AESTIMUM
Centro Studi di Estimo e di Economia Territoriale - Ce.S.E.T.

JUST ACCEPTED

High Rents, Low Values: The Rent-to-Price Ratio as an Indicator of Urban Imbalance

Cristian Cannaos[1,*], Giuseppe Onni[1], Alessandra Casu[1], Valentina Talu[1], Nicola Solinas[2]

[1]*Department of Architecture, Design and Urban Planning (DADU), University of Sassari (Italy).*
Email: *cannaos@uniss.it*
Email: *gonni@uniss.it*
Email: *casual@uniss.it*
Email: *vtalu@uniss.it*

[2]*Tamalacà srl (Italy).*
Email: *nicola.solinas@tamalaca.com*

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record.

Please cite this article as:
Cannaos, C., Onni, G., Casu, A., Talu, V., & Solinas, N. (2026). High Rents, Low Values: The Rent-to-Price Ratio as an Indicator of Urban Imbalance. **Aestimum**, *Just Accepted*.
DOI: 10.36253/aestim-18147

CRISTIAN CANNAOS[1,*], GIUSEPPE ONNI[1], ALESSANDRA CASU[1], VALENTINA TALU[1], NICOLA SOLINAS[2]

[1]*Department of Architecture, Design and Urban Planning (DADU), University of Sassari (Italy).*
[2]*Tamalacà srl (Italy).*

E-mail: cannaos@uniss.it; gonni@uniss.it; casual@uniss.it; vtalu@uniss.it; nicola.solinas@tamalaca.com

Keywords: *Rent-to-Price Ratio, Urban Inequality, Housing Market Imbalance.*

**Corresponding author*

ORCID*:*
CC: 0000-0002-8560-2048
GO: 0000-0002-4514-2497
AC: 0000-0001-9035-4942
VT: 0000-0002-7491-3473

Data Availability Statement*: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.*

Conflicts of Interest*: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.*

High Rents, Low Values: The Rent-to-Price Ratio as an Indicator of Urban Imbalance

Housing market imbalances can emerge not only in contexts of high property values, but also where relatively low real estate prices coexist with sustained rental demand. In such situations, rents may remain disproportionately high compared with property values, generating structural tensions in local housing systems. The rent-to-price ratio (RtPR) represents a useful indicator for capturing these dynamics, as it reflects the relationship between the rental and ownership markets. This paper investigates the RtPR analytical potential as a diagnostic tool for identifying socio-territorial housing imbalances and housing vulnerability. The analysis tests this interpretive potential in the city of Sassari, using OMI data on property values and rents, municipal records on rental subsidy applications, and socio-demographic variables. The results show a significant association between high RtPR values and the spatial concentration of demand for housing support. These findings suggest that the RtPR can function not only as an indicator of real estate performance, but also as a proxy for detecting spatial patterns of housing vulnerability that are not captured by property values alone. While the exploratory and cross-sectional nature of the analysis prevents causal interpretation, the paper shows how the RtPR may contribute to the construction of more sensitive diagnostic tools for housing policy. From this perspective, the final section outlines the Housing Imbalance Composite Index (HICI) as a possible future development for integrating market indicators with contextual measures of housing vulnerability and housing-stock use.

Accepted manuscript

1. Introduction

In many housing markets, the relationship between property values and rental levels provides important insights into the functioning of urban real estate systems (Campbell et al., 2009; Gallin, 2008). When rents and property prices evolve in a relatively balanced way, their relationship reflects the underlying economic fundamentals of the market (Ayuso and Restoy, 2006). However, in several urban contexts this balance appears increasingly fragile. Situations may arise in which property values stagnate or decline while rental levels remain relatively high, generating a growing divergence between the capital value of housing assets and the income generated through rent (Manganelli et al., 2014).

The Rent-to-Price Ratio (RtPR) offers a synthetic way to observe this relationship. Traditionally used as an indicator of the gross yield of residential property, the RtPR expresses the ratio between annual rental income and property value (Davis et al., 2008). Within real estate economics, the indicator has mainly been interpreted as a measure of investment profitability or as a signal of market over- or under-valuation. Yet persistent deviations between rents and property values may also reveal structural imbalances within housing markets, including spatial segmentation and pressures in the rental sector (Musil and Kaucic, 2024).

From this perspective, the RtPR can be interpreted not only as a financial indicator but also as a diagnostic tool for detecting urban housing imbalances. High values of the ratio may occur in contexts where relatively low property values coexist with sustained rental demand, often reflecting situations in which households rely on the rental market but face limited access to home ownership or alternative housing solutions.

This article investigates these dynamics through the case of Sassari, a medium-sized Italian city characterized by significant internal disparities in its housing market. The study combines real estate valuation data with socio-territorial information, including the spatial distribution of applications for rental support and selected demographic indicators. The paper is guided by the hypothesis that, in weak and segmented housing markets, unusually high RtPR values may signal areas where low property values, sustained rental demand and housing vulnerability overlap. The aim is therefore not to establish a causal relationship between RtPR and subsidy demand, but to assess whether the indicator can help identify spatial configurations of housing imbalance.

The paper is structured as follows. The next section reviews the literature on the RtPR. The methodological section describes the datasets, spatial aggregation procedures and exploratory statistical tests. The empirical part compares RtPR values across selected Italian cities and analyses the spatial and temporal evolution of the indicator in Sassari. The final section discusses policy implications, analytical limitations and a possible extension towards a composite housing imbalance indicator.

2. The Rent-to-Price Ratio between Real Estate Finance and Urban Studies

The RtPR is an indicator widely used in economic and valuation literature to estimate the gross profitability of residential property, expressed as the ratio between annual rental income and the capital value of the property. Although its formulation may vary (in many international contexts the inverse measure, the price-to-rent ratio, is more commonly used), in both cases the indicator summarizes the relationship between real estate values and the income generated by housing assets.

The use of the RtPR has become consolidated within economic and financial literature, where it is interpreted as an indicator derived from the macroeconomic fundamentals of the real estate market. From this perspective, variations in the index mainly reflect changes in interest rates, expectations regarding price growth, or investors' perception of risk (Kishor and Morley, 2015). Theoretical present-value models, adapted to the residential housing sector, suggest that the relationship between prices and rents tends to remain in equilibrium in the long term, although it may deviate in the short term due to exogenous factors. Several empirical studies have shown that these deviations can persist for extended periods, making the ratio useful not only for assessing profitability but also for diagnosing market imbalances (Engsted et al., 2016; Lo et al., 2021). Analyses of the persistence of the price-to-rent ratio in time series have confirmed that such ratios can remain high or low for decades, revealing structural dynamics rather than simple cyclical fluctuations (André et al., 2014).

More recent developments have shown increasing interest in the spatial articulation of the RtPR, with research demonstrating that the indicator can vary significantly even within the same urban area. Micro-scale studies have highlighted that the relationship between rents and property values is not spatially homogeneous, but is influenced by the physical characteristics of buildings, their location within the city, and local market dynamics (Lee and Park, 2018). However, this approach often remains anchored to a functional interpretation of the indicator, without extending it to the understanding of the social conditions and housing pressures that may contribute to explaining high values of the ratio even in contexts of urban marginality.

At the same time, a strand of research more attentive to the social dimension of housing has emphasized the inequalities generated by real estate markets and the limitations of traditional indicators in capturing ongoing transformations in urban contexts. Although these studies do not directly employ the RtPR, they provide an interpretative framework that helps explain why, in some urban areas, asymmetries may arise between property values and rental income, driven by vulnerable housing demand and limited availability of alternative housing options (Cellamare, 2022; Fregolent and Colini, 2024; Mugnano, 2018). Critical literature on urban regeneration policies, as well as studies on shared housing and emerging residential needs, has highlighted how the very concept of real estate return must be reconsidered in light of housing accessibility, the quality of the housing stock, and the capacity of public policies to influence territorial balances.

This contribution lies at the intersection of these two research strands. It adopts the quantitative and comparative approach of real-estate studies, but extends the interpretation of the RtPR by testing whether high values may also signal territorial vulnerability. By integrating valuation data with administrative information, the paper compares the spatial distribution of the RtPR with that of housing assistance demand. The aim is not to replace the classical use of the indicator, but to open a new interpretative perspective on an existing and widely comparable measure, shifting it from financial evaluation towards the critical reading of urban space. From this perspective, the RtPR can be regarded as a diagnostic signal of housing imbalance and, in future research, as one of the possible components of a broader composite index integrating market, socio-demographic and housing-stock variables.

Accepted manuscript

3. Data and Methodology

The empirical analysis combines real estate market data with socio-territorial information to explore the association between the RtPR and indicators of housing demand. Given the limited number of spatial units available, the analysis cannot provide causal evidence, but can identify spatial associations between rental-market dynamics and housing vulnerability.

$$RtPR = \frac{Rm \cdot 12}{P} \cdot 100 \quad [1]$$

where
R_m= monthly rent €/m²
P= property price €/m²

Real estate values were drawn from the Osservatorio del Mercato Immobiliare (OMI) database of the Italian Revenue Agency, which provides reference prices and rents for intra-municipal market zones. The RtPR was calculated as the ratio between average annual rent and average property value per square metre, expressed as a percentage. Rents and prices were estimated as the midpoint between the minimum and maximum values reported for residential units.

The analysis uses data from the second semester of 2023, selected because it was the only period for which address-level information on rental subsidy applications was available. This made it possible to relate market indicators to the spatial distribution of housing assistance demand. For the case study of Sassari, the RtPR was calculated for each OMI zone in order to identify areas where rents and property values diverge from the general structure of the local housing market.

The indicator was calculated for two residential segments, mid-range and low-cost housing, both in standard condition. Particular attention is given to the low-cost segment, more directly connected with the housing conditions of economically vulnerable households.

The analysis integrates administrative information on rental subsidy applications submitted to the Municipality of Sassari in 2023, together with demographic and housing-stock indicators derived from census-section data. These include residential density, the share of foreign residents and the share of dwellings not occupied by residents. Dwellings not occupied by residents are not treated as a direct measure of vacancy or building decay, but as an indicator of weakened or discontinuous stable residential use.

The relationship between the RtPR and the selected socio-territorial indicators was explored through correlation analysis and simple regression models. The number of subsidy applications was normalized using resident households, obtaining a rental subsidy application rate per 1,000 households (DemRate). The census-based variables were not originally available at the OMI-zone level. Census sections were therefore aggregated to construct spatial units approximating the corresponding OMI zones. The real-estate values attributed to these units were those reported for the related OMI zones. Where boundaries did not perfectly coincide, the approximation was considered acceptable because the resulting units referred to broadly comparable portions of the city and were checked against the authors' knowledge of the local housing market.

Since a sufficiently coherent spatial match among real-estate data, census variables and subsidy applications was available only for part of the urban territory, the multivariate analysis was conducted on 12 OMI microzones. This harmonisation reduces, but does not entirely remove, the uncertainty associated with non-identical territorial units. The results should therefore be read as exploratory evidence of spatial association, not as robust econometric estimates.

4. The Case of Sassari: Housing Policies Between Real Estate and Rental Values

To illustrate certain distortions in the market, particularly those related to the increase in rental prices despite low property values, we examined the case of Sassari, and specifically its historic centre. This area, often referred to as a "central periphery" (Beretić and Talu, 2020), has for decades concentrated the city's most vulnerable and disadvantaged populations, now increasingly composed of foreign residents, mainly economic migrants.

Urban conditions mirror a broader social situation. The centre currently suffers from severe housing hardship, marked by a significant mismatch between the reuse potential of its building stock and actual housing dynamics, inadequate proximity services, and progressive depopulation. There are high levels of school dropout, and yet, paradoxically, an observable concentration of overcrowded housing units, mostly inhabited by immigrants. Alongside the disappearance of stable residential communities and neighbourhood-oriented services, access to housing is becoming increasingly difficult, due both to high rents and the inadequacy of available housing.

Accepted manuscript

This decline has also been exacerbated by the closure or relocation of many commercial activities that once thrived along the main street; in fact, many activities shifted to the urban periphery or were replaced by large shopping centres.

Existing housing units are often incompatible with current residential needs, whether due to size, facilities, or maintenance conditions. The private market imposes conditions that exclude large segments of the population, such as families with children, young people with precarious employment, or individuals with irregular incomes. Today, the historic centre (especially its lower section, located to the north) features entire blocks of deteriorating buildings, including a growing number of ruins and unoccupied houses.

As of 2024, field surveys and ISTAT data recorded 158 abandoned buildings out of approximately 2,430, 95 of which, equal to 60%, were in advanced decay. Most of them were privately owned, 135 buildings, corresponding to 86% of the total.

Against this background, property and rental values in Sassari's historic centre were analysed using OMI data, in order to examine how a once vibrant residential and cultural core has acquired a fragile socio-economic profile, marked by tensions that traditional statistics alone may fail to capture.

In this context, the joint analysis of property values, rents and social composition is not merely a matter of market appraisal. It provides a way to interpret housing markets as systems that shape inclusion and exclusion, access and barriers, stability and precarity. For Sassari, where the reconnection of the historic centre with broader urban dynamics has long remained unresolved, this approach can support public policies capable of reading value, use and vulnerability together.

5. The Real Estate Market: Rent-to-Price Ratio

5.1 The Real Estate Market: discrepancies between rents and property values

Our analysis begins with an examination of the relationship between property values and rental levels across the OMI micro-zones of the city of Sassari.

The objective of this first step is to observe whether the spatial distribution of property prices follows the same pattern as rental values, or whether significant discrepancies emerge between the two components of the housing market.

The analysis relies on OMI data from the second semester of 2023. Average values were considered for residential units in standard condition, distinguishing between mid-range and low-cost housing categories.

To begin with, the distribution of average purchase prices per square metre was examined (Figure 1).

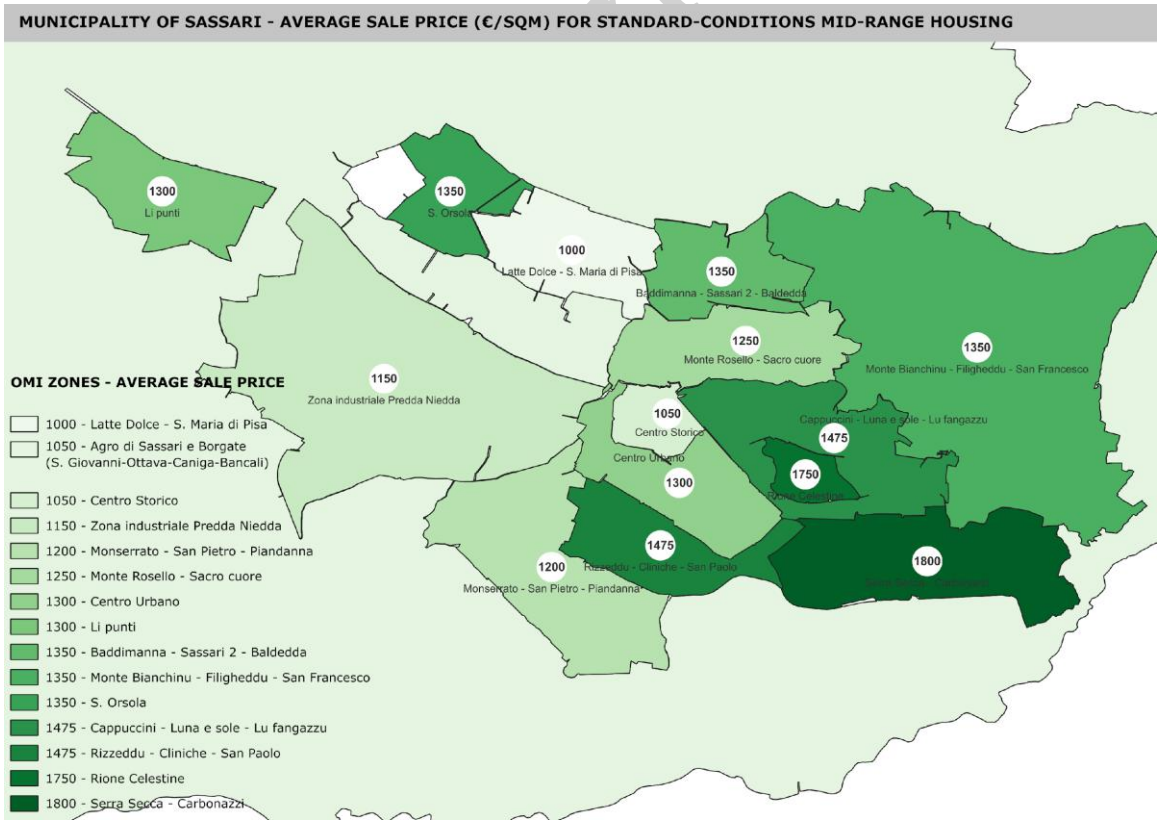


Figure 1. Average sale price per square metre of standard-condition mid-range housing – OMI data, Italian Revenue Agency, second semester 2023.

The first striking observation is that the average purchase prices in the historic centre are among the lowest in the city. Comparable values are found only in peripheral low-income settlements, characterized by large-scale public housing. However, the built environment differs significantly: the historic centre is largely composed of small historic townhouses, usually two to four storeys tall.

A similar pattern emerges in the segment of low-cost housing units (Figure 2).

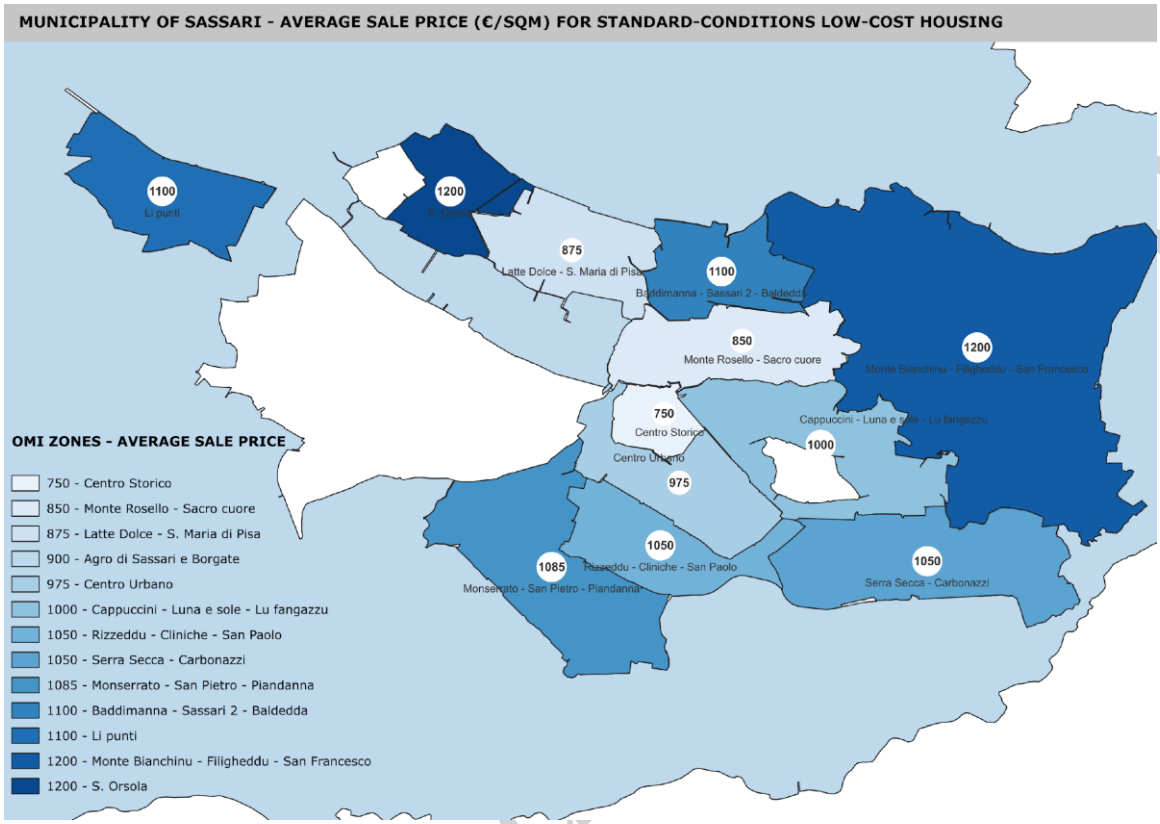


Figure 2. Average sale prices of standard-condition low-cost housing – OMI data – Italian Revenue Agency, second half of 2023.

Even in this category, purchase prices in the historic centre remain the lowest in the city. This depressed capital value cannot be explained solely by the age of the buildings. Rather, it reflects a progressive loss of attractiveness for potential homebuyers, linked to several factors including limited accessibility, reduced availability of urban services and a widespread perception of physical and social decline.

Rental values, however, paint a very different picture (Figure 3).

Accepted manuscript

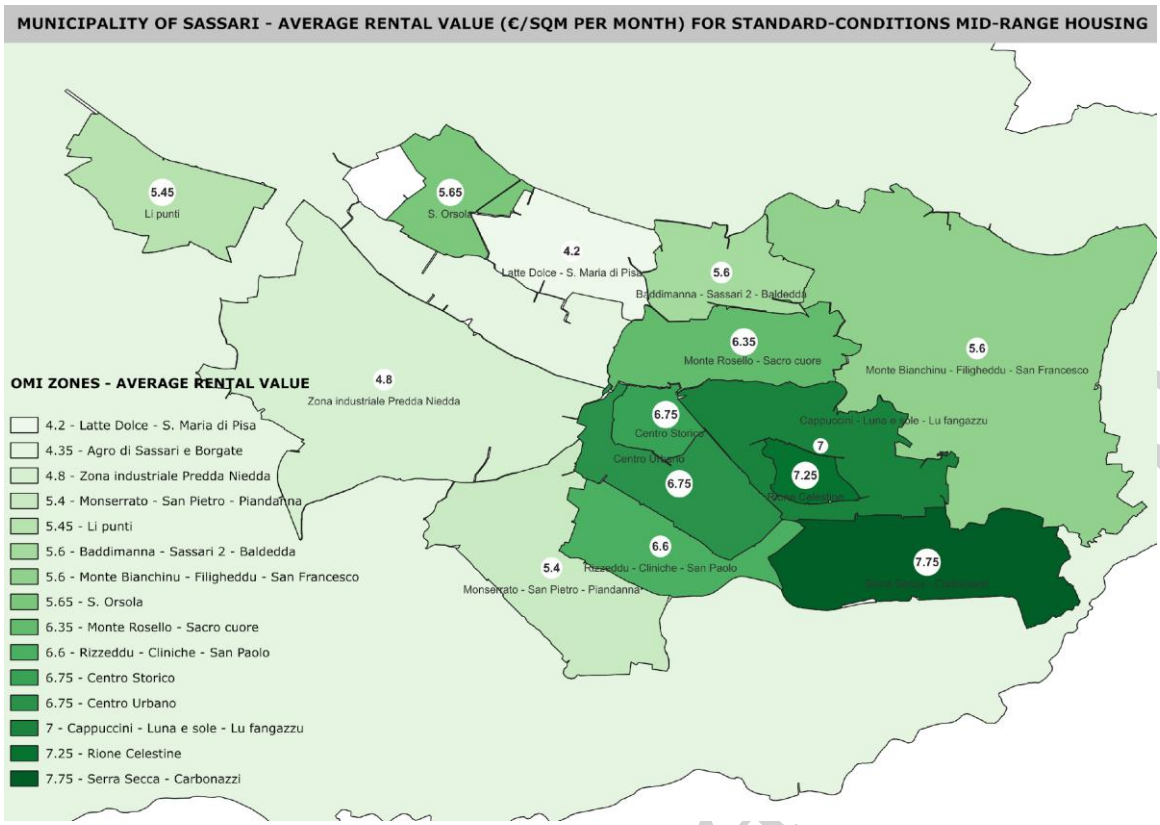


Figure 3. Average rental values of standard-condition mid-range housing – OMI data – Italian Revenue Agency, second half of 2023.

For mid-range housing units, rental prices in the historic centre are relatively high and comparable to those observed in other central districts of the city, being surpassed only by the most affluent neighbourhoods.

The contrast becomes even more evident for the segment of low-cost housing (Figure 4).

Accepted manuscript

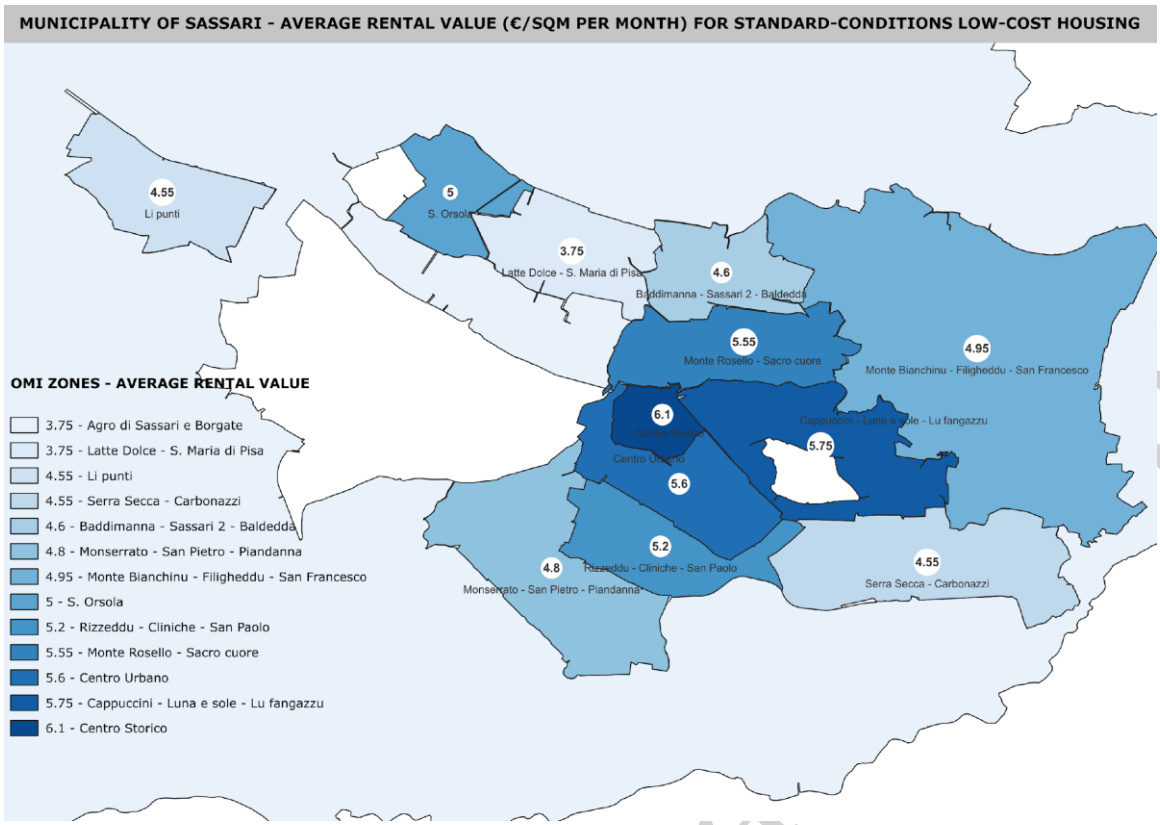


Figure 4. Average rental values of standard-condition low-cost housing – OMI data – Italian Revenue Agency, second half of 2023.

In this case, the historic centre records the highest average rental values in the entire city, despite presenting the lowest property values. This apparent contradiction points to the existence of structural dynamics that cannot be explained solely through traditional real estate indicators.

To illustrate this phenomenon, we calculated the RtPR. It measures how much a property generates rental income in relation to its market value. While primarily of interest to investors and appraisers, it may also provide a diagnostic signal of urban imbalance when interpreted together with socio-territorial information (Engsted et al., 2016; Fama and French, 2025; Kishor and Morley, 2015; Lee and Park, 2018). High values (8-10%) may occur in situations where rents remain elevated despite depressed property values, often in areas with low capital appreciation but active rental demand.

When applying this indicator to the OMI zones of Sassari, the spatial pattern becomes clearer (Figure 5).

Accepted manuscript

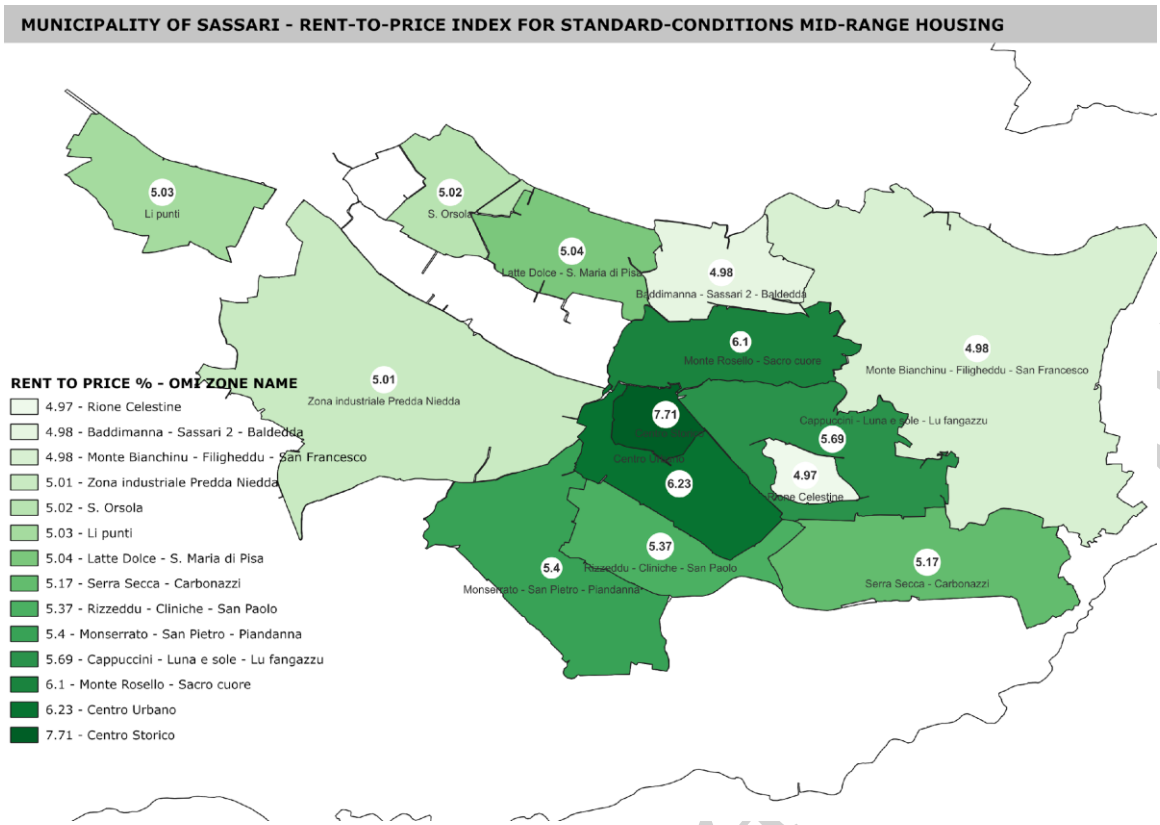


Figure 5. Rent-to-price ratio of standard-condition mid-range housing – Real Estate Market Observatory (OMI), Italian Revenue Agency, 2023, second semester.

Our analysis shows that, in the historic centre, mid-range housing units yield a strong RtPR (7.71%) compared to other districts. The further one moves from the centre, the lower the returns. The contrast is even sharper for low-cost housing units (Figure 6).

Accepted manuscript

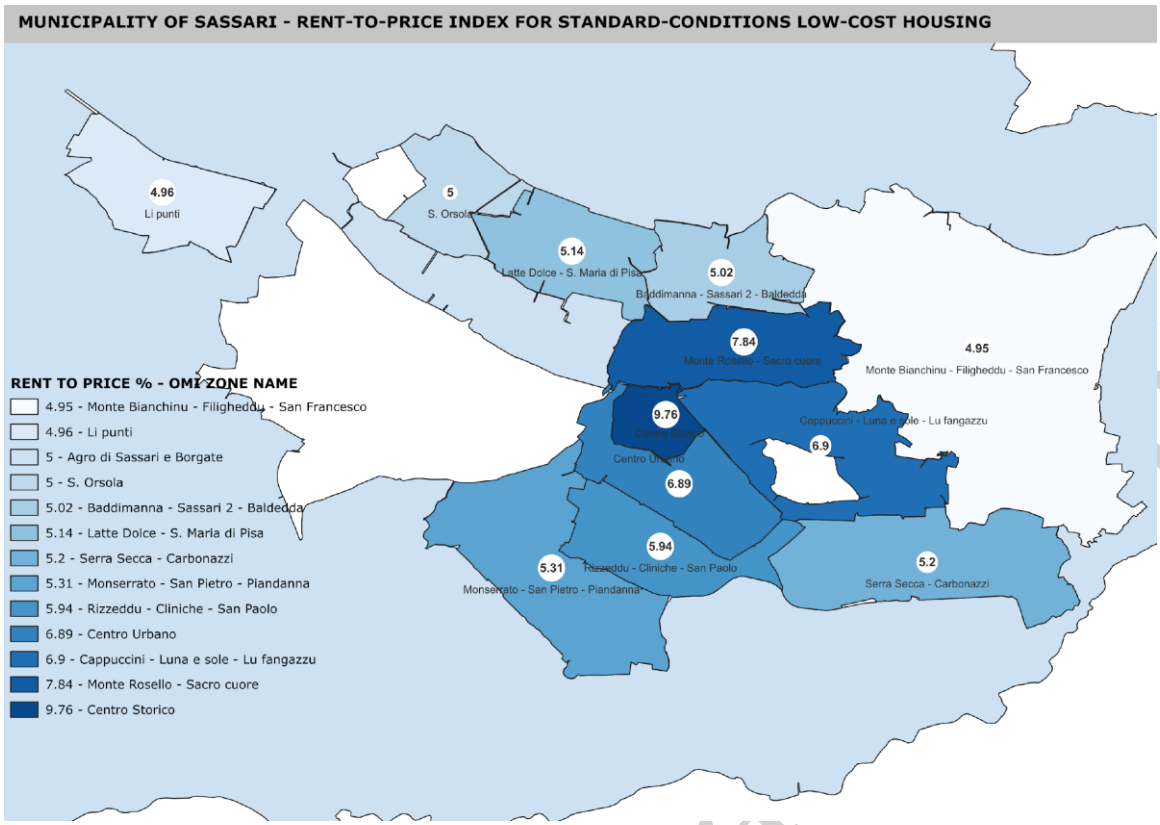


Figure 6. Rent-to-price ratio of standard-condition low-cost housing – Real Estate Market Observatory (OMI), Italian Revenue Agency, 2023, second semester.

In this case, the RtPR in the historic centre is by far the highest in Sassari. Neighbouring districts also offer good returns but remain 2–3 percentage points lower. The nearly two-point gap compared to mid-range housing suggests that lower-quality properties yield higher returns.

In stable urban contexts, RtPR values typically range from 3% to 6%, depending on property type, market stability, and perceived risk. According to a report by the Italian Revenue Agency (Guerrieri and Festa, 2023), the average RtPR for Italian provincial capitals in 2022 was estimated at 5.14%. Against this benchmark, the value observed in Sassari's historic centre appears unusually high and supports an interpretation of the RtPR as a diagnostic signal of rental-market pressure and socio-territorial imbalance. It suggests that relatively low capital values coexist with sustained and partly constrained demand for rental housing, producing a condition of urban and housing imbalance.

Such returns may reflect several critical conditions: concentrations of low-income residents unable to access homeownership; a supply of degraded or informal rental units that still drive high prices; and a lack of alternatives in other districts, which pushes part of the demand to 'fallback' into the centre despite its structural deficiencies.

A 9.76% RtPR in the absence of significant investment in the built environment or surrounding infrastructure reflects an intensive use of unrenewed urban capital, an extractive housing economy rather than one based on value creation. The real estate market survives without actual urban development, making such returns, although seemingly positive, an indicator of imbalance rather than health. The historic centre appears to be trapped in a distorted dynamic, in which rental income continues to be extracted from a housing stock that has lost part of its social, urban, and capital value.

5.2 Temporal Evolution of the Rent-to-Price Ratio

The evolution of the RtPR over time is used to better understand whether the observed imbalance is a recent phenomenon or part of a longer-term dynamic. The analysis considers three reference years (2004, 2014 and 2024) using the mean value of OMI second semester data, allowing a medium-term comparison of the relationship between rental values and property prices within the urban housing market.

Accepted manuscript

Table 1. Rent-to-price ratio, years 2004, 2014, 2024, OMI data, own elaborations.

		Rent-to-Price Ratio		
Zone	*Name*	*2004*	*2014*	*2024*
B1	CENTRO URBANO	4.97	5.04	6.90
B2	CENTRO STORICO	4.95	5.00	10.59
C1	CAPPUCCINI - LUNA E SOLE - LU FANGAZZU	4.98	5.00	6.81
C3	SERRA SECCA - CARBONAZZI		5.01	5.20
C4	RIZZEDDU - CLINICHE - SAN PAOLO		5.00	5.69
D1	MONSERRATO - SAN PIETRO - PIANDANNA	4.96	5.01	5.25
D2	MONTE ROSELLO - SACRO CUORE	4.97	4.99	7.33
D3	MONTE BIANCHINU - FILIGHEDDU - SAN FRANCESCO		4.95	4.95
D4	LATTE DOLCE - S. MARIA DI PISA		5.00	5.14
D5	S. ORSOLA NORD E SUD		5.03	5.00
D6	BADDIMANNA - SASSARI 2 - BALDEDDA		5.03	5.02
E1	LI PUNTI	4.99	5.03	5.03
R1	AGRO DI SASSARI E BORGATE		5.00	5.03
R2	AGRO DELLA NURRA E BORGATE		5.04	4.96

As shown in Table 1, during the first two reference periods, the RtPR values across the city appear relatively homogeneous. In 2004 and again in 2014, the ratio for most OMI zones was close to 5%, suggesting a broadly proportional relationship between rents and market prices throughout the urban system. In other words, despite differences in absolute real estate values between central and peripheral districts, the gross rental yield remained relatively stable across the city.

In 2024, several central neighbourhoods, including the historic centre (B2), the urban centre (B1), and adjacent districts such as C1 and D2, display significantly higher RtPR values than peripheral areas. The most striking case is the historic centre, where the ratio increases from approximately 5% in 2014 to more than 10% in 2024. This divergence indicates a growing decoupling between property values and rental levels.

To illustrate this dynamic more clearly, a diachronic representation of the RtPR evolution in the historic centre was produced. In relatively balanced housing markets, the rent-to-price ratio usually corresponds to a gross rental yield of about 4–6% of property value; significantly higher values may therefore signal structural divergences between rents and real estate prices (Campbell et al., 2009; Himmelberg et al., 2005).

Accepted manuscript

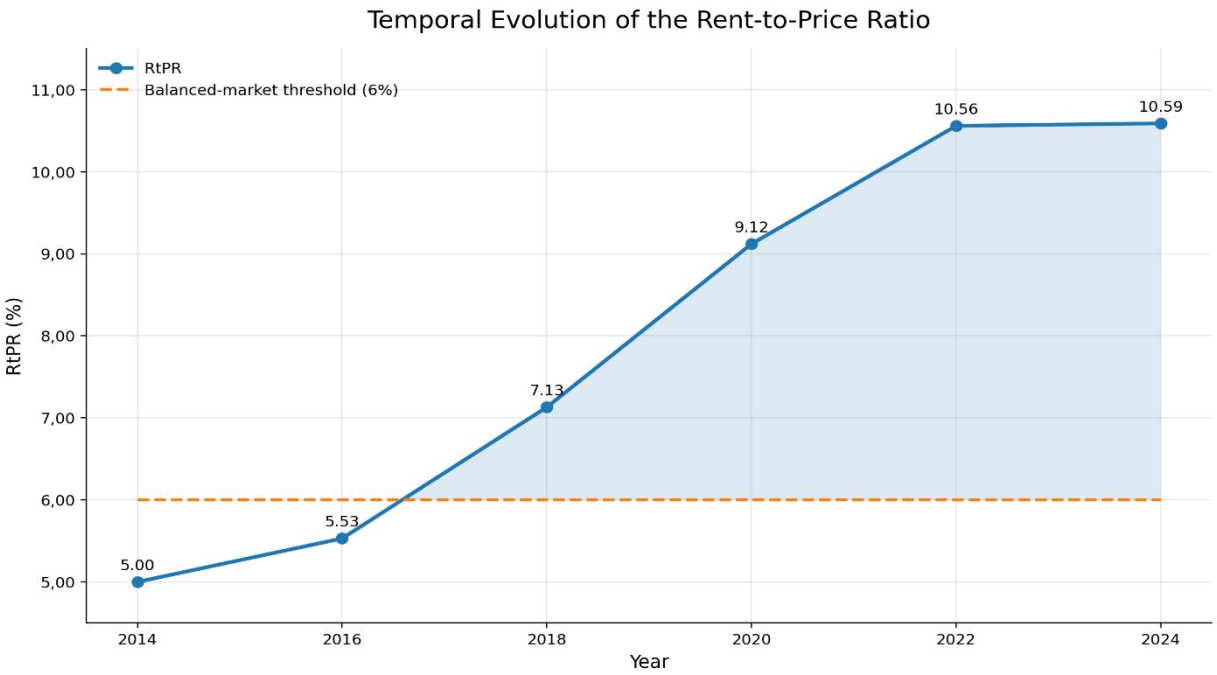


Figure 7. Temporal evolution of Rent-to-Price Ratio in the historic centre for low-cost housing in standard conditions, years 2004-2024, OMI data, own elaborations.

Figure 7 highlights the rapid increase of the indicator over the last decade. While the RtPR remained relatively stable between 2004 and 2014, it more than doubled in the following period. It reflects the combined effect of two simultaneous processes: the decline of property values due to weak purchasing demand and perceived risk, and the growth of rental demand driven by households that rely on the rental market.

This divergence between capital value and rental income represents one of the most significant signals emerging from the analysis. The RtPR does not increase because housing assets are becoming more valuable, but because rental income continues to be extracted from a stock whose market value remains depressed, revealing a structural imbalance between the exchange value and the use value of housing in the historic centre.

The analysis suggests that the rising RtPR reflects structural changes in the local housing system rather than short-term market fluctuations.

The area has increasingly become a settlement space for socially vulnerable groups, including low-income households, migrants and people in precarious employment. For many of them, the rental market represents the only accessible housing option, due to limited access to mortgage credit and the lack of alternative housing solutions.

These conditions generate two simultaneous dynamics: declining demand for homeownership, which contributes to stagnant or falling property values, and persistent rental demand from households structurally dependent on rented accommodation. Their combination produces the growing divergence between property prices and rental values captured by the rising RtPR.

This can also be read as an intensive use of an urban capital that is not being renewed. In the absence of significant reinvestment in the built environment and surrounding infrastructure, the historic centre's housing stock continues to generate rental income while losing capital value. The result is an active but fragile housing market, increasingly disconnected from urban regeneration and long-term value creation.

5.3 Rent-to-Price Ratio in a Comparative Perspective

To place the Sassari results in context, we compared its RtPR values with those of other Italian cities, using OMI data for the same reference period (second semester of 2023).

The cities included in the comparison were selected to represent different types of urban contexts: large metropolitan markets (such as Milan and Naples), medium-sized regional capitals with relatively active housing markets (such as Palermo and Cagliari), and provincial cities characterized by weaker real estate markets (such as Foggia and Caltanissetta).

The comparison relies on the ranges of RtPR values observed across the OMI micro-zones of each city. Since the OMI classification is applied uniformly at the national level by the Italian Revenue Agency, it provides a consistent framework for comparing the relationship between rental values and property prices across different urban contexts.

Accepted manuscript

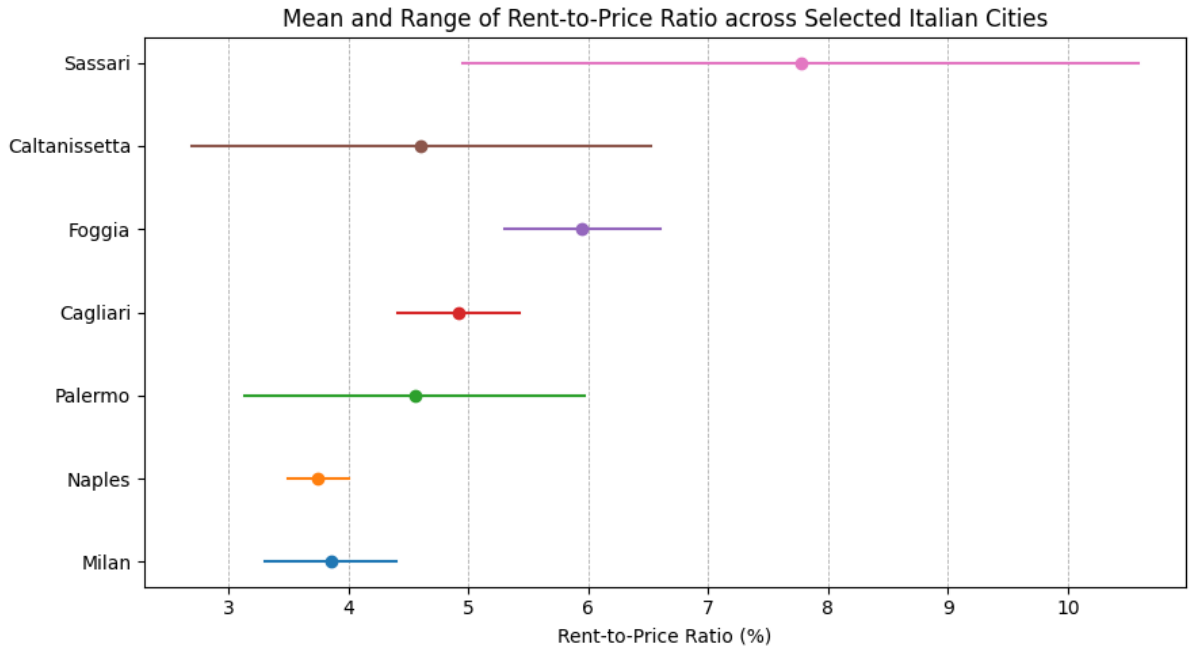


Figure 8. Mean and Range of RtPR across selected Italian Cities, second semester 2023, OMI data, own elaborations.

Figure 8 shows that, in most Italian urban contexts, the RtPR generally falls within a relatively contained range. In large metropolitan markets such as Milan, the indicator varies between approximately 3.3% and 4.4%, reflecting a highly capitalized real estate market in which high property values limit gross rental yields. Similar levels are observed in Naples, where the RtPR ranges between 3.49% and 4%, suggesting a relatively balanced relationship between property prices and rental values.

Intermediate values are observed in cities such as Palermo and Cagliari. In Palermo, the RtPR ranges between 3.13% and 5.97%, while in Cagliari it varies between 4.41% and 5.43%. In both cases, the ratio remains within the range observed in Italian housing markets.

Higher values emerge in cities characterized by weaker property markets. In Foggia, the RtPR varies between 5.3% and 6.6%, while in Caltanissetta the indicator shows a wider dispersion, ranging from 2.69% to 6.52%, reflecting greater internal heterogeneity across urban areas. These cities are the ones whose demographic size and economic conditions are closer to those of Sassari, making them useful points of comparison for understanding housing market dynamics in medium-sized urban contexts characterized by relatively weak real estate demand.

Against this background, the case of Sassari stands out clearly. The RtPR in the city ranges between 4.95% and 10.59%, with the highest values concentrated in the historic centre and in adjacent neighbourhoods. These levels are significantly higher than those observed in the other cities considered and well above the range typically associated with stable real estate markets.

This comparative perspective reinforces the interpretation proposed in the previous sections. The very high RtPR values observed in Sassari reflect a structural imbalance between property values and rental demand.

6. Rental Subsidies and Housing Demand

The results presented in the previous sections highlight the presence of a significant imbalance between property values and rental levels in several areas of the city of Sassari, particularly within the historic centre. To better understand the factors that may contribute to this divergence, the analysis was extended to include indicators of effective housing demand.

A useful proxy for measuring housing pressure in the rental sector is represented by applications for public rental subsidies. These subsidies are designed to support households whose income level is insufficient to sustain housing costs in the private rental market and often operate as short-term palliatives, leaving underlying market dynamics untouched.

Moreover, they may inadvertently sustain inflated rents, thereby propping up a distorted rental market (Baldini and Poggio, 2012). Cities under high housing pressure provide concrete evidence of this phenomenon (Brewer et al., 2019; Disney and Luo, 2017; Leviten-Reid et al., 2025).

Therefore, the spatial distribution of subsidy applications provides an indirect but meaningful indicator of the concentration of economically vulnerable households and of the intensity of demand for affordable rental housing.

Accepted manuscript

For the purposes of this study, administrative data referring to applications submitted to the Municipality of Sassari for the 2023 rental support programme were analysed. These data were georeferenced and aggregated at the level of census sections, allowing their comparison with the real estate indicators discussed in the previous sections.

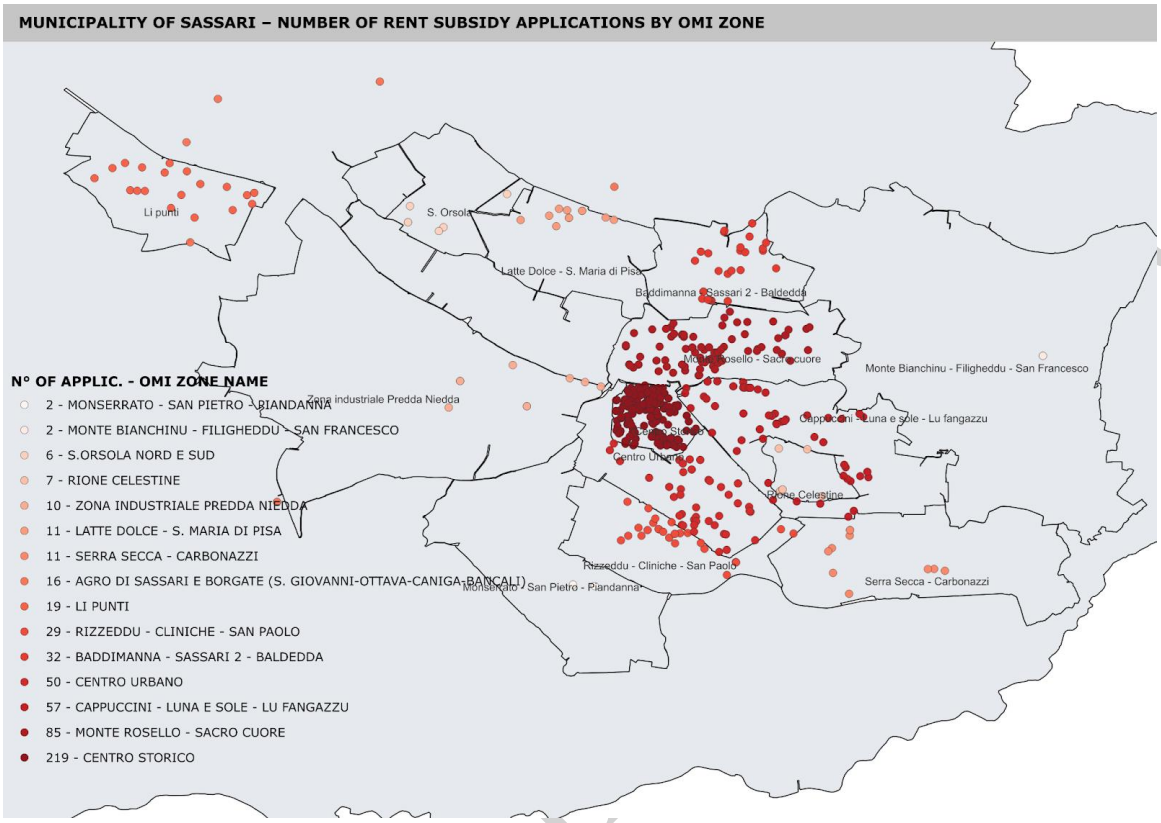


Figure 9. Number of rent subsidy application by OMI zones, Municipality of Sassari data 2023, own elaboration.

As shown in Figure 9, the distribution of subsidy applications is highly uneven across the urban area. A clear concentration emerges in the historic centre and in some adjacent neighbourhoods, while peripheral districts display significantly lower levels of demand. This spatial pattern suggests the existence of a close relationship between the areas characterized by higher housing vulnerability and those where the divergence between rents and property values appears most pronounced.

In order to further explore this relationship, the spatial distribution of subsidy applications was compared with the values of the Rent-to-Price Ratio observed across the OMI zones of the city (Figure 10).

Accepted

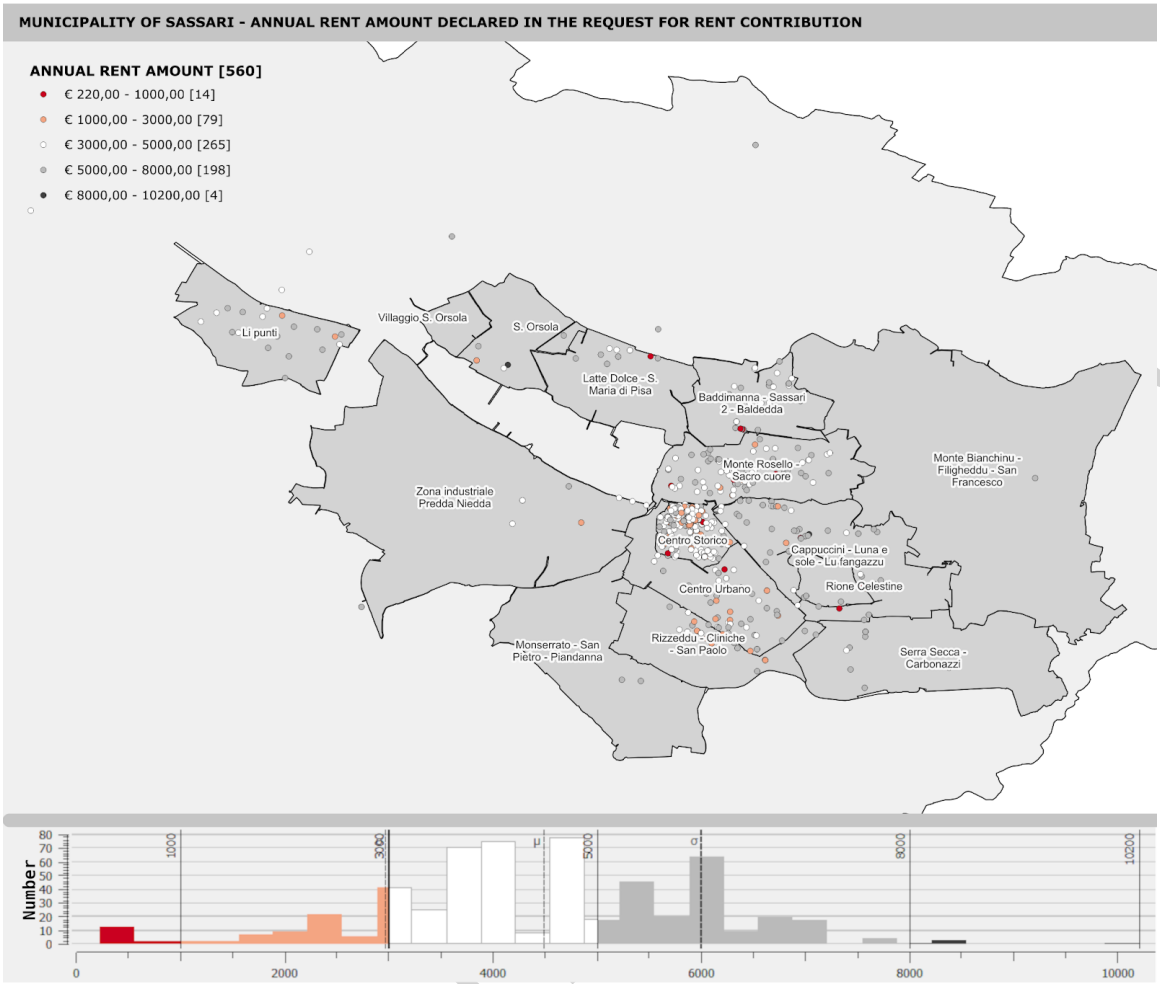


Figure 10. Rental assistance applications classified by annual rent amount, Municipality of Sassari data 2023, own elaboration.

The comparison highlights a substantial spatial overlap between the areas characterized by the highest RtPR values and those with the greatest concentration of subsidy requests. This correspondence suggests, without implying causality, that the divergence between rental income and property values may be associated with the presence of households that rely structurally on the rental market but face significant economic constraints.

Accepted

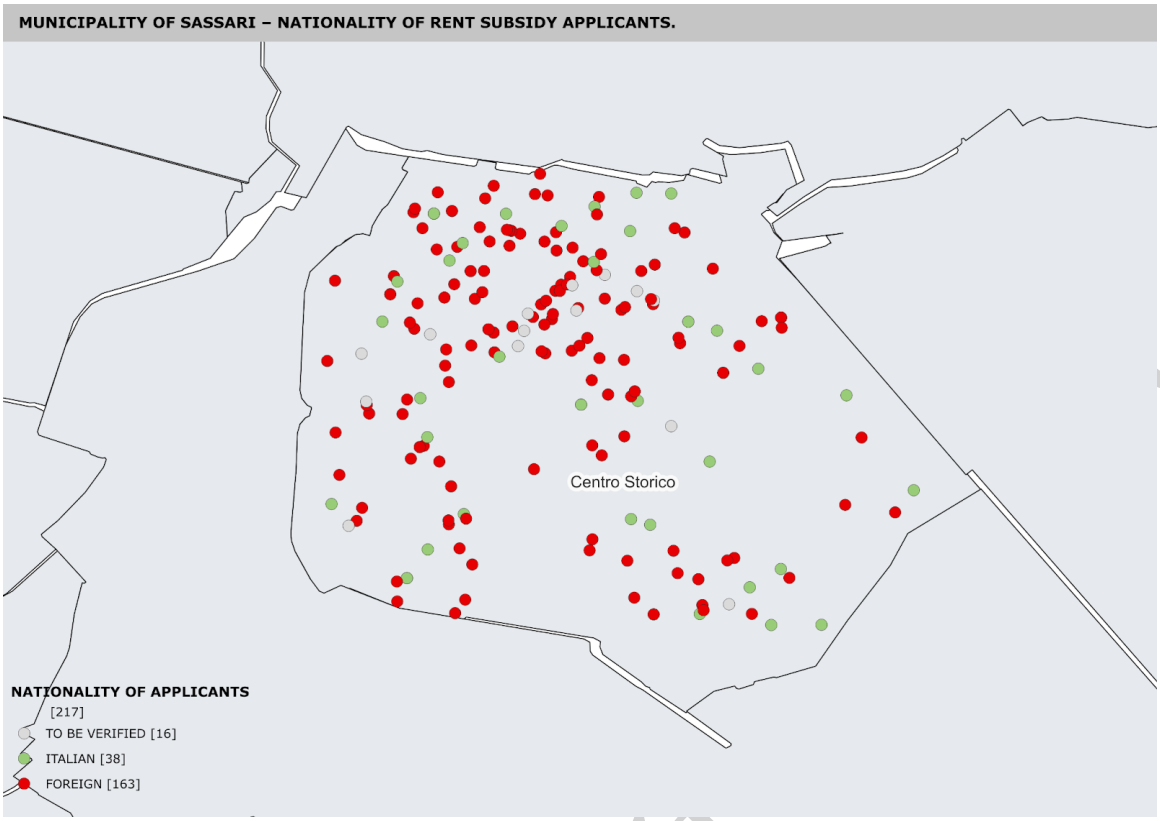


Figure 11. Nationality of rent subsidy applicants in the Historic Centre, Municipality of Sassari data 2023, own elaboration.

Focusing on the historic centre, administrative data show that a large share (80%) of rental subsidy applicants are of foreign nationality (Figure 11). This evidence may be interpreted as part of the longer-term stratification of migrant settlement in the area. Previous studies suggest that changes in the socio-demographic composition of urban areas may be associated with differentiated effects on housing prices and rents, particularly where access to homeownership and access to rental housing are shaped by different constraints (Accetturo et al., 2014; Helfer et al., 2023; Sharpe, 2019).

According to Sharpe (2019), the impact of immigration, or more generally of any increase in housing demand, on prices and rents is not automatic, but depends on the housing system's ability to adapt. Where supply is rigid, due to planning constraints, lack of incentives, limited availability of affordable housing, or long adjustment times, additional demand may contribute to pressure on rents, especially in the lowest segments of the market. In the Sassari case, this hypothesis is relevant because the historic centre combines low property values, relatively high rental levels and a concentration of rental subsidy applications.

Moreover, the concentration of rental subsidy applications in some neighbourhoods surrounding the historic centre, together with the recent increase in RtPR values in these areas, points to a possible spatial diffusion of housing pressure beyond the historic core. This pattern is consistent with neighbourhood-level housing-market effects discussed in the literature, where tensions generated in one area may extend to adjacent urban sectors (Mussa et al., 2017). In the present analysis, this interpretation is not treated as causal evidence, but as a relevant spatial signal. The following regression sequence therefore examines whether the association between RtPR and rental subsidy demand remains stable when broader socio-territorial conditions are introduced. The share of foreign residents is used in this framework as a contextual socio-demographic variable, not as an autonomous causal factor.

6.1 Rent-to-Price Ratio and rental subsidy applications

To explore whether the spatial coincidence observed in the previous maps corresponds to a measurable association, a correlation analysis was carried out between the RtPR and the distribution of rental subsidy applications.

For this purpose, the number of applications recorded in each spatial unit was compared with the corresponding values of the RtPR. The analysis was conducted using aggregated data to maintain consistency between real estate indicators and socio-demographic information.

Accepted manuscript



Figure 12. Relationship between the number of rental subsidy applications and the Rent-to-Price Ratio across OMI zones in Sassari (2023) for the mid-range housing segment.



Figure 13. Relationship between the number of rental subsidy applications and the Rent-to-Price Ratio across OMI zones in Sassari (2023) for the low-cost housing segment. The shaded band represents the 95% confidence interval of the linear regression.

The scatter plot presented in Figures 12 and 13 suggests a positive association between the two variables. Areas characterized by higher values of the RtPR tend to correspond to higher rental subsidy applications. Although the dispersion of the observations reflects the complexity of urban housing dynamics, the overall pattern is consistent with

the hypothesis that the divergence between rents and property values is associated with the concentration of households experiencing housing vulnerability.

A visual inspection of the scatterplot does not reveal clear outliers or influential observations. Although the micro-zone B2 presents a higher number of subsidy applications compared to the rest of the sample, its position remains consistent with the overall trend. This observation should nevertheless be interpreted cautiously, given the limited number of OMI zones included in the analysis.

The relationship appears particularly strong in the low-cost housing segment, suggesting that the divergence between rental values and property prices is most evident in the part of the housing stock that is more accessible to economically vulnerable households.

To further explore this association, a simple linear regression model was estimated in which the RtPR was considered as the dependent variable and the number of subsidy applications as the explanatory variable.

$$RtPR_i = \alpha + \beta \cdot SubsidyApplications_i + \varepsilon_i \quad [2]$$

where $RtPR_i$ represents the Rent-to-Price Ratio observed in spatial unit i, $SubsidyApplications_i$ indicates the number of rental subsidy applications recorded in the same unit, and ε_i is the error term.

Table 2. Results of the linear regression models for the low-cost and mid-range housing segments.

Model	Housing segment	α (Intercept)	β (Applications)	r	R^2	p-value	σ(ε)
(1)	Low-cost housing	4.993	0.0239	0.947	0.897	< 0.001	0.482
(2)	Mid-range housing	4.972	0.0128	0.948	0.899	< 0.001	0.241

In both cases, the relationship between the number of rental subsidy applications and the RtPR is positive and statistically significant (Table 2). However, the high coefficients of determination and low p-values should be interpreted with caution. The estimated coefficient is almost twice as large in the low-cost housing segment.

This result suggests that higher values of the RtPR tend to be observed in areas characterized by stronger demand for housing assistance. However, the model does not imply a direct causal relationship and should be read as preliminary evidence of spatial association between real estate imbalance and housing vulnerability.

From an urban perspective, this pattern reflects the spatial concentration of housing demand within specific parts of the city. In particular, the historic centre and the neighbouring districts (the OMI zones B2, B1, C1 and D2) show both the highest number of subsidy applications and the highest values of the RtPR. These areas correspond to parts of the city characterized by relatively low property values and by a housing stock that is largely composed of older and lower-quality dwellings.

In this sense, the RtPR may also be interpreted as an indicator of housing pressure associated with social and demographic transformations occurring within the historic centre.

6.2 Multivariate regression results

The statistical analysis was conducted on spatial units obtained by aggregating census sections to approximate the corresponding OMI micro-zones. For the purposes of the statistical analysis, these spatial units are hereafter referred to as OMI-based analytical units. They correspond to aggregations of census sections constructed to approximate the boundaries of the OMI micro-zones and to allow the integration of real-estate, census and administrative data. On this basis, a sequence of exploratory tests was developed to assess the relationship between the RtPR and the intensity of rental support demand. The absolute number of applications was first normalized by the number of resident households in each aggregated unit, obtaining a demand rate expressed as applications per 1,000 households (DemRate). It reduces the dimensional effect of micro-zones and makes areas with different demographic sizes comparable.

$$DemRate_i = (SubsidyApplications_i \,/\, Households_i)\; x\; 1{,}000 \quad [3]$$

A first linear regression model was then estimated, in which DemRate was the dependent variable and RtPR was the only explanatory variable:

$$DemRate_i = \alpha + \beta RtPR_i + \varepsilon_i \quad [4]$$

Accepted manuscript

The regression analysis was conducted on 12 OMI-based analytical units for which all variables were available. The model shows a positive relationship between RtPR and DemRate, with a coefficient of determination equal to $R^2 = 0.739$ and an estimated RtPR coefficient of 5.74. This first result indicates that higher RtPR are associated with a higher incidence of rental subsidy applications. However, the limited number of observations means that the result should be interpreted as exploratory evidence of association rather than as a robust econometric estimate.

To test whether this association was affected by differences in settlement structure, the model was then extended by introducing residential density, expressed as residents per hectare. The following multivariate specification was therefore estimated:

$$DemRate_i = \alpha + \beta RtPR_i + \beta_2 Density + \varepsilon_i \quad [5]$$

In this model, the coefficient associated with RtPR loses statistical significance, as does the coefficient associated with residential density, despite the model retaining a relatively high overall explanatory power. To clarify this result, an additional auxiliary regression was performed between DemRate and residential density:

$$DemRate_i = \alpha + \gamma Density + \varepsilon_i \quad [6]$$

The estimation reveals a very strong association between the two variables, with a coefficient of determination equal to $R^2 = 0.915$. This result indicates a condition of severe collinearity between RtPR and residential density, suggesting that the two variables share a large portion of the same underlying socio-spatial information.

From an econometric perspective, this limits the stability and interpretability of the regression coefficients. From an urban perspective, however, it supports the interpretation of RtPR as part of a broader socio-spatial structure rather than as an independent explanatory variable.

In a subsequent step, residential density was replaced by a socio-demographic control variable, namely the share of foreign residents in the total population. A new regression model was therefore estimated with DemRate as the dependent variable and RtPR together with the foreign population share as regressors:

$$DemRate_i = \alpha + \beta_1 RtPR_i + \beta_2 ForeignShare_i + \varepsilon_i \quad [7]$$

The overall model is highly significant and presents a coefficient of determination equal to $R^2 = 0.869$; however, the RtPR coefficient again loses statistical significance, while the coefficient associated with the share of foreign residents is positive and statistically significant. This result should be interpreted cautiously. It does not indicate that foreign residence causes housing vulnerability or rent pressure, but rather that the spatial concentration of foreign residents is part of a wider socio-territorial configuration involving limited access to homeownership, constrained rental demand, and possible segmentation of the housing market. To further explore the relationship between this contextual variable and the real estate indicator, an additional regression was estimated with RtPR as the dependent variable:

$$RtPR_i = \alpha + \delta ForeignShare_i + \varepsilon_i \quad [8]$$

This estimation also reveals a strong statistical association, with a coefficient of determination equal to $R^2 = 0.732$. The result therefore points to a clear spatial co-variation.

A further census-based variable was then considered in order to account for the condition and use of the housing stock: the share of Dwellings Not Occupied by Residents (DNOR). This variable is relevant because housing imbalance may emerge not only where vulnerable rental demand is concentrated, but also where part of the housing stock is not used as a stable residence. An additional exploratory regression was estimated:

$$DemRate_i = \alpha + \beta_1 RtPR_i + \beta_2 DNOR + \varepsilon_i \quad [9]$$

The inclusion of this variable does not substantially increase the explanatory power of the model compared with the simple regression between DemRate and RtPR: R^2 changes from 0.739 to 0.740, and the coefficient associated with DNOR is not statistically significant. This suggests that dwellings not occupied by residents do not directly explain the intensity of rental subsidy applications. However, the variable remains relevant for the diagnostic interpretation of housing imbalance, since it refers to the use of the housing stock rather than to the demand for housing assistance. Its relatively weak rank correlation with DemRate indicates that it does not simply reproduce the geography of subsidy applications, but adds a complementary dimension concerning the weakening of stable residential use.

The regression sequence suggests that the relationship between RtPR and subsidy demand is not a direct causal one. Instead, it appears to be mediated by the socio-territorial structure of micro-zones. RtPR is strongly associated with variables describing both settlement density and social composition, and therefore appears, in the analysed context, as a synthetic indicator of a broader condition of housing-market segmentation and territorial vulnerability. The loss of

Accepted manuscript

statistical significance of RtPR in multivariate models does not invalidate its diagnostic relevance; rather, it indicates that the indicator captures a composite socio-spatial condition and should not be interpreted as an independent causal driver.

6.3 Towards an Exploratory Composite Indicator of Housing Imbalance

In light of the results discussed above, a possible methodological development of the analysis consists in the construction of an exploratory composite indicator of socio-territorial housing imbalance. The regression sequence shows that the RtPR should not be interpreted as an independent causal determinant of rental subsidy demand. However, the same evidence suggests that the RtPR captures an important component of a broader urban condition, in which low property values, sustained rental demand and housing vulnerability overlap.

For this reason, a preliminary Housing Imbalance Composite Index (HICI) was calculated. The index combines three dimensions referring to different aspects of housing imbalance: the RtPR, which measures the misalignment between rental income and property values; the DemRate, which captures the intensity of vulnerable rental demand; and the $DNOR$, which is used as a contextual indicator of the weakening of stable residential use.

The three components do not measure the same phenomenon. RtPR refers to the functioning of the real estate market, DemRate refers to the social demand for rental support, and DNOR refers to the use of the housing stock. The index is designed to summarize the spatial co-occurrence of different signals of housing imbalance. Given the small number of observations and the presence of extreme values in some variables, the index was constructed using rank-normalized components rather than raw values or z-scores. This choice reduces the influence of outliers and assigns the same relative weight to each dimension in terms of relative position within the observed distribution. For each variable, OMI-based analytical units were ranked from the lowest to the highest value and then transformed into a 0-100 score according to the following formula:

$$R(x_i) = ((rank_{(x_i)} - 1) / (n - 1)) \, x \, 100 \quad [10]$$

where R(x_i) is the rank-normalized score of zone i for variable x, and n is the number of observed units. The composite index was then calculated as the average of the three rank-normalized components:

$$HICI_i = [R(RtPR_i) + R(DemRate_i) + R(DNOR_i)] / 3 \quad [11]$$

where $DNOR_i$ represents the share of dwellings not occupied by residents in the analytical unit i. The resulting index should be interpreted as a relative measure of housing imbalance within the Sassari case study, not as an absolute or universally valid metric. Its purpose is to identify the spatial units where several critical dimensions are simultaneously concentrated.

Table 3. Housing Imbalance Composite Index based on RtPR, rental subsidy application rate, and dwellings not occupied by residents across Sassari OMI-based analytical units.

Rank	Analytical units	RtPR low-cost	DemRate	% AB NR	HICI	Class
1	Centro storico	9.76	38.93	24.16	100.0	Very high
2	Centro Urbano	6.89	8.69	20.42	78.8	Very high
3	Monte Rosello	7.84	12.84	5.76	75.8	Very high
4	Cappuccini	6.90	6.33	9.86	66.7	High
4	Rizzeddu	5.94	6.59	16.73	66.7	High
6	Baddimanna	5.02	10.68	2.11	42.4	Moderate
7	Monserrato	5.31	1.41	7.17	36.4	Moderate
7	Serra Secca	5.20	4.20	4.06	36.4	Moderate
9	Lattedolce	5.14	4.01	4.12	33.3	Moderate
10	Li Punti	4.96	7.14	1.87	27.3	Moderate
11	Monte Bianchinu	4.95	1.63	8.30	24.2	Low
12	S. Orsola	5.00	3.74	1.07	12.1	Low

Note: The index includes the RtPR for low-cost housing, the rental subsidy application rate per 1,000 households, and the share of dwellings not occupied by residents. All components are based on rank-normalized scores ranging from 0 to 100. The classes are

Accepted manuscript

descriptive and refer only to the relative distribution of HICI values within the Sassari case study: Low = 0-25; Moderate = 25-50; High = 50-75; Very high = 75-100.

The results confirm the exceptional position of the historic centre, which reaches the maximum value of the index (Table 3). This area ranks first in all three components considered. Therefore, its position is not driven by a single anomalous value, but by the simultaneous concentration of a high RtPR, a high rental subsidy application rate and a high share of dwellings not occupied by residents.

The introduction of the DNOR variable modifies the interpretation of the index in a useful way. The urban centre rises in the ranking because it combines relatively high RtPR values with a high share of dwellings not occupied by residents, while Monte Rosello remains among the highest-ranking areas mainly because of the combined effect of RtPR and DemRate. This confirms that the index does not simply reproduce the geography of subsidy applications, but also incorporates a complementary dimension related to the weakening of stable residential use.

The HICI presented here is an initial exploratory formulation. Its purpose is to show how the classical RtPR can be combined with indicators of vulnerable rental demand and housing-stock use in order to identify spatial configurations where real estate imbalance and housing vulnerability converge. In this sense, the index offers a promising direction for the future development of the research. Further validation on larger samples, different urban contexts and longitudinal datasets will be necessary before it can be proposed as a general analytical tool.

7. Final Remarks

The main contribution of this paper is not to propose the RtPR as a stand-alone explanatory variable, but to show how a conventional real-estate indicator can acquire diagnostic value when it is read together with administrative and socio-territorial data. In this perspective, the relevance of the RtPR does not lie only in measuring rental yield, but in making visible configurations in which low capital values, constrained rental demand and housing vulnerability coexist.

The Sassari case shows that this condition may emerge with clarity in urban contexts that do not correspond to the usual image of overheated housing markets. Housing pressure is not necessarily associated with high property values or intense capital appreciation. It may also appear where the housing stock has weak market value but continues to generate significant rental income because vulnerable households have limited access to alternative housing solutions.

The cumulative dynamic emerging from the analysis can therefore be summarized as follows:

Socio-territorial vulnerability → rental-market segmentation → high RtPR → concentration of rental subsidy demand

In this sense, the RtPR can be interpreted as a synthetic diagnostic indicator of fragile housing-market configurations. Its value lies in its ability to connect market data with social vulnerability, helping to identify areas where weak property values, segmented rental demand and housing distress overlap. This makes the indicator particularly relevant for medium-sized cities and urban contexts that do not necessarily show strong price growth, but where housing pressure is concentrated in specific parts of the city.

The exploratory HICI test developed in the paper moves in the same direction. By combining the RtPR with housing assistance demand and the use of the housing stock, it proposes a preliminary composite framework for detecting housing criticality at the intra-urban scale. Although further validation is needed, the results suggest that this type of approach can be replicated in other cities and adapted to different territorial contexts.

The study has some limitations, mainly related to the small number of OMI zones, the cross-sectional structure of part of the analysis and the spatial approximation required to align census data with real estate micro-zones. These limits affect the statistical generalizability of the results, but they do not weaken the methodological contribution of the work. Rather, they indicate the next steps for future research: expanding the dataset, testing the indicator in other cities and integrating spatial econometric methods where data availability allows it.

The findings have relevant policy implications. If high RtPR values are associated with the spatial concentration of vulnerable households, rental subsidies risk operating mainly as compensatory tools, without addressing the structural conditions that produce housing imbalance. The proposed approach can therefore support more targeted housing policies, helping public institutions identify fragile urban areas where affordability measures, regeneration strategies and improvements in residential quality should be considered together.

Acknowledgements

This article reports on part of the research project ‘Innovative and Inclusive Policies for Urban and Housing Regeneration’, carried out by the Department of Architecture, Planning and Design at the University of Sassari, Italy. The

Accepted manuscript

research project is funded by the Autonomous Region of Sardinia – Regional Programming Centre – ERDF Regional Programme 2021–2027.

References

Accetturo, A., Manaresi, F., Mocetti, S., & Olivieri, E. (2014). Don't stand so close to me: The urban impact of immigration. *Regional Science and Urban Economics*, 45, 45–56. https://doi.org/10.1016/j.regsciurbeco.2014.01.001

André, C., Gil-Alana, L. A., & Gupta, R. (2014). Testing for persistence in housing price-to-income and price-to-rent ratios in 16 OECD countries. *Applied Economics*, 46(18), 2127–2138. https://doi.org/10.1080/00036846.2014.896988

Ayuso, J., & Restoy, F. (2006). House prices and rents: An equilibrium asset pricing approach. *Journal of Empirical Finance*, 13(3), 371–388. https://doi.org/10.1016/j.jempfin.2005.10.004

Baldini, M., & Poggio, T. (2012). Housing policy toward the rental sector in Italy: A distributive assessment. *Housing Studies*, 27(5), 563–581. https://doi.org/10.1080/02673037.2012.697549

Beretić, N., & Talu, V. (2020). Social housing as an experimental approach to the sustainable regeneration of historic city centres: An ongoing study of Sassari City, Italy. *Sustainability*, 12(11), 4579. https://doi.org/10.3390/su12114579

Brewer, M., Browne, J., Emmerson, C., Hood, A., & Joyce, R. (2019). The curious incidence of rent subsidies: Evidence of heterogeneity from administrative data. *Journal of Urban Economics*, 114, 103198. https://doi.org/10.1016/j.jue.2019.103198

Campbell, J. Y., Davis, M., Gallin, J., & Martin, R. (2009). What moves housing markets: A variance decomposition of the rent–price ratio. *Journal of Urban Economics*, 66(2), 90–102. https://doi.org/10.1016/j.jue.2009.06.002

Cellamare, C. (2022). PNRR: Rigenerazione urbana e housing. *Archivio di studi urbani e regionali*, 135(3), 183–201.

Davis, M. A., Lehnert, A. & Martin, R. F. (2008), The rent-price ratio for the aggregate stock of owner-occupied housing. *Review of Income and Wealth*, 54(2), 279–284. https://doi.org/10.1111/j.1475-4991.2008.00274.x

Disney, R., & Luo, G. (2017). The right to buy public housing in Britain: A welfare analysis. *Journal of Housing Economics*, 35, 51–68. https://doi.org/10.1016/j.jhe.2017.01.005

Engsted, T., Hviid, S. J., & Pedersen, T. Q. (2016). Explosive bubbles in house prices? Evidence from the OECD countries. *Journal of International Financial Markets, Institutions and Money*, 40, 14–25. https://doi.org/10.1016/j.intfin.2015.07.006

Fama, E. F., & French, K. R. (2025). House prices and rents. *Review of Financial Studies*, 38(2), 547–563. https://doi.org/10.1093/rfs/hhae065

Fregolent, L., & Colini, L. (2024). La casa verso il cambiamento. *Urbanistica Informazioni*, 52(313), 35–39.

Gallin, J. H. (2008). The Long-Run Relationship Between House Prices and Rents. *Real Estate Economics*, 36(4), 635–658, https://doi.org/10.1111/j.1540-6229.2008.00225.x

Guerrieri, G., & Festa, M. (2023). Una possibile stima del rendimento lordo e netto dell'investimento in un'abitazione. In Quaderni dell'Osservatorio del Mercato Immobiliare (No. 1/2023). Agenzia delle Entrate – Osservatorio del Mercato Immobiliare.

Helfer, F., Grossmann, V., & Osikominu, A. (2023). How does immigration affect housing costs in Switzerland? *Swiss Journal of Economics and Statistics*, 159(1), 5. https://doi.org/10.1186/s41937-023-00110-1

Himmelberg, C., Mayer, C., & Sinai, T. (2005). Assessing high house prices: Bubbles, fundamentals and misperceptions. *Journal of Economic Perspectives*, 19(4), 67–92.

Kishor, N. K., & Morley, J. (2015). What factors drive the price–rent ratio for the housing market? A modified present-value analysis. *Journal of Economic Dynamics and Control*, 58, 235–249. https://doi.org/10.1016/j.jedc.2015.06.006

Lee, C., & Park, K. (2018). Analyzing the rent-to-price ratio for the housing market at the micro-spatial scale. *International Journal of Strategic Property Management*, 22(3), 223–233. https://doi.org/10.3846/ijspm.2018.1416

Leviten-Reid, C., Digou, M., & Kennelly, J. (2025). Housing as a human right, rent supplements and the new Canada Housing Benefit. *Housing Studies*, 40(3), 565–588. https://doi.org/10.1080/02673037.2024.2307595

Lo, D., McCord, M., McCord, J., Davis, P., & Haran, M. (2021). Rent or buy, what are the odds? Analysing the price-to-rent ratio for housing types within the Northern Ireland housing market. *International Journal of Housing Markets and Analysis*, 14(3), 552–569. https://doi.org/10.1108/IJHMA-08-2020-0103

Manganelli, B., Morano, P., & Tajani, F. (2014). House prices and rents. The Italian experience. *WSEAS Transactions on Business and Economics*, 11, 219–226

Mugnano, S. (2018). L'abitare condiviso: innovazione sociale in un sistema di welfare fragile. In *Sviluppo urbano e politiche per la qualità della vita* (pp. 185–204). Firenze University Press. https://doi.org/10.36253/978-88-6453-736-8

Accepted manuscript

Musil, R., & Kaucic, J. (2024). Housing Market Segmentation as a Driver of Urban Micro-Segregation? An In-Depth Analysis of Two Viennese Districts. *Land*, 13(9), 1507. https://doi.org/10.3390/land13091507

Mussa, A., Nwaogu, U., Pozo, S. (2017). Immigration and housing: A spatial econometric analysis. *Journal of Housing Economics*, 35, 13–25. https://doi.org/10.1016/j.jhe.2017.01.002

Sharpe, J. (2019). Re-evaluating the impact of immigration on the U.S. rental housing market, *Journal of Urban Economics*, 111, 14–34. https://doi.org/10.1016/j.jue.2019.04.001

Accepted manuscript