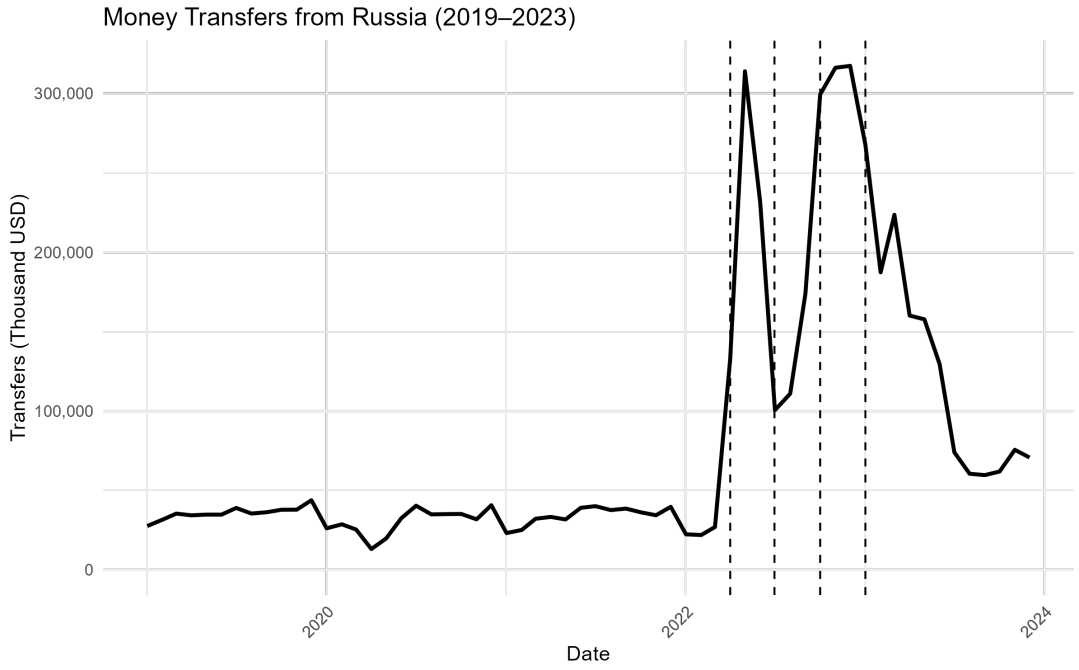

Figure 2: Money Transfers from Russia (thousand USD), 2019–2023

My second hypothesis is that rent increases were most pronounced in Tbilisi, the likely hub for incoming migrants. If price spikes were concentrated in Tbilisi rather than across all cities, this would provide further support for an association between migration inflows and rising rental costs. Although no official city-level migration statistics are available, several indicators support the assumption that most migrants settled in the capital. First, many migrants originated from Moscow and St. Petersburg, large urban centers whose residents likely sought comparable amenities abroad (Krawatzek et al., 2023). Tbilisi, with its population of 1.2 million and well-developed infrastructure, was the most viable destination (Geostat, 2017). To test this hypothesis, I compare rent trends in Tbilisi to those in five other cities. While full regression outputs comparing Tbilisi with each individual city are provided in the Appendix, the main findings are presented based on a binary comparison between Tbilisi and the rest.

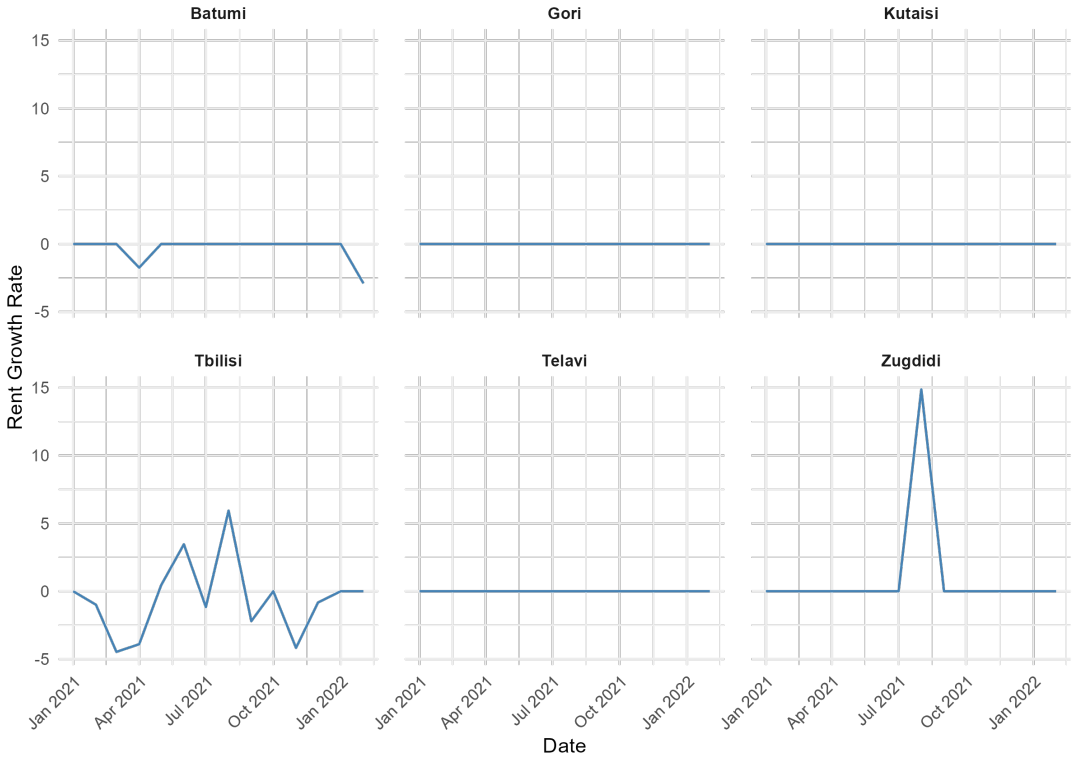

Figure 3: Parallel Trends Check: Rent Growth Rates by City (Jan 2021–2022)

Differences in housing market structure are also relevant for interpreting city-level variation. Georgia has a high homeownership rate, approximately 92% nationwide (Delmendo, 2025), which implies a relatively thin rental market. Under normal conditions, this limits market turnover and dampens price fluctuations. However, it also makes the market more sensitive to sudden shifts in demand: even small absolute changes can trigger large relative price movements. Tbilisi, where the homeownership rate is lowest (84.5%), has the country's most active rental market. In contrast, cities like Gori (94.9%) and Telavi (93.8%) have more limited rental sectors and are unlikely to have sufficient infrastructure to absorb a migration shock.

Because of these structural differences, the parallel trends assumption does not hold across cities. Figure 3 displays monthly rent growth rates from January 2021 to February 2022. Most cities exhibit relatively flat trends, whereas Tbilisi shows greater variability and Zugdidi a single

sharp increase. Given this divergence, and the broader methodological constraints discussed in the Limitations section, I do not interpret the two-way fixed effects (TWFE) estimates as causal. Instead, they are used descriptively to assess differences in post-invasion rent dynamics across locations.

Third, I hypothesize that rents increased faster than wages, resulting in a decline in rental affordability. This expectation stems from the limited labor market integration of the migrant population, most of whom continued to earn income remotely while living in Georgia. Unlike low-skilled migrants who tend to engage in both local housing and labor markets, this group contributed to housing demand without contributing to local wages. Their purchasing power was often higher than that of local residents, but since their earnings came from abroad, they did not push up wages in Georgia. This disconnect likely widened the gap between rents and incomes. As a result, even if wages were rising, they may not have kept pace with rent increases, leading to a decline in affordability, particularly for local renters. These hypotheses are tested using city-level and nationwide data, applying Ordinary Least Squares (OLS) regressions to estimate associations and two-way fixed effects (TWFE) models to assess geographic variation over time. The empirical strategy section provides further detail on each modeling choice.

3.3 Empirical Strategy

The empirical strategy starts with a series of Ordinary Least Squares (OLS) regressions to estimate changes in monthly rent growth rates after the start of the war in Ukraine and migration inflow from Russia that followed. These models examine both average effects and short-term dynamics.

The baseline regressions estimate the average change in rent growth following the onset of the

war, controlling for inflation and interest rates. At the national level, the model is specified as:

$$\texttt{Rent Growth Rate}_t = \alpha + \beta_1 \cdot \texttt{War}_t + \epsilon_t \tag{2}$$

$$\texttt{Rent Growth Rate}_t = \alpha + \beta_1 \cdot \texttt{War}_t + \beta_2 \cdot \texttt{Inflation Rate}_t + \epsilon_t \tag{3}$$

$$\texttt{Rent Growth Rate}_t = \alpha + \beta_1 \cdot \texttt{War}_t + \beta_2 \cdot \texttt{Inflation Rate}_t \tag{4}$$

$$+ \beta_3 \cdot \texttt{Interest Rate}_t + \epsilon_t \tag{5}$$

where the outcome variable is the national monthly rent growth rate. $\texttt{War}_t$ is a binary variable equal to 1 from April 2022 onward. Inflation and interest rates are included as time-varying controls. These specifications are estimated at the national level as well as separately for each city, using the full model with all controls. Since the data are time series, I use Newey–West standard errors to correct for potential autocorrelation and heteroskedasticity.

To estimate short-term effects, I use `Shock Spring` (April–June 2022) and `Shock Winter` (October 2022–January 2023), corresponding to peak periods of Russian migration. These are included in OLS specification with linear time trend, inflation and interest rate controls:

$$\begin{aligned}\texttt{Rent Growth Rate}_t = \alpha + \lambda \cdot \texttt{Time}_t + \beta_1 \cdot \texttt{Shock Spring}_t + \beta_2 \cdot \texttt{Shock Winter}_t \\ + \gamma \cdot \texttt{Inflation Rate}_t + \delta \cdot \texttt{Interest Rate}_t + \varepsilon_t\end{aligned} \tag{6}$$

To compare rent dynamics across cities, I estimate a two-way fixed effects (TWFE) model to assess whether rent growth in Tbilisi responded differently to migration shocks than in other cities. The model includes both city and time fixed effects, and interaction terms between city identifiers and migration shock periods. This setup accounts for time-invariant differences across cities and common temporal shocks, while estimating the relative rent growth response

by city. In the main analysis, rent growth in Tbilisi is compared to the average of other cities. In the Appendix, I present the full TWFE results for all cities, using Tbilisi as the reference group. This choice is made because Tbilisi experienced the largest rent increase, and using it as the baseline allows for more interpretable comparisons. The model is specified as follows:

$$\texttt{Rent Growth Rate}_{it} = \alpha + \sum_{c \neq \text{Tbilisi}} \beta_c \cdot (\texttt{City}_c \times \texttt{Shock}_t) + \gamma \cdot \texttt{Inflation Rate}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \tag{7}$$

where $\texttt{Shock}_t$ represents either the post-treatment war dummy or the Spring and Winter migration waves dummies; μ_i and λ_t are city and time fixed effects; and standard errors are clustered at the city level.

To examine whether wages kept pace with rent increases, I construct a `Rental Affordability` measure, defined as the difference between real wage growth and rent growth:

$$\texttt{Rental Affordability}_{it} = \texttt{Real Wage Growth Rate}_{it} - \texttt{Rent Growth Rate}_{it} \tag{8}$$

This measure indicates whether real wages outpaced or lagged behind rent growth. A positive value indicates improving affordability, while a negative value signals declining affordability. To assess changes in affordability after the start of migration, I regress affordability on a post-invasion binary variable:

$$\texttt{Rental Affordability}_{it} = \alpha + \beta_1 \cdot \texttt{War}_t + \varepsilon_{it} \tag{9}$$

A negative and statistically significant coefficient for β_1 indicates that affordability declined

following the migration influx. I estimate this model separately for Tbilisi and for all other cities combined, with full city-specific results provided in the Appendix.

I estimate only average changes using the war dummy and do not include an analysis of the specific windows of Russian migration, as I do not expect immediate responses in wages. Given that labor markets typically take more time to adjust, any wage effects are likely to materialize gradually rather than instantaneously (Borjas, 2003; Card, 2001). I therefore assume that observed changes in wages result from migration over the broader post-war period.

I do not estimate changes in wages during the periods of Russian migration because I do not expect immediate responses in wages. Given that labor markets typically take more time to adjust, any wage effects are likely to materialize gradually rather than instantaneously (Borjas, 2003; Card, 2001).

3.4 Limitations

This study faces several limitations, primarily due to data constraints and structural features of the Georgian economy. First, reliable migration data is scarce. GeoStat provides only annual data on immigration and emigration by nationality, which makes it difficult to draw precise conclusions, especially in the context of a short-term study. Additionally, these data do not include information on where migrants have settled within Georgia. Although border crossing data is available monthly from 2018 onward, it only tracks entries, not exits, making it hard to distinguish between immigrants and tourists. While money transfer data from Russia could serve as a useful proxy for migration, they were excluded from the main analysis due to concerns about multicollinearity with other variables. As a result, migration exposure in this study is estimated using external sources and assumptions about how migrants have distributed

themselves across cities.

Second, there are challenges with measuring the outcome variables. Wage data are only available at the regional level and on a quarterly basis, while rent data is available on a monthly basis for specific cities. In my analysis, I match each city to its corresponding region but this approach may dilute city-specific effects, especially in regions that include large rural areas or are economically diverse. Additionally, the analysis uses wage data rather than income or consumption measures due to data limitations. This could understate the role of alternative income sources, which are especially significant in Georgia, where more than 90% of households own their homes. In such contexts, native welfare during a housing demand shock may be influenced more by asset-based wealth or rental income than by wages alone. Nevertheless, focusing on wage growth is still valuable for understanding the situation of those who do not own property, particularly renters in urban centers like Tbilisi, where the rental market is more active.

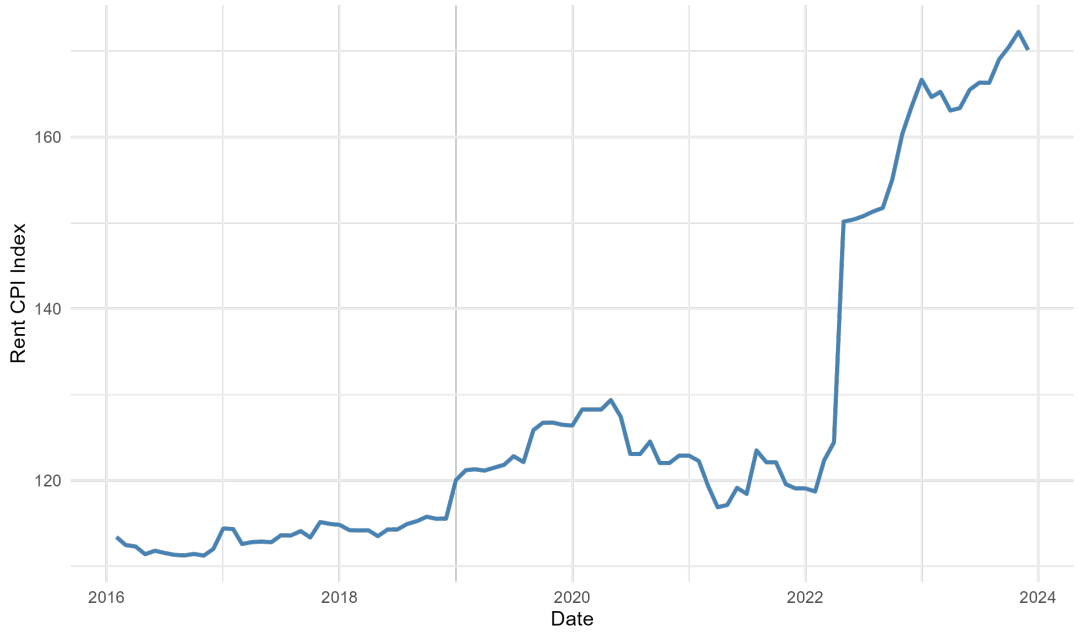

Figure 4: Cumulative Rent CPI (base = 2012, 2016-2023)

Third, there are limitations related to the assumption that no other major shocks affected the housing market during the observed period. Specifically, the years 2019 to 2021 were characterized by suppressed rent levels due to the COVID-19 pandemic, as shown in Figure 4. This suggests that pre-war averages may not accurately reflect typical baseline conditions, which could influence the observed rent changes following the migration inflow. To address this, I use short-term shock models that focus on narrowly defined periods and include a linear time trend to account for gradual shifts in the rental market.

4 Findings

4.1 Rents: Nationwide Associations

To test my first hypothesis that migration inflows following the onset of the war were associated with a significant increase in rent growth rates in Georgia, I estimate the association between the onset of the war and rent growth using a series of nationwide OLS models. The results are presented in Table 4.1. As shown, the average monthly rent growth increased by approximately 1.6 to 1.8 percentage points after April 2022, relative to the pre-war period. Notably, this result is significant only in the complete model at the level 10%. Neither inflation nor interest rates show a statistically significant association with rent growth in any of the specifications, with inflation showing a weak positive association and interest rates - negative. The magnitude of the variables remains stable across models, suggesting robustness to the inclusion of controls. Although the models report relatively low R^2 values, this is expected given the monthly scale and volatility of the rent growth variable, which fluctuates within a narrow range.

Table 4.1: OLS: National Rent Growth Rate

	Dependent variable:			
	Rent Growth Rate			
	(1)	(2)	(3)	(4)
War	1.63	1.77	1.82*	
	(0.93)	(0.99)	(0.92)	
Inflation Rate		0.61	0.57	0.23
		(0.39)	(0.42)	(0.28)
Interest Rate			−0.10	−0.16*
			(0.13)	(0.08)
Time				0.003
				(0.003)
Spring Shock				7.34***
				(1.30)
Winter Shock				2.31***
				(0.21)
Constant	0.04	−0.26	0.95	1.69
	(0.16)	(0.21)	(1.50)	(0.87)
Observations	95	95	95	95
R^2	0.07	0.11	0.12	0.32
Adjusted R^2	0.06	0.09	0.09	0.28
Note:		*p<0.05; **p<0.01; ***p<0.001		

Furthermore, to estimate the association between Russian migration and rent growth more precisely, I estimate average changes in rent growth rates during the Spring and Winter shocks, as shown in Column (4). The Spring shock is associated with a monthly rent growth increase of approximately 7.34 percentage points, a substantial and statistically significant effect. The Winter shock corresponds to an additional 2.31 percentage point increase in monthly rent growth, which is also statistically significant but smaller in magnitude compared to the Spring wave. Thus, while, on average, rents grew 1.6–1.8 percentage points faster per month during the post-war period, the migration periods saw much larger spikes in rent growth. A placebo test, included in the Appendix (see Table A.10), applies identical shock dummies to the same months in other years and finds no significant positive effects. To ensure that the observed rent growth patterns were not driven by seasonal fluctuations, I test for seasonal trends (Appendix Table A.7). As shown in the table, there is no consistent seasonal pattern in rent growth.

While October shows a weakly significant coefficient at the 10% level, the overall pattern does not suggest systematic seasonality. Furthermore, to validate the assumption that the migration shocks related to the war in Ukraine are uniquely associated with rent growth, I perform a placebo test. This test involves applying the same modeling approach to comparable time periods in previous and subsequent years. As shown in Table A.10, the post-2022 migration shock dummy remains large and statistically significant, indicating a substantial rent growth increase of about 7 percentage points during that period. In contrast, the placebo dummies for the years 2019, 2020, and 2021 show significant negative coefficients, likely reflecting the rent price declines during the COVID-19 pandemic. The placebo test for 2023 yields no statistically significant results, further supporting the association between Russian migration and changes in rent growth rates.

4.2 City-Level differences in Rent Growth: Tbilisi vs. Other Cities

To assess whether Tbilisi experienced stronger rent increases than other Georgian cities following the onset of migration, I estimate OLS and two-way fixed effects (TWFE) models separately for Tbilisi and the rest of available cities. These models evaluate both average rent growth after the war and rent growth during the two migration waves from Russia in 2022.

Table 4.2 presents the results of these regressions. As shown in Column (1), average monthly rent growth in Tbilisi increased by 2.79 percentage points after the war began, a statistically significant effect at the 10% level. In contrast, the effect in other cities, shown in Column (2), was much smaller (0.65 percentage points) and not statistically significant, indicating that there were no significant changes in rent growth rates following the migration inflow.

Table 4.2: OLS: Rent Growth – Tbilisi vs. Other Cities

	Dependent variable:			
	Rent Growth Rate			
	Tbilisi – War	Other – War	Tbilisi – Shocks	Other – Shocks
	(1)	(2)	(3)	(4)
War	2.79*	0.65		
	(1.38)	(0.35)		
Inflation Rate	1.61	0.25	0.94	0.19
	(1.18)	(0.20)	(0.86)	(0.21)
Interest Rate	−0.10	−0.01	−0.22	0.01
	(0.26)	(0.08)	(0.18)	(0.08)
Time			0.001	0.004
			(0.01)	(0.01)
Spring Shock			11.48***	1.63
			(2.80)	(1.00)
Winter Shock			4.49***	−0.77
			(0.57)	(0.60)
Constant	0.46	0.13	2.13	−0.12
	(3.22)	(0.92)	(2.14)	(0.96)
Observations	95	475	95	475
R^2	0.15	0.02	0.32	0.03
Adjusted R^2	0.13	0.01	0.28	0.01
Note:				*p<0.05; **p<0.01; ***p<0.001

Columns (3) and (4) of Table 4.2 examine changes in average rent growth rates across Georgian cities during the Spring and Winter migration waves. In Tbilisi, the spring shock is associated with a sharp 11.48 percentage point increase in monthly rent growth, while the winter shock contributes an additional 4.49 percentage points. Other cities show no statistically significant change during either shock period, with the magnitude of the estimates being small. Across all models, inflation and interest rates do not appear to affect rent dynamics. These estimates indicate that rents have been growing significantly faster in Tbilisi during the periods of Russian migration, whereas other cities did not experience similar growth. To ensure the robustness of

these results, I test for potential serial correlation in the city-level models and nationwide. Durbin–Watson tests indicate minimal autocorrelation in most cities, though some evidence of autocorrelation is observed in Batumi (Appendix Figures 5 and 5). To account for this and to ensure reliable inference, I use Newey–West standard errors in all OLS regressions. This approach adjusts for both heteroskedasticity and autocorrelation, providing more conservative and robust standard error estimates.

Table 4.3: TWFE: Rent Growth – Tbilisi vs. Other Cities

Dependent Variable:	Rent Growth Rate	
Model:	(1)	(2)
Variables		
War x Tbilisi	1.8***	
	(0.36)	
Inflation Rate x Tbilisi	0.77	0.63
	(0.61)	(0.49)
Spring Shock x Tbilisi		10.0***
		(1.3)
Winter Shock x Tbilisi		5.0***
		(0.28)
Fixed-effects		
city	Yes	Yes
date	Yes	Yes
Fit statistics		
Observations	570	570
R^2	0.23551	0.28806
Within R^2	0.02979	0.09648

Clustered (city) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

To account for time- and city-specific unobserved heterogeneity, I estimate a two-way fixed effects (TWFE) model that includes both city and time fixed effects, with "Other Cities" as the reference group. As shown in Table 4.3, Column (1), controlling for city-specific and time-invariant characteristics, Tbilisi's rent growth rates were, on average, 1.8 percentage points higher than those in other observed Georgian cities. Column (2) extends this analysis to the spring and winter shock periods, revealing that Tbilisi experienced significantly greater rent

growth than other cities: 10 percentage points more during the spring wave and 5 points more during the winter wave.

These findings provide strong support for the second hypothesis: rent increases following the Russian migration inflow were not evenly distributed across Georgia, but were instead concentrated in Tbilisi. While other cities saw small and insignificant changes, Tbilisi experienced sharp rent surges during the months of highest migrant inflows. This spatial concentration supports the link between Russian migration and rent growth, as rents in Tbilisi are expected to increase more significantly, given the assumption that most migrants settled in the capital. A more detailed analysis of each city is available in Appendix Tables A.1, A.2, and A.3.

4.3 Wages and Rental Affordability

To assess changes in rental affordability following the war and to test the third hypothesis, that rents increased faster than wages after the migration inflow from Russia, I begin by examining changes in real wage growth. Table A.5 in the Appendix shows that the average quarterly real wage growth rate in Georgia increased by 3.78 percentage points after the war began, compared to the pre-war period.

Table 4.4 presents the OLS estimates for real wage growth and rental affordability, comparing Tbilisi with other cities combined. Columns (1) and (2) show that in Tbilisi, the average quarterly real wage growth post-war was 3.67 percentage points higher than before the war, while in other cities, the increase was slightly smaller at 3.39 percentage points. This suggests that, following the migration inflow, real wages grew faster across all cities, with a slightly stronger increase observed in Tbilisi. After testing for seasonality and finding significant quarterly effects (Appendix Table A.8), I estimate the same OLS wage model including a quarter factor

as a control (Appendix Table A.9). While the estimated magnitudes differ slightly, the results remain consistent with the baseline findings.

Table 4.4: OLS: Tbilisi vs. Other Cities – Real Wage Growth and Affordability

	Dependent variable:			
	Real Wage Growth		Rental Affordability	
	Tbilisi	Others	Tbilisi	Others
	(1)	(2)	(3)	(4)
War	3.67^{***}	3.39^{***}	-4.53	1.80
	(0.68)	(0.50)	(4.82)	(0.95)
Constant	0.36	0.42^{*}	0.36	0.01
	(0.45)	(0.19)	(1.26)	(0.44)
Observations	32	160	32	160
R^2	0.05	0.04	0.04	0.01
Adjusted R^2	0.02	0.04	0.01	0.003
Note:		*p<0.05; **p<0.01; ***p<0.001		

However, wage growth alone does not fully capture changes in rental affordability. To assess whether wages kept pace with rising rents, Columns (3) and (4) report estimates of rental affordability. There is suggestive evidence that in Tbilisi, rental affordability decreased by 4.53 percentage points after the war, meaning the gap between wage growth and rent growth widened, compared to the pre-war period. This suggests that rent growth outpaced wage growth in the capital during the post-war period. In contrast, the estimate for other cities is positive at 1.80 percentage points, indicating a modest improvement in affordability, with real wages growing slightly faster than rents relative to pre-war trends.

Although these estimates are not statistically significant, they provide valuable descriptive insight. The magnitude and direction of the coefficients are consistent with the hypothesis that affordability declined most in Tbilisi, the city most affected by rent inflation. Thus, while real wage growth was positive across all cities, it was insufficient to offset the rental pressure in the

capital, lending tentative support to the third hypothesis.

A more detailed analysis for each city is available in Appendix Tables A.5 and A.6.

5 Conclusion and Policy Recommendations

This study examined the relationship between the migration wave triggered by Russia's 2022 invasion of Ukraine and subsequent changes in rent growth and wages in Georgia. The analysis was guided by three main hypotheses: first, that migration inflows following the onset of the war would be associated with an acceleration in rent growth rates; second, that rent increases would be concentrated in Tbilisi; and third, that rental affordability would decline as rents outpaced wage growth.

The findings support the first two hypotheses, with suggestive evidence for the third. Rent growth accelerated significantly following the war, with average monthly rent increases of 1.76 percentage points nationwide and much sharper spikes during the spring and winter 2022 migration waves. These changes were concentrated in Tbilisi, where rent growth rose by over 11 percentage points during the spring shock, more than five times the pre-war average. Other cities saw smaller and statistically insignificant changes.

Notably, there is suggestive evidence that in Tbilisi, wage growth did not keep pace with rents, and rental affordability declined by around 4.5 percentage points. While much of the existing literature on migration and housing finds that the overall welfare of natives does not decline with immigration and that the rent burden remains stable, these findings typically reflect cases of low-skilled migration (Saiz, 2006; Greulich et al., 2004; Card, 2007). The decline in affordability observed in Georgia supports a broader argument: that the effects of migration are not

uniform and depend on the composition of the migrant population (Ottaviano and Peri, 2012).

Building on this, I suggest that it is not only the skill composition of migrants that matters, but also the extent to which they integrate into local markets. In most of the literature, which focuses on low-income or low-skilled migration, migrants participate in both labor and housing markets (Card, 1990; Borjas, 2003; Ottaviano and Peri, 2007). In the labor market, they increase the labor supply, which raises overall output and average wages, while putting downward pressure on wages for the groups they directly compete with (Borjas et al., 1991; Altonji and Card, 1991). At the same time, migrants increase consumption of goods and housing, which benefits capital and business owners, but can also lead to higher prices, particularly in the rental market (Saiz, 2006; Cochrane and Poot, 2021). Overall, these effects tend to balance out, resulting in average gains but uneven distribution (Johnson, 1980; Ottaviano and Peri, 2012).

In the case of labor-detached migration, the average gains for locals are likely smaller. When migrants do not enter the labor market, the main local benefits come from increased consumption and from a smaller share of migrants who do find local employment. However, these migrants are still fully engaged in the housing market. If we assume, based on available survey evidence, that around 60% of Russian migrants continued working remotely, then only the remaining 40% would have contributed to domestic labor supply (Ok Russians, 2022). This suggests that pressure on the housing market was far greater than on the labor market.

In light of these findings, there is a clear need for policies that protect housing affordability, especially during periods of sudden demand shocks. Any such effort should begin with basic rental market regulation. In Georgia, there is currently no legally mandated notice period for rent increases or evictions, and no restrictions on how much or how often rents can be raised

(Delmendo, 2025). This regulatory gap leaves renters highly exposed: when demand rises quickly, as it did during the 2022 migration wave, prices can spike with little warning, creating affordability issues.

First, while landlords typically give 30 days' notice before raising rents or ending leases, this is only informal practice, not required by law. During a demand shock, this enables landlords to evict tenants quickly in order to re-rent at higher prices. To reduce this risk, Georgia could introduce a legally mandated notice period, such as 60 days, for rent increases and evictions. This would slow down tenant turnover and give the market time to adjust more gradually. It could help prevent displacement in the short term and reduce the likelihood of speculative rent hikes. Even a short delay may allow for partial labor market adjustment. Over a few months, increased migrant consumption and some labor force entry could support job creation or wage growth for locals, helping them stay competitive in the rental market.

Second, Georgia has no regulation on how much or how often rents can be increased. In normal times, this may not be a major issue due to high homeownership rates. But during migration shocks, the situation changes. With no restrictions in place, landlords can raise rents freely in response to sudden increases in demand. When a large inflow of higher-income migrants enters the market, the equilibrium shifts quickly, creating affordability challenges for locals who cannot compete with the new price level.

To address housing affordability, many cities have introduced rent caps or rent freezes during periods of rapid rent growth. Evidence shows that such policies can be effective in the short term, helping stabilize prices and reduce displacement (Hahn et al., 2023; Kholodilin, 2022; Breidenbach et al., 2022). However, they also come with trade-offs, including reduced housing quality, a decline in available rental units, and discouraged new construction. Additionally, rent

controls can lead to misallocation, often protecting middle-class tenants more than low-income ones. In some cases, such as New York or San Francisco, strict long-term rent stabilization has made unregulated units unaffordable for newcomers, resulting in highly segmented and exclusionary rental markets (Diamond et al., 2019; Zapatka and de Castro Galvao, 2022).

There are also alternative models. Vienna, for example, maintains housing affordability not by regulating private markets, but by sustaining a large stock of publicly owned or subsidized housing (Stadt Wien, 2020). Around 60% of residents live in municipal or cooperative units. While this model has been successful, it may not be realistic for Georgia. On the one hand, Georgia's Soviet legacy and high homeownership rates suggest that expanding public rental housing might be administratively feasible. On the other hand, public attitudes toward state-led housing are shaped by post-socialist skepticism, and the housing sector plays a central role in Georgia's economy, with nearly 20% of GDP coming from construction and real estate activities (National Statistics Office of Georgia, 2022). A large shift toward public ownership would likely face strong political and economic resistance.

Given this, a more realistic option may be the introduction of moderate, short-term rent caps during demand shocks (Kholodilin, 2022). These could allow rents to rise in line with wages but prevent excessive spikes driven purely by speculative or sudden demand. The policy could be reviewed and adjusted periodically until the shock subsides and the market stabilizes. This would still allow developers and landlords to earn returns while offering locals some protection during periods of extreme volatility. In the absence of such protections, housing markets may become increasingly exclusionary, threatening the welfare of residents, especially those with lower incomes.

This pattern is not unique to Georgia. Countries like Armenia, Serbia, and Kyrgyzstan also re-

ceived large numbers of Russian migrants in 2022 relative to their population sizes (Kasyanchuk and Prokopenko, 2024). In each case, local rental markets experienced noticeable strain (Sargsyan, 2024; Antonijević, 2023), and host governments lacked policy mechanisms to mitigate affordability shocks. These examples suggest that basic rental protections, such as notice periods and temporary rent caps, could benefit a wider group of countries facing similar pressures.

These dynamics also extend beyond post-Soviet states. A growing number of countries are experiencing housing affordability challenges driven by new forms of labor-detached migration, particularly short-term, lifestyle-oriented, and digital nomad flows. In countries like Spain and Portugal, which have become hubs for remote workers (Glaeser, 2022; Cocola-Gant and Lopez-Gay, 2020), these trends are accelerating the expansion of short-term rental platforms like Airbnb, putting pressure on housing supply and fueling rent increases. In response, many cities have introduced stricter regulations on short-term rentals, including limits on rental days, mandatory registration for hosts, and zoning restrictions aimed at preserving residential stock. There is some evidence from U.S. cities that such regulations can reduce rental pressure and help mitigate affordability challenges (Valentin, 2020; Wessel et al., 2024).

These developments point to a broader shift in migration regimes, one that makes rental regulation increasingly essential. As countries compete to attract digital nomads, they are adopting visa regimes that explicitly prohibit labor market integration while encouraging long stays and local consumption (OECD, 2022). In this context, migrants contribute primarily through spending and taxation, but not through wages or labor supply. That imbalance, demand for housing without corresponding support for local incomes, makes affordability an inevitable pressure point.

Policymakers must recognize that new forms of migration are no longer primarily a labor mar-

ket issue. When economic contribution occurs through consumption rather than work, the resulting strain falls most visibly on housing. The policy response, therefore, must come from the rental market. Stronger regulation, adaptive to shocks and focused on protecting vulnerable renters, will be essential to ensure that cities remain livable as new forms of mobility reshape urban life.

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Appendix A: Supporting Rent Growth Results

Table A.1: OLS Results: Rent Growth Regressions by City

	Dependent variable:					
	Rent Growth Rate					
	Batumi	Gori	Kutaisi	Tbilisi	Telavi	Zugdidi
	(1)	(2)	(3)	(4)	(5)	(6)
War	1.88	0.99**	−0.13	2.79	0.26	0.34
	(1.21)	(0.37)	(0.13)	(−1.94)	(−0.57)	(0.48)
Inflation Rate	−0.22	1.05***	0.21*	1.61	−0.06	0.17
	(−0.14)	(−0.18)	(−0.10)	(−2.21)	(−0.21)	(−0.12)
Interest Rate	−0.13	−0.01	0.06	−0.10	0.16	−0.16
	(−0.48)	(−0.07)	(−0.03)	(−0.82)	(−0.21)	(−0.45)
Constant	1.47	0.09	−0.82	0.46	−1.62	1.85
	(5.45)	(0.90)	(0.46)	(10.36)	(2.72)	(5.05)
Observations	95	95	95	95	95	95
R^2	0.11	0.08	0.01	0.15	0.02	0.03
Adjusted R^2	0.08	0.05	−0.02	0.13	−0.02	−0.004
Note:						*p<0.05; **p<0.01; ***p<0.001

Table A.2: OLS Results: Shock-Specific Rent Growth Regressions by City

	Dependent variable:					
	Rent Growth Rate					
	Tbilisi	Kutaisi	Batumi	Gori	Telavi	Zugdidi
	(1)	(2)	(3)	(4)	(5)	(6)
Time	0.03	−0.01	−0.005	0.001	−0.01	0.01
	(0.02)	(0.02)	(0.004)	(0.01)	(0.01)	(0.01)
Spring Shock	0.31	−0.46	3.43***	11.48***	5.95***	−0.42
	(0.76)	(0.73)	(0.49)	(2.80)	(1.30)	(0.42)
Winter Shock	−1.49	−0.59	−1.55	4.49***	0.06	−0.53
	(0.88)	(0.79)	(0.95)	(0.57)	(0.30)	(0.44)
Inflation Rate	−0.37	0.99	0.12	0.94	−0.14	0.13
	(0.30)	(0.87)	(0.16)	(0.86)	(0.17)	(0.12)
Interest Rate	−0.01	0.03	0.02	−0.22	0.08	−0.12
	(0.22)	(0.08)	(0.04)	(0.18)	(0.10)	(0.20)
Constant	−0.75	0.20	−0.11	2.13	−0.44	0.92
	(2.45)	(1.42)	(0.50)	(2.14)	(1.31)	(2.14)
Observations	95	95	95	95	95	95
R^2	0.09	0.08	0.14	0.32	0.19	0.05
Adjusted R^2	0.04	0.02	0.09	0.28	0.14	−0.01
Note:						*p<0.05; **p<0.01; ***p<0.001

Table A.3: TWFE: City Rent Growth After March 2022 (vs. Tbilisi)

Dependent Variable:	Rent_rate
Model:	(1)
Variables	
Batumi vs. Tbilisi	-0.6582***
	(0.0300)
Gori vs. Tbilisi	-1.771***
	(0.1871)
Kutaisi vs. Tbilisi	-2.538***
	(0.1450)
Telavi vs. Tbilisi	-1.939***
	(0.1912)
Zugdidi vs. Tbilisi	-2.171***
	(0.1505)
Inflation Rate	0.7365
	(0.6288)
Fixed-effects	
city	Yes
date	Yes
Fit statistics	
Observations	570
R^2	0.24209
Within R^2	0.03814

Clustered (city) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table A.4: TWFE: City Rent Growth by Shock Period (vs. Tbilisi)

Dependent Variable:	Rent Growth Rate
Model:	(1)
Variables	
Batumi – Spring Shock	-13.23***
	(0.1671)
Gori – Spring Shock	-14.46***
	(0.4311)
Kutaisi – Spring Shock	-10.43***
	(0.4213)
Telavi – Spring Shock	-8.761***
	(0.3315)
Zugdidi – Spring Shock	-13.77***
	(0.5605)
Batumi – Winter Shock	-5.589***
	(0.0515)
Gori – Winter Shock	-5.741***
	(0.0216)
Kutaisi – Winter Shock	-7.910***
	(0.4332)
Telavi – Winter Shock	-5.053***
	(0.1340)
Zugdidi – Winter Shock	-5.120***
	(0.0843)
Inflation Rate	0.4875
	(0.4429)
Fixed-effects	
city	Yes
date	Yes
Fit statistics	
Observations	570
R^2	0.32767
Within R^2	0.14675

Clustered (city) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Appendix B: Supporting Wage Results

Table A.5: OLS Results: Wage Growth by City and Nationwide

	Dependent variable:						
	Real Wage Growth Rate						
	Batumi	Gori	Kutaisi	Tbilisi	Telavi	Zugdidi	Nationwide
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
War	5.35***	3.24***	2.38***	3.67***	2.61	3.36***	3.78***
	(1.48)	(0.31)	(0.43)	(0.68)	(1.89)	(0.39)	(0.52)
Constant	−0.01	0.44*	0.58**	0.36	0.97	0.11	0.29
	(0.79)	(0.18)	(0.21)	(0.45)	(1.00)	(0.26)	(0.33)
Observations	32	32	32	32	32	32	32
R^2	0.06	0.06	0.04	0.05	0.02	0.05	0.06
Adjusted R^2	0.03	0.03	0.004	0.02	−0.01	0.02	0.03
Note:							*p<0.05; **p<0.01; ***p<0.001

Table A.6: Affordability Gap Before and After the War

City	Gap (Post)	Gap (Pre)	Δ Gap
Batumi	0.53	0.58	-0.04
Gori	0.43	-1.19	1.63
Kutaisi	3.40	0.58	2.82
Tbilisi	-4.18	0.36	-4.53
Telavi	2.20	0.28	1.91
Zugdidi	2.47	-0.20	2.67
Nationwide	-1.26	0.15	-1.41

Appendix C: Seasonality Checks

Table A.7: Monthly Seasonality: Rent Growth Rates (Newey–West SEs)

	Dependent variable:
	Monthly Growth Rate Rent Growth Rate
Month: Feb	0.02
	(0.67)
Month: Mar	−0.36
	(0.82)
Month: Apr	−0.30
	(0.86)
Month: May	0.92
	(0.55)
Month: Jun	−1.41
	(0.96)
Month: Jul	0.67
	(0.53)
Month: Aug	0.60
	(0.81)
Month: Sep	−0.86
	(0.76)
Month: Oct	−1.00*
	(0.51)
Month: Nov	1.35
	(1.22)
Month: Dec	−0.65
	(1.03)
Constant	0.41
	(0.28)
Observations	95
R^2	0.11
Adjusted R^2	−0.01
Note:	*p<0.05; **p<0.01; ***p<0.001

Table A.8: Quarterly Seasonality: Real Wage Growth (Newey–West SEs)

	Dependent variable:
	Real Wage Growth Rate
Q2	11.52***
	(1.12)
Q3	11.65***
	(0.89)
Q4	12.85***
	(0.99)
Constant	−7.84***
	(0.63)
Observations	192
R^2	0.58
Adjusted R^2	0.57
Note:	*p<0.1; **p<0.05; ***p<0.01

Table A.9: OLS Estimates of Real Wage Growth with Seasonal Controls (Newey–West SEs)

	Dependent variable:						
	Real Wage Growth Rate						
	Batumi	Gori	Kutaisi	Tbilisi	Telavi	Zugdidi	Nationwide
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
War	3.09***	2.12***	1.06	1.91***	0.76	1.97	2.08***
	(1.19)	(0.68)	(0.83)	(0.55)	(1.73)	(1.42)	(0.52)
Q2	16.44***	7.54***	10.91***	12.13***	10.50***	10.21***	12.03***
	(1.96)	(2.87)	(1.90)	(3.13)	(3.09)	(2.45)	(2.71)
Q3	17.08***	9.40***	8.84***	10.47***	14.18***	8.56***	10.68***
	(2.21)	(0.79)	(1.60)	(1.60)	(2.01)	(2.19)	(1.61)
Q4	15.74***	7.60***	9.14***	15.97***	15.70***	11.56***	14.30***
	(1.78)	(1.30)	(1.40)	(1.24)	(2.79)	(2.90)	(1.10)
Constant	−11.83***	−5.46***	−6.35***	−8.90***	−8.73***	−7.17***	−8.59***
	(1.05)	(1.06)	(1.21)	(1.26)	(1.82)	(1.58)	(1.14)
Observations	32	32	32	32	32	32	32
R^2	0.70	0.49	0.69	0.75	0.65	0.56	0.79
Adjusted R^2	0.66	0.41	0.64	0.72	0.60	0.49	0.75
Note:							*p<0.1; **p<0.05; ***p<0.01

Appendix D: Autocorrelation Diagnostics (Durbin–Watson Tests)

Model	Variable	Estimate	Std. Error	P-Value	DW Statistic	DW P-Value
Model 1	War	1.735	0.585	0.004	1.919	0.310
Model 2	War	1.790	0.578	0.003	1.993	0.412
Model 2	Inflation Rate	0.557	0.301	0.068	1.993	0.412
Model 3	War	1.852	0.587	0.002	1.999	0.399
Model 3	Inflation Rate	0.506	0.311	0.107	1.999	0.399
Model 3	Interest Rate	-0.116	0.170	0.496	1.999	0.399

Figure 5: Durbin–Watson Test Result for Nationwide Rent Model

City	Variable	Estimate	Std. Error	P-Value	DW Statistic	DW P-Value
Batumi	War	1.847	0.586	0.002	1.469	0.002
Batumi	Inflation Rate	-0.285	0.289	0.327	1.469	0.002
Batumi	Interest Rate	-0.145	0.168	0.392	1.469	0.002
Gori	War	0.798	0.899	0.377	2.116	0.630
Gori	Inflation Rate	1.019	0.378	0.008	2.116	0.630
Gori	Interest Rate	-0.008	0.256	0.976	2.116	0.630
Kutaisi	War	-0.152	0.478	0.751	2.090	0.966
Kutaisi	Inflation Rate	0.209	0.207	0.315	2.090	0.966
Kutaisi	Interest Rate	0.063	0.137	0.647	2.090	0.966
Tbilisi	War	2.863	1.001	0.005	1.961	0.319
Tbilisi	Inflation Rate	1.513	0.533	0.006	1.961	0.319
Tbilisi	Interest Rate	-0.122	0.289	0.673	1.961	0.319
Telavi	War	0.115	0.609	0.850	1.994	0.396
Telavi	Inflation Rate	-0.069	0.248	0.782	1.994	0.396
Telavi	Interest Rate	0.165	0.176	0.350	1.994	0.396
Zugdidi	War	0.294	0.487	0.548	2.050	0.502
Zugdidi	Inflation Rate	0.159	0.196	0.419	2.050	0.502
Zugdidi	Interest Rate	-0.157	0.139	0.261	2.050	0.502

Durbin–Watson Test Result for City-Specific Rent Model

Durbin–Watson Test Result for City-Specific Rent Model

Figure 6: Durbin–Watson Test Result for City-Specific Rent Model

City	Variable	Estimate	Std. Error	P-Value	DW Statistic	DW P-Value
Batumi	War	5.347	3.780	0.168	2.460	0.876
Gori	War	3.243	2.346	0.177	2.320	0.772
Kutaisi	War	2.381	2.257	0.300	2.737	0.978
Tbilisi	War	3.675	3.013	0.232	2.828	0.989
Telavi	War	2.606	3.339	0.441	2.477	0.886
Zugdidi	War	3.361	2.702	0.223	2.878	0.993
Nationwide	War	3.776	2.740	0.178	2.756	0.981

Figure 7: Durbin–Watson Test Result for Wage Models

Appendix E: Placebo Tests

Table A.10: Placebo Model: Estimated Effects of Random Shock Periods on Monthly Rent Growth

	Dependent variable:
	Rent Growth Rate
Time	0.01^{*}
	(0.004)
Shock 2019 (Apr–June)	-0.47
	(0.40)
Shock 2020 (Oct–Jan)	-0.85^{**}
	(0.31)
Shock 2021 (Apr–June)	-0.61
	(0.44)
Shock 2022 (Apr–June)	6.99^{***}
	(1.38)
Shock 2023 (Oct–Dec)	-0.46
	(0.39)
Inflation Rate	0.20
	(0.30)
Interest Rate	-0.17
	(0.09)
Constant	1.66
	(1.15)
Observations	95
R^2	0.30
Adjusted R^2	0.23
Note:	*p<0.05; **p<0.01; ***p<0.001