
Short- and Long-Term Economic Cycles in the Renter-Occupied Housing Market: A Conceptual Framework

Submitted 14/04/25, 1st revision 10/05/25, 2nd revision 24/05/25, accepted 10/06/25

Arkadiusz Jan Derkacz¹

Abstract:

Purpose: The main objective of the study is to diagnose and describe economic cycles in the renter-occupied housing (ROH) market.

Design/Methodology/Approach: The research is based on the classic DiPasquale-Wheaton model, adapted to the specific characteristics of this housing rental market. The model distinguishes between two key components: the housing asset market and the rental space market. The former is controlled by owner-investors, and the latter by renter-users.

Findings: The paper describes the most important market interdependencies. However, the most important findings relate to economic cycles. The use of the ROH market model made it possible to diagnose and describe these cycles in both the short and long term.

Practical implications: The findings may be useful for further research and analysis of the housing rental market. The general framework of the model presented can also serve as a basis for understanding the detailed relationships and mechanisms operating in this market.

Originality/value: It can be concluded that the described ROH market model provides a new approach to analysing the residential property market. It is a concept that clearly accentuates the specificity of the housing rental market and emphasises its distinctive characteristics.

Keywords: Economic Cycles, Housing Rental, Real Estate Market.

JEL codes: R31, R21.

Paper type: Research paper.

¹Adjunct Professor, University of Kalisz, Poland, ORCID: 0000-0003-1363-9551,
e-mail: a.derkacz@uniwersytetkaliszki.edu.pl;

1. Introduction

Analysing the renter-occupied housing (ROH) market is extremely challenging. It consists of interrelated markets—the asset market and the space market. Equally important is the subjective criterion of division. Thus, the ROH market comprises a user-occupier market and an owner-investor market. The division according to the first criterion is not in doubt; it becomes evident when properties are not occupied by their owners (Ball, Lizieri, and MacGregor 2012, 18-40).

The proposed additional subdivision of the ROH market by entity criterion requires brief commentary. In the original model, the space market refers to use, and the asset market to ownership. Since the focus here is on the renter-occupied housing market, the users are tenants, while housing assets remain the property of owner-investors (investor-capitalists). It is this group of market participants that holds the right to take actions concerning their housing assets. As will become apparent later in the article, this division plays a crucial role in the proposed ROH market model.

Based on the assumptions made, a general analytical framework can be developed. This framework also forms the basis for defining economic cycles. The proposed general model of the renter-occupied housing market helps to explain how different forces operate in this important segment of the overall housing market. The links between the two markets occur at two nodes. The first reveals the impact of rents on real investment demand for housing assets (Petropoulos *et al.*, 2023).

Rents are set in the tenant market, whereas this investment demand pertains to the owner-investor market. The second node linking the two markets concerns the relationship between the supply of assets and the evolution of rents. These relationships have also become elements or stages of economic cycles in the short and long term.

This article only briefly describes the original real estate market model developed by D. DiPasquale and W.C. Wheaton. The research results based on this model are presented in general terms. Instead, it describes in more detail the general analytical framework that illustrates the links between the asset market and the rental housing stock market. Distinguishing between these two markets helps to clarify the economic cycles operating in the ROH market.

The framework developed is general in character but is applicable exclusively to renter-occupied housing. This is a key differentiator of the model. The use of comparative static analysis with this framework allows the likely effects of changes in the two markets to be traced. It also enables the interpretation of the economic cycles identified, in both the short and long term.

This allows the ROH market model to serve as a tool for more detailed understanding and analysis of changes occurring in this market.

2. Materials and Methods

The main theoretical foundation for analysing housing rental market is the DiPasquale-Wheaton model (DiPasquale and Wheaton 1992). The original DPW graphical model applies to the entire real estate market, including residential, office, and service properties (DeSalvo 2017).

Studies and research addressing the graphical DPW model in various ways are quite numerous. Some focus on the real estate market as a whole (Farzanegan, Feizi, and Gholipour 2021; Hirota, Suzuki-Löffelholz, and Udagawa 2020; Jang, Shin, and Yim 2020), while other on the residential property market (Baek *et al.*, 2021; Martins *et al.*, 2021; Mironiuc *et al.*, 2021; Thackway *et al.*, 2022).

Valuable insights are also provided by studies relating the DPW model to the owner-occupied housing (OOH) market (Flavin and Yamashita 2002; Laszek, Augustyniak, and Olszewski 2021). Additional value is found in analyses in which economic cycles are a key component (Borgersen and Emblem 2023; Laszek, Olszewski, and Augustyniak 2018). This segment of the residential property market refers to pure consumption demand (consumption-speculative demand is excluded in this article), which is reported by consumer-owners.

This leads to the satisfaction of reported demand through home ownership (Forrest, Murie, and Williams 2021, 7-18; Amira and Thalassinou, 2023). The OOH market also includes investment demand and the phenomenon of multiple property ownership (Kadi, Hochstenbach, and Lennartz 2020). The original model has been subjected to various modifications, interpretations, and refinements addressing different aspects of the economy (Borgersen and Emblem 2022; 2023; Borgersen and King 2024). These studies share one common denominator: they do not fully capture the relationship between consumer demand, rent, housing prices, and supply from the perspective of the housing rental market alone.

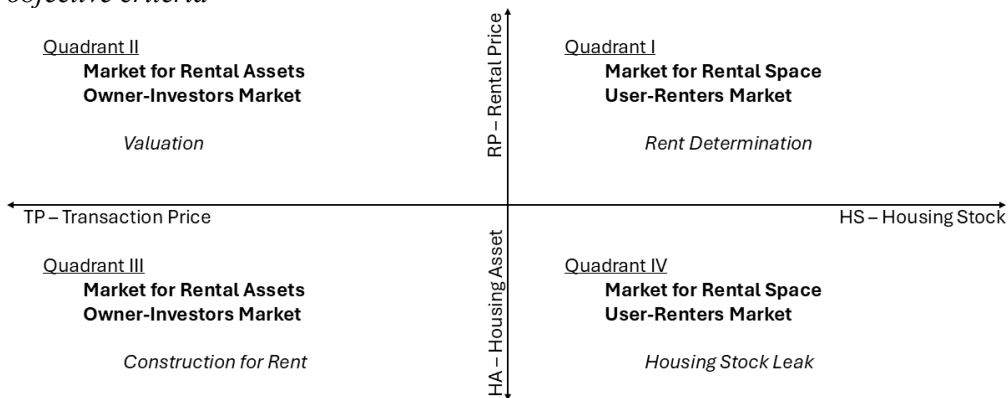
The housing rental market is an important part of the broader property market. It operates according to slightly different principles. There is only pure consumer demand, reported exclusively by renter-users. The supply of rental housing originates solely from owners, and its growth is directly linked to investment decision concerning housing for rent. It follows that there is no investment or speculative demand in the housing rental market, no user-owners, and the supply is not directly determined by the actions of developers.

Consequently, the DPW graphical model requires adjustments when applied to the housing rental market. This also enables the definition of short- and long-term economic cycles operating in the ROH market.

The ROH market model assumes the coexistence of a market for rented space and a market for rental housing assets. At the same time, there are user-renter markets and

owner-investors (Figure 1). Housing is assumed to be a capital good that generates occupancy services. It responds to pure consumption demand, which is reported by renter-users. This is a key assumption of the ROH market model, as it is designed to describe the housing rental market rather than the deposit market (Kucharska-Stasiak 2006, 41), where investment and speculative demand also exist.

Figure 1. Division of the Renter-Occupied Market according to subjective and objective criteria



Source: Own study.

The fact that housing is a capital good that generates residence services means that its supply and price are primarily shaped by the housing asset market. Here, the new supply depends on the price of housing assets relative to their cost of production. The price of housing, in turn, depends on its availability and demand—in this case, investment demand.

This is because the asset market concerns the owner-investor market. For the purposes of this article, other causes of change that may also contribute to imbalances in this market have been omitted. It is also important to note that the ROH market may respond to emerging imbalances in the short and/or long term. The different stages of market adjustment over these two time horizons are presented in the findings using the four-quarter system in the next section.

3. Results

It is widely accepted that the supply of facilities in the residential property market is rigid in the short term. This is due to the long lead times for housing projects. However, this assertion is based on user-owner demand. From the perspective of the ROH market, there is only pure consumption demand reported by user-renters.

The question is whether this market has also a rigid supply in the short term (see quadrant I). If so, short-run demand (D_I) would align with the rigid supply line (S_I) at point (aI), and the rent would reach RP_I .

Furthermore, an increase in demand for housing rental (D_2) would increase rents to RP_2 . In the short term, however, the supply of rental space is not always rigid (Barras 2005, 87). There is a certain amount of unused housing stock (HSF) in the economy. Owners of these dwellings may decide to rent them out. The impetus may be the emergence of additional demand in the ROH market in the short term (D_2) and an increase in rents (RP_2). The equilibrium point in the short term would then shift to a_2 . This would be consistent with the expectations of some owner-investors.

The next stage of the analysis concerns the market for rental assets (quadrant II). Here, the relationship between the rental rate and the transaction price for the purchase of a flat is observed. This relationship is determined by the capitalisation rate of residential investments. The radius i_1 determines their level of profitability. The short-term changes described earlier ($a_1 \rightarrow a_2$) also affect this market.

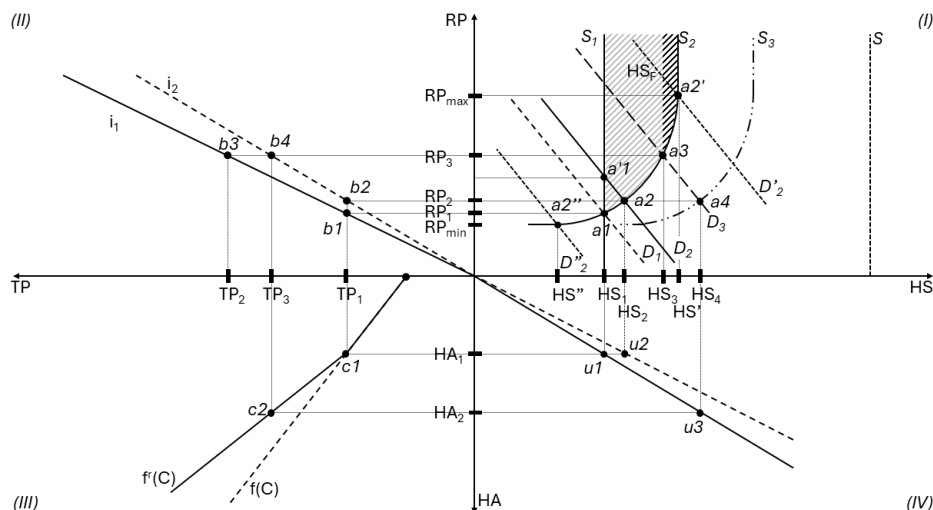
The original level of the capitalisation rate (b_1) increases, and the capitalisation line steepens to i_2 . The rent determined in the short term, RP_2 , has increased rental profitability (b_2). This type of change results from the rigidity of transaction prices in the short term. It is also a consequence of market adjustment on the supply side, which was based on unused vacant housing stock (HS_F). Such a transfer of residential space is typically associated with a change in use.

The third quadrant of the model relates to rental housing assets and the activities of owner-investors. The short-term changes described earlier led to a short-term market adjustment, but they did not affect transaction price for the purchase of housing (TP_1). At certain levels of replacement costs for the housing stock, represented by the curve $f(C)$, the stock size does not change in the short term (HA_1). It can be concluded that the short-term market adjustments do not result in changes in the housing asset market in terms of generating new supply.

The fourth quadrant of the layout once again concerns the market for rented space and the user-renter segment. In the classic DPW model, this quadrant primarily explains the depreciation mechanism of the housing stock. The change in stock depends on new housing supply minus losses from the housing stock. Embedding the model within the ROH market context requires a redefinition of this phenomenon.

The original term 'stock adjustment' has been replaced by 'housing stock leakage'. This refers to the decrease in the real availability of housing stock to tenants. The housing stock volume is thus equal to the amount of new supply relative to the depreciation rate. In the ROH market, this means that $\Delta HS = 0$ and $HS = HA/u$. Based on this, it is possible to determine the level of new rental space supply that will replace the housing stock in the rental market at a given level of functional degradation. The amount of housing stock leakage can result from a loss of functionality, standard, or attractiveness, even if the dwellings still physically exist.

Figure 2. ROH market based on DPW model



Source: Own study.

This can be estimated using the housing unavailability ratio, defined as the ratio of new housing stock to the real stock of rented space ($u = HA/HS$). An increase in this ratio, with a given number of new renter-occupied housing units, indicates a decrease in the available stock in the user-renter market. The radius of housing stock leakage will shift toward the vertical axis (θ, HA).

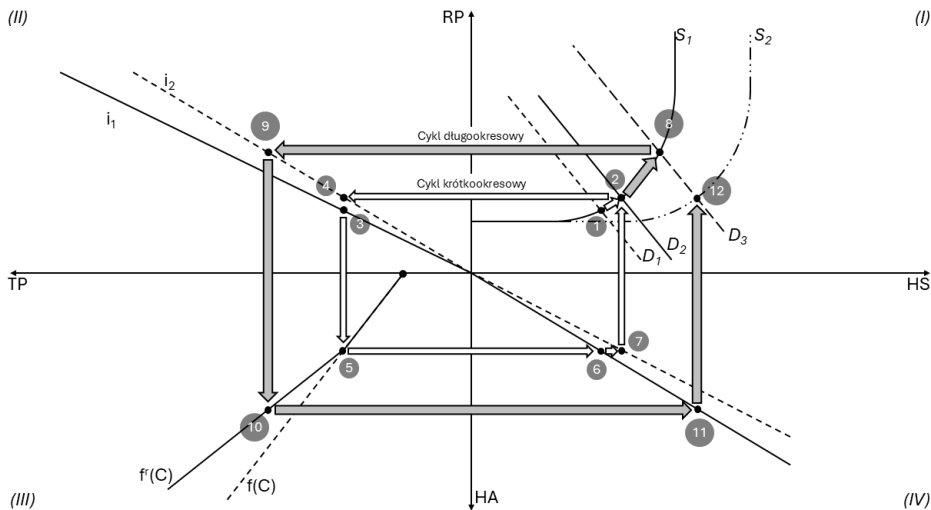
On this basis, an attempt was made to diagnose short-term cycles in the ROH market. These may follow the course illustrated in Figure 3. The occurrence of a demand impulse will trigger a recovery of the ROH market, manifested by rising rents. This recovery is preceded by a recession on the supply side (housing stock leakage). Short-term market adjustment, through the use of vacant stock, ultimately leads to demand being met and the peak of the economic cycle being reached.

Further increases in demand will result in a stiffening of supply, leading to a faster increase in rents. At a certain income level, such a situation may reduce interest in renting and simultaneously trigger a new state of market imbalance. Moreover, it is not possible to generate additional supply solely from unused stock. This, in turn, triggers demand and supply impulses.

There is no basis for claiming that a subsequent increase in demand for rented space (D_3) will be met from the pool of unused housing stock. At a certain point, real supply will become rigid. Sustained increases in demand in the user-renter market, given a certain supply structure (S_2), will lead to an increase in rents to RP_3 . This will be a situation in which rental rents, despite their increase, continue to reinforce decisions to rent housing (a_3), and the alternative of purchasing housing remains

unattractive. Continued market imbalances may spur long-term owner-investor action in the rental housing asset market.

Figure 3. Diagram of short- and long-term cycles in the ROH market based on the DPW model



Source: Own study.

Rental growth, under an established capitalisation rate for rental housing investments, becomes a significant factor influencing the decisions of owner-investors of housing assets (quadrant II). There is thus a market impetus for new residential investment. Assuming the existing capitalisation rate (i_1), the market will determine a new purchase price for housing at TP_2 .

However, it must be noted that short-term market adjustments have skewed the profitability of housing investment, forming i_2 . The persistence of these conditions in the long term may lead to weaker housing price growth (TP_3).

These types of phenomena may serve as drivers of supply-side activity in the housing market, contributing to the housing stock in the ROH market. A long-term increase in pure consumer demand for rental housing will also boost investment demand in the housing asset market.

However, supply in this market is highly rigid, primarily due to the time-consuming nature of the investment and construction process. Therefore, increased investment demand for rental housing in the long term will also affect the overall housing asset market. This means that the increase in rents (RP_3), through the capitalisation rate of residential investment (i_2), influences the setting of housing purchase prices (TP_3).

Increased demand for investment housing in the long term will be a key driver of activity in the housing asset market. The slope of the $f(C)$ curve illustrates the elasticity of housing supply ($e = HA/TP$), which is mainly influenced by real estate, capital market, and planning considerations.

However, this applies to supply in the residential property market as a whole. To relate this relationship specifically to the renter-occupied housing market, the rental housing investment propensity index should be used. This index expresses the ratio of completed rental dwellings to the total housing supply over a given period ($r = HA_{ROH}/HA$). As a result, the $f(C)$ curve flattens and takes the form $f_r(C)$.

The supply elasticity of rental housing (e_r) is lower than the supply elasticity of the entire housing market (e). It can be concluded that the transaction price for purchasing investment housing (TP3), via the cost curve of rental housing production (c_2), determines the level of new housing assets in the ROH market (HA_2).

The newly generated rental housing assets feed the housing stock (HS). Its final volume is also shaped by stock adjustments. In the context of the ROH market, this phenomenon has been referred to as housing stock leakage. Although these leakages occur in the short term, the long-term adjustment process is also influenced by them.

This means that newly created housing assets feed the stock of rented space according to the housing unavailability rate (u). Consequently, the long-term adjustment results in an increase in the stock of rented space (HS_4), leading to an increase in the real supply in this market (S_3). A new equilibrium (a_4) is established, a new/lower level of rent is reached (RP_2).

Based on the long-term adjustment process in the ROH market, it is possible to define the various phases of the cycle. The above analysis begins with the identification of a market imbalance, consisting of increased demand in the user-renter market. At the same time, further short-term adjustments are no longer feasible. This situation can be described as a market recession, which also serves as a clear impetus for recovery.

The growth phase of the ROH market is further reinforced by rising rental rates and housing asset prices. New impulses emerge, motivating owner-investors to undertake investment activity. A new supply of rental housing assets is created, and the ROH market reaches the peak of its expansion. New assets feed the housing asset market in the user-renter market.

However, the mechanism of housing stock leakage results in a shrinking stock. The ROH market is entering a slowdown phase. Further along the cycle, the next bottom

in the long-term economic cycle may be reached once the corresponding impulses from the rental space market become apparent.

4. Discussion and Conclusion

The distinction between the housing asset market for rental housing and the market for rented housing spaces proved to be fully valid. The division of the ROH market into a market for owner-investor activities and a market for tenants also proved to be equally valid. On this basis, a general analytical framework was provided to understand economic cycles in the short and long term.

Several key and absolutely fundamental assumptions were necessary for building this model. There is only pure consumer demand in the ROH market, reported exclusively by renter-users. The supply of rental housing originates solely from owners, and its growth is determined by their investment decisions. The described conceptual framework of the ROH market proved to be very useful in analysing the processes of rent formation, prices of housing assets for rent, the creation of new supply of these assets, and the housing stock as determined by various external factors.

The structure of the model works well in illustrating the new equilibrium states that arise as a result of changes in the property market. This has enabled the diagnosis and analysis of economic cycles in the ROH market. Their description in this article is very general and should be regarded as material for discussion and further, more detailed analysis.

Certainly, this research should be verified by empirical studies. However, this study adopts the concept of a theoretical presentation of the general framework of the ROH market model. This is also, to some extent, the result of editorial limitations.

The presented model of the ROH market and economic cycles also opens up new possibilities for research and analysis. Already during the development phase of the model, several research questions emerged that could form future research challenges.

Do tenant preferences affect rents? (quadrant I) How does the situation in the financial/capital markets affect housing asset prices through the level of rental investment returns? (quadrant II) What factors, beyond the transaction price, influence landlords' decisions to generate new housing supply in the rental market? What is the future of the so-called institutional residential rental segment in Poland and the countries of Central and Eastern Europe? (quadrant III) What are the main reasons for the leakage of housing stock from the ROH market? What are the main factors determining housing availability in the ROH market from the perspective of renters? (quadrant IV).

References:

- Amira, H., Thalassinou, E. 2023. The Global Business Cycle within the New Commodities and the Financial Cycle: An Empirical Evidence Based on a Multivariate Unobserved Components Model (UCM). In: *New Topics in Emerging Markets*. IntechOpen.
- Baek, Insoo, Sanghyo Lee, Joosung Lee, and Jaeyun Kim. 2021. 'Analysis of Housing Market Dynamics Considering the Structural Characteristics of Mortgage Interest'. *Sustainability* 13(19):10523. doi: 10.3390/su131910523.
- Ball, Michael, Colin Lizieri, and Bryan MacGregor. 2012. *The Economics of Commercial Property Markets*. London and New York: Routledge.
- Barras, Richard. 2005. 'A Building Cycle Model for an Imperfect World'. *Journal of Property Research* 22(2–3):63–96. doi: 10.1080/09599910500453905.
- Borgersen, Trond-Arne, and Anne Wenche Emblem. 2022. 'Mortgage Market Induced Booms and Busts in the Housing Market in a Modified DiPasquale-Wheaton Model'. *International Real Estate Review* 25(3):281–306.
- Borgersen, Trond-Arne, and Anne Wenche Emblem. 2023. 'Direct and Indirect Effects of Housing Market Policies Using an Augmented DiPasquale-Wheaton Framework'. *Tidsskrift for Boligforskning* 6(1):4–29. doi: 10.18261/tfb.6.1.2.
- Borgersen, Trond-Arne, and Roswitha M. King. 2024. 'Transition and Integration Effects in the Baltic Housing Markets: The DiPasquale-Wheaton Approach'. *Baltic Journal of Real Estate Economics and Construction Management* 12(1):285–306. doi: 10.2478/bjreecm-2024-0019.
- DeSalvo, Joseph S. 2017. 'Teaching the DiPasquale-Wheaton Model'. *Journal of Real Estate Practice and Education* 20(1):1–25. doi: 10.1080/10835547.2017.12091767.
- DiPasquale, Denise, and William C. Wheaton. 1992. 'The Markets for Real Estate Assets and Space: A Conceptual Framework'. *Real Estate Economics* 20(2):181–98. doi: 10.1111/1540-6229.00579.
- Farzanegan, Mohammad Reza, Mehdi Feizi, and Hassan F. Gholipour. 2021. 'Drought and Property Prices: Empirical Evidence from Provinces of Iran'. *Economics of Disasters and Climate Change* 5(2):203–21. doi: 10.1007/s41885-020-00081-0.
- Flavin, Marjorie, and Takashi Yamashita. 2002. 'Owner-Occupied Housing and the Composition of the Household Portfolio'. *American Economic Review* 92(1):345–62. doi: 10.1257/000282802760015775.
- Forrest, Ray, Alan Murie, and Peter Williams. 2021. *Home Ownership: Differentiation and Fragmentation*. London: Routledge.
- Hirota, Shinichi, Kumi Suzuki-Löffelholz, and Daisuke Udagawa. 2020. 'Does Owners' Purchase Price Affect Rent Offered? Experimental Evidence'. *Journal of Behavioral and Experimental Finance* 25:100260. doi: 10.1016/j.jbef.2019.100260.
- Jang, Soonwoo, Seungwoo Shin, and Hana Yim. 2020. 'Factors That Affect Listed Real Estate Investment Trust Market Capitalization: A Country Level Analysis'. *Journal of Real Estate Portfolio Management* 26(1):1–8. doi: 10.1080/10835547.2020.1826839.
- Kadi, Justin, Cody Hochstenbach, and Christian Lennartz. 2020. 'Multiple Property Ownership in Times of Late Homeownership: A New Conceptual Vocabulary'. *International Journal of Housing Policy* 20(1):6–24. doi: 10.1080/19491247.2019.1697514.
- Kucharska-Stasiak, Ewa. 2006. *Property in a Market Economy*. Warsaw: WN PWN.

-
- Laszek, Jacek, Hanna Augustyniak, and Krzysztof Olszewski. 2021. 'The Development of the Rental Market in Poland'. Pp. 263–74 in *Real Estate at Exposure. New Challenges, Old Problems*. Warsaw: Oficyna Wydawnicza SGH.
- Laszek, Jacek, Krzysztof Olszewski, and Hanna Augustyniak. 2018. 'A Simple Model of the Housing Market and the Detection of Cycles'. Pp. 87–102 in *Recent trends in the real estate market and its analysis*, edited by J. Laszek, K. Olszewski, and R. Sobiecki. Warsaw: SGH Publishing House.
- Martins, António Miguel, Ana Paula Serra, Francisco Vitorino Martins, and Simon Stevenson. 2021. 'EU Housing Markets before Financial Crisis of 2008: The Role of Institutional Factors and Structural Breaks'. *Journal of Housing and the Built Environment* 36(3):867–99. doi: 10.1007/s10901-021-09848-7.
- Mironiuc, Marilena, Elena Ionașcu, Maria Carmen Huian, and Alina Țaran. 2021. 'Reflecting the Sustainability Dimensions on the Residential Real Estate Prices'. *Sustainability* 13(5):2963. doi: 10.3390/su13052963.
- Petropoulos, T., Liapis, K., Thalassinou, E. 2023. Optimal structure of real estate portfolio using EVA: a Stochastic Markowitz model using data from Greek real estate market. *Risks*, 11(2), 43.
- Thackway, William Thomas, Matthew Kok Ming Ng, Chyi-Lin Lee, Vivien Shi, and Christopher James Pettit. 2022. 'Spatial Variability of the "Airbnb Effect": A Spatially Explicit Analysis of Airbnb's Impact on Housing Prices in Sydney'. *ISPRS International Journal of Geo-Information* 11(1):65. doi: 10.3390/ijgi11010065.