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ASSESSMENT OF THE ECONOMIC EFFICIENCY OF INVESTMENTS IN RESIDENTIAL AND COMMERCIAL REAL ESTATE

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ОЦІНКА ЕКОНОМІЧНОЇ ЕФЕКТИВНОСТІ ІНВЕСТИЦІЙ У ЖИТЛОВУ ТА КОМЕРЦІЙНУ НЕРУХОМІСТЬ

The aim of this research paper is to identify the current features of assessing the economic efficiency of investments in residential and commercial real estate. As shown by the study, it has been established that real estate investments under conditions of macroeconomic instability and increased uncertainty are an important instrument for capital preservation and growth. It has been demonstrated that the real estate market is internally heterogeneous, which is reflected in differences in

income generation mechanisms, risk levels, and sensitivity to external factors across residential and commercial segments. It has been substantiated that the core methodological characteristic defining the specifics of investment efficiency assessment is the sensitivity of cash flows to changes in the economic and market environment. Residential real estate is characterized by relatively low sensitivity, stable demand, and more predictable cash flows, which justifies the use of conservative valuation approaches as basic tools. In contrast, commercial real estate exhibits high sensitivity to changes in business activity, vacancy rates, rental prices, and macroeconomic conditions, resulting in increased risk and variability in income. Findings indicate that under current conditions, traditional methods of assessing investment economic efficiency are being transformed through their combination with scenario analysis, real options models, and big data-based forecasting tools. This integration enables the consideration of multiple market development paths, investor managerial flexibility, and complex nonlinear relationships between factors affecting investment returns. It has been established that, for the residential segment, these additions play a supporting role and are primarily aimed at refining forecasts in cases of market instability. In contrast, for commercial real estate, they are an essential component of valuation, ensuring an adequate representation of high cash flow volatility and risk. Thus, the effectiveness of real estate investment valuation is determined not only by the chosen method but also by the degree to which it adapts to the segment's specific characteristics and market conditions.

Метою статті є визначення сучасних особливостей оцінки економічної ефективності інвестицій у житлову та комерційну нерухомість. У результаті проведеного дослідження встановлено, що інвестиції у нерухомість в умовах макроекономічної нестабільності та підвищеної невизначеності є важливим інструментом збереження і примноження капіталу. Доведено, що ринок нерухомості є внутрішньо неоднорідним, що проявляється у відмінностях механізмів формування доходів, рівня ризику та чутливості до зовнішніх факторів у житловому та комерційному сегментах. Обґрунтовано, що

ключовою методологічною характеристикою, що визначає специфіку оцінки економічної ефективності інвестицій, є рівень чутливості грошових потоків до змін економічного та ринкового середовища. Житлова нерухомість характеризується відносно низькою чутливістю, стабільністю попиту та більш передбачуваними грошовими потоками, що зумовлює доцільність застосування консервативних підходів оцінки як базових інструментів. Натомість комерційна нерухомість відзначається високою чутливістю до змін ділової активності, вакантності, орендних ставок і макроекономічних умов. Це формує підвищений рівень ризику та варіативності доходів. Доведено, що в сучасних умовах традиційні методи оцінки економічної ефективності інвестицій трансформуються шляхом їх поєднання зі сценарним аналізом, моделями реальних опціонів та інструментами прогнозування на основі великих даних. Така інтеграція дозволяє враховувати багатоваріантність розвитку ринку, управлінську гнучкість інвестора та складні нелінійні залежності між факторами, що впливають на дохідність інвестицій. Встановлено, що для житлового сегмента ці доповнення мають допоміжний характер і спрямовані переважно на уточнення прогнозів у разі порушення стабільності ринку, тоді як у комерційній нерухомості вони є необхідним складником оцінки (забезпечують адекватне відбиття волатильності грошових потоків і змінності ризиків). Так, ефективність оцінки інвестицій у нерухомість визначається не лише вибором методу, а й глибиною його адаптації до специфіки сегмента та умов функціонування ринку.

Keywords: capital growth; risk level; income variability; market; real estate; investor managerial flexibility; investments.

Ключові слова: примноження капіталу; рівень ризику; варіативність доходів, ринок, нерухомість, управлінську гнучкість інвестора, інвестиції.

Problem statement. In a changing economic environment and increasing uncertainty in financial markets, investments in residential and commercial real estate

remain one of the key instruments for preserving and growing capital (this is confirmed, in particular, by the provisions of portfolio theory developed by Harry Markowitz, according to which real estate is an important diversification asset with relatively stable returns and protection against inflation risks). In particular, an overall analysis of the real estate price index dynamics indicates an increase in its value over the past several years.

Over the period 2016–2025, the annual real estate price index in the primary market increased from 102.1% in 2016 to 113.0% in 2025 [2]. As for the secondary market, the dynamics of this indicator also show a steady upward trend in property values (in particular, the price index rose from 103.4% in 2016 to 113.4% in 2025) [2].

In parallel, even under conditions of economic instability, which have intensified since 2021, the overall dynamics of the annual real estate price index remain positive, confirming the relative resilience of the real estate market and its investment attractiveness.

The real estate transaction price index (which reflects changes in the value of transactions—purchase, sale, or rental—of owned or leased real estate over a certain period) amounted to 106.4 in 2025, also demonstrating growth [2].

Such investments have a lower correlation with the stock market and can serve as a hedge against inflation. In addition, the real estate market itself is characterized by heterogeneity, which is reflected in differing approaches to evaluating the effectiveness of investments in residential and commercial segments (in particular, through a combination of traditional and modern valuation methods).

This heterogeneity is conditioned by the varying sensitivity of these segments to changes in demand, consumer purchasing power, overall business activity, and security factors.

Actual scientific researches and issues analysis. The problems of evaluating real estate investments have been studied by N. Andrushkevych, O. Zhurba, I. Bufan [1], I. Terebukh, A. Hoi [7], O. H. Malyi, and D. N. Rionidze [4]. In particular, these scholars analyzed the issues of assessing the value of real estate as an investment

resource and the specific features of constructing algorithms for determining the investment value of properties.

In the meantime, although their works emphasize the complexity of evaluating the economic efficiency of real estate investments, they do not sufficiently address the differentiation of approaches to such evaluation depending on the type of real estate (residential or commercial), as well as the integration of traditional methods with modern analytical tools under conditions of increasing market uncertainty.

This, subsequently, creates a set of scientific and applied challenges, in particular:

1. The lack of a unified methodological framework for assessing the economic efficiency of investments in different real estate segments.
2. The limited adaptability of traditional models (NPV, IRR, DCF) to changes in market conditions and the instability of cash flows.
3. The limited practical use of modern digital tools (Big Data, GIS, AVM) is combined with classical methods.

Research aim. The present paper aims to determine the modern features of assessing the economic efficiency of investments in residential and commercial real estate.

Main findings of the research. Within the present study, the economic efficiency of real estate investments is interpreted as a comprehensive characteristic of the performance of capital investments in residential or commercial property. At the same time, the efficiency concept is defined by the classical ratio of the benefits obtained (namely, income generation, asset value growth, or cash flows) to the costs incurred, taking into account time, risk, and alternative investment opportunities.

Indeed, the economic efficiency of property investments is a complex evaluative category that encompasses financial indicators (profitability, liquidity, and payback period) together with market-related factors, income stability, and the long-term value of the asset.

Therefore, in the present-day context, traditional approaches to investment appraisal (NPV, IRR, payback period, and others) are supplemented by modern

methods (see Table 1), which enable a more accurate consideration of uncertainty and the complexity of the real estate market.

It is worth noting that the fusion of traditional and modern methods for assessing the economic efficiency of real estate investments enhances the accuracy of accounting for market uncertainty and complexity.

Table 1. Up-to-date approaches to integrating traditional and innovative methods for assessing the economic efficiency of residential and commercial real estate investments

Standard valuation method	Limitations of the traditional valuation method	Modern extensions of valuation methods	Features of combining traditional and modern valuation methods	Objectives and advantages of combining traditional and modern valuation methods
NPV (Net Present Value)	Static nature of forecasts; does not account for decision flexibility	Real options-based models	Incorporation of alternative scenarios (e.g., defer, modify, or expand the project)	Assessment of investment management flexibility under conditions of uncertainty
IRR (Internal Rate of Return)	High sensitivity to assumptions; ignores complex risk factors	Machine learning	Use of algorithms for forecasting returns based on big data	Improved forecast accuracy and consideration of nonlinear relationships
Investment payback period	Excludes post-payback income and associated risks	Big Data analytics	Analysis of large datasets of market information to assess long-term trends	More comprehensive understanding of investment prospects
Discounted Cash Flow (DCF)	Limited number of factors included in the model	Geospatial analysis (GIS)*	Integration of spatial factors (location, infrastructure) into valuation models	More precise determination of asset value
Comparative approach	Dependence on a limited number of comparable properties (benchmarks)	Automated Valuation Models (AVM)**	Use of digital platforms and databases for mass valuation purposes	Increased speed, scalability, and reduced subjectivity in valuation

Note

* this is the use of geographic information systems for the analysis of spatial (location-based) data that affect the value and profitability of a real estate object.

** these are automated real estate valuation models that use mathematical algorithms, statistics, and large datasets to determine the market price of an object without (or with minimal) involvement of an expert.

Source: created by the author based on [1; 4; 6]

Such a combination ensures the correction of the shortcomings of traditional evaluation methods identified above (notably via the introduction of IT solutions that transform them into flexible, adaptive, and analytical ones [10]). Against this backdrop, the methods are not only able to assess but also to model the effectiveness of investments in changing market conditions and complex, multifactor interrelationships. Thus, the following advantages are formed:

1. The ability to modify investment decisions depending on market conditions—for example, to postpone construction, change the project format, or sell the property. This enables the assessment of not only current cash flows but also potential future courses of action, which significantly enhances forecast accuracy under uncertainty.
2. The ability to analyze large volumes of market, social, spatial, and economic data. As a result, these methods capture real patterns, trends, and even weak signals that traditional financial models cannot capture.
3. The ability to quantitatively assess aspects such as transport accessibility, building density, environmental characteristics, and infrastructure development. This increases the accuracy of property valuation by accounting for specific location factors rather than only financial indicators.
4. The ability to minimize the influence of the human factor through the use of statistical and machine learning algorithms, ensuring result reproducibility and enabling simultaneous analysis of thousands of real estate objects.
5. The ability to account for interactions among a large number of variables (market, macroeconomic, and behavioral factors), which is not possible in simple traditional models of assessing the economic efficiency of real estate investments.

Thus, the blended use of traditional and modern methods for assessing the economic efficiency of investments, as presented in Table 1, integrates traditional financial evaluation with real market, behavioral, and spatial data, creating a more flexible and realistic system for analyzing risks and potential returns in the real estate market.

Concurrently, it is important to note that residential property (as property intended for permanent or short-term human habitation) is primarily oriented toward stable demand shaped by social factors and long-term value preservation, whereas commercial real estate (as property not belonging to the residential housing stock) is focused on profitability, cash flow intensity, and sensitivity to business activity.

This gives rise to differences in the application of investment efficiency evaluation methods. Notably, traditional valuation methods (NPV, IRR, payback period, DCF) are used to assess the efficiency of investments in both segments of the real estate market; however, their interpretation and weighting differ significantly (see Table 2).

Table 2. Comparative aspects of applying methods for assessing the economic efficiency of investments in residential and commercial real estate

Valuation method	Features for residential real estate	Features for commercial real estate	Limitations of the method	Relevant modern extensions
NPV (Net Present Value)	Focus on long-term value appreciation and stable but lower cash flows	High dependence on rental income and capitalization rates	Does not account for management flexibility	Real options allow the formation of variable assessments of efficiency under different development scenarios
IRR (Internal Rate of Return)	Lower variability of indicators due to stable demand	High volatility due to changes in rental rates and occupancy levels	High sensitivity to assumptions	Machine learning enables more accurate forecasting of returns
Investment payback period	Longer but more predictable payback period	Shorter payback period only in successful projects, therefore higher risk	Ignores post-payback income	Big Data analytics for long-term trend analysis
Discounted Cash Flow (DCF)	Accounts for gradual increase in housing prices (as liquid residential property tends to appreciate over time)	Detailed modeling of rental cash flows, operating costs, and vacancy rates	Limited set of factors considered	GIS analysis for incorporating location-based factors
Comparative approach	Widely applied due to the large number of comparable properties	Limited applicability due to the uniqueness of properties	Subjectivity and data limitations	AVM for automating the valuation process

Source: created by the author based on [1; 6-8]

In view of the above specifics, it can be stated that the key differences in assessing the efficiency of investments in residential and commercial real estate are driven by varying levels of sensitivity of this indicator to changes.

Meanwhile, such “sensitivity” is interpreted in this study as a measure of the rate and magnitude of cash flow changes —and, consequently, the investment attractiveness of a real estate asset—change in response to shifts in the economy, population purchasing power, security conditions, and other factors (which is also partially illustrated in the studies of R. Taratula and M.-O. Lapshiy [6]).

The defined “sensitivity” plays a methodological role, in particular explaining why identical valuation tools (NPV, IRR, DCF, and the payback period) yield different results for residential and commercial real estate.

So, investments in residential real estate, under “normal” market functioning (that is, when supply and demand are relatively balanced and prices are realistic), are characterized by a low level of sensitivity to short-term changes in market conditions. This results in relative stability and predictability of cash flows, based on the assumption that [3]:

1. Residential real estate is always bought, sold, and rented.
2. Residential real estate appreciates over time/
3. The economic situation has an impact, but only a minor one, and as stability returns, prices level out/
4. At any given moment, a residential property can be put up for sale, allowing the invested capital to be recovered.

Basically, cash flows are quite simple in terms of their formation. They mainly rely on income from rent or the resale of real estate properties. In particular, drawing on data from the development company “Vorobyovi Hory” (Kharkiv), investments in residential real estate can be carried out using the following models:

1. Buy-and-rent model (purchase and lease) — involves generating income from short- or long-term rentals. In this case, the average return is about 8–10% per year, with a payback period of about 10 years. This model draws on yielding

stable cash flows and the gradual appreciation of the asset's value, making it relatively conservative and less sensitive to short-term economic fluctuations.

2. Buy-and-sell model (flipping) — involves acquiring a property at a lower price (such as during the construction phase or in a condition requiring renovation) with the aim of reselling it later. In this case, the average return is about 15–20% per project, with a payback period ranging from 6 months to 2 years. This model also relies on generating predictable cash flows; however, it is characterized by a higher sensitivity to changes in market conditions, price growth rates, and the liquidity of the property, which leads to a higher level of risk.

The outlined investment models are generally characterized by a relatively low level of sensitivity to changes in the external environment (especially in the case of rental strategies and long-term holding strategies focused on capital appreciation).

Also, the level of sensitivity in Ukraine is minimized due to state support for such investments, primarily shaped by programs such as “eOselya” and “eRecovery,” as well as support programs for internally displaced persons and socially vulnerable population groups, which ensure additional stability in housing demand [3].

Chiefly, the preferential mortgage program “eOselya” has had a significant impact on the primary residential real estate market since its launch in late 2022 [3]. Under this program, more than 21,000 mortgage loans have been issued, totaling over UAH 31 billion [3]. In 2025, the program was actively focused on financing the primary market, particularly new residential developments: 114 construction companies and developers were accredited under it, offering housing in 278 buildings at the construction stage [3]. In 2025 alone, more than 4,300 loans were issued for the purchase of housing from developers, representing a significant share of the total number of mortgages granted [3].

Alongside this, the “eRecovery” program has had a significant impact on the secondary market, under which approximately 28,000 families received housing certificates reaching around UAH 40 billion, while upwards of 18,600 families have already used them to purchase new housing [3]. Additionally, the rental residential

real estate market is influenced by programs that provide partial compensation for rental costs to internally displaced persons, veterans, and other socially vulnerable population groups, helping maintain stable demand in the rental housing segment.

Hence, the combination of market mechanisms and state support instruments forms a relatively stable investment environment in residential real estate, preserving its attractiveness even under heightened macroeconomic and security uncertainty. Ukraine's experience has shown that demand for such real estate has reacted only slightly to both military-political and economic events. This specific feature makes conservative approaches to assessing the economic efficiency of investments in this sector more relevant (see Table 3). Such as, the NPV indicator is characterized by a relatively high degree of predictability of results, which leads to its widespread use as a basic analytical tool.

However, such stability is not absolute. It can be disrupted by a range of factors, including overheating of the market and the formation of a speculative "price bubble" due to excessive demand stimulation; a significant reduction or termination of state support programs; a deterioration in macroeconomic conditions and household solvency; as well as an escalation of security risks. In such a scenario, the volatility of investors' cash flows increases, which reduces the informational value of conservative approaches to assessing investment performance.

Specifically, the values of NPV become more dependent on assumptions regarding income growth rates and the discount rate; IRR may exhibit instability, particularly under conditions of uneven or non-standard cash flows; and the payback period becomes less clear-cut, as delays in income generation or temporary declines in revenues may occur. The DCF method becomes more sensitive to the quality of forecasting.

These issues call for active application of scenario analysis and consideration of alternative market development paths.

Table 3. Up-to-date approaches to expanding methods for assessing the economic efficiency of investments in residential real estate

Valuation method	Application algorithm	Economic meaning / role in the investment environment	Result of supplementation in a stable investment environment	Result of supplementation under conditions of declining stability in the investment environment
NPV (Net Present Value)	Discounting projected cash flows from rental income and capital appreciation; using a base scenario with conservative assumptions	Assessment of the long-term net economic effect of investments in a stable segment	High predictability of results and suitability as a baseline efficiency indicator	Increased dependence of results on assumptions regarding income and discount rates; necessity of scenario analysis (base, optimistic, and pessimistic) to account for alternative market trajectories
IRR (Internal Rate of Return)	Calculating the rate of return based on stable rental income; testing sensitivity to changes in rental rates	Relative assessment of investment profitability in a low-risk segment	Stable IRR values with low volatility and limited scenario variability	Higher variability of the indicator and its sensitivity to cash flow structure; more complex interpretation due to divergences between scenario-based return estimates
Investment payback period	Determining the payback period of invested capital, taking into account regular rental cash flows	Assessment of liquidity and the risk-adjusted recoverability of invested capital	Predictable payback period, increasing the investment attractiveness of housing as a conservative asset	Loss of stability in valuation due to potential fluctuations and delays in cash flows; need to supplement with scenario-based approaches to determine a range of payback periods
Discounted Cash Flow (DCF)	Forecasting stable rental income and gradual property value growth; discounting at a conservative rate	Comprehensive assessment of the long-term value of a residential asset	Enhanced reliability of forecasts due to stable cash flows	Significant increase in model sensitivity to assumptions; requirement for multi-scenario forecasting and adjustment of the discount rate to reflect risks and alternative market conditions
Comparative approach	Analyzing a large number of comparable residential market properties; adjusting for location and property characteristics	Market-based valuation derived from a large number of transactions	Strong valuation accuracy supported by extensive comparable market data	Reduced representativeness due to a shortage of stable market transactions; increased role of expert adjustments and scenario-based analysis of market price ranges

Source: created by the author based on [1; 4; 6-7]

Investments in commercial real estate are typically highly responsive to changes, particularly to fluctuations in economic conditions, business activity, business solvency, financing costs, and the overall investment climate. Thus, it is assumed that [5]:

- Commercial properties are leased, sold, and purchased under favorable business activity conditions.
- High-quality, properly located commercial real estate increases in value in economically active areas.
- Economic fluctuations affect the value of investments. During periods of economic instability, the exposure period typically increases, and the discount to market value grows.
- A property can be sold, but not always at any given moment or at the desired price, since liquidity depends on the type of real estate, its location, market conditions, and the availability of solvent buyers.

In our view, this is what drives the variability and unpredictability of cash flows. They are relatively complex in terms of formation, as they are based on income from the sale/resale of real estate assets, rental of commercial space, as well as additional revenues from the operational activity of the properties (in particular, service charges and infrastructure-related services), among others.

Namely, as reported by “Vorobyovi Hory” (Kharkiv), investments in commercial real estate can be carried out using the following models:

1. Value-add investment model — involves acquiring properties with underutilization, outdated infrastructure, or inefficient management in order to increase the asset’s value. In this case, profitability averages 20–40% per project, depending on the depth of asset and market transformation, while the payback period is around 3–7 years.
2. Income-generating investment model — involves acquiring stable commercial properties (Class A/B office centers, retail spaces, logistics facilities) in order to generate regular rental income. In this case, profitability remains relatively stable, averaging 18–22% per year, while the payback period ranges from 6–8

months to 8–12 years, depending on the property class, occupancy rate, lease duration, and macroeconomic conditions.

3. Development / greenfield investment model — involves investing in the creation of new commercial properties or the complete redevelopment of existing ones. In this case, profitability is generally the highest among the core strategies, averaging 30–60% per project depending on the property class, project entry stage, level of pre-existing demand, and market conditions, while the payback period is approximately 5–10 years.

These investment models are highly sensitive, as they largely depend on occupancy levels, lease duration, tenant creditworthiness, overall business activity, and security factors. For instance, regarding demand for commercial real estate, at the beginning of 2022, rental rates and purchase prices per square meter decreased by 10–15% compared to pre-war levels. This applied both to large properties exceeding 1,000 m² and smaller units of 100–150 m², which in some cases remained vacant for extended periods.

Toward the end of 2022, the market had partially recovered to 50–70% of pre-war levels. In 2023, the recovery process continued: in particular, the vacancy rate decreased from approximately 30% to 15–20% [5]. In 2025, investors demonstrated adaptation to the new conditions: rental rates in USD began to gradually increase and currently average \$10–11 per m², which, although still lower than pre-war levels, indicates relative stabilization.

Additional fluctuations in profitability are also driven by seasonal demand patterns. Thus, from winter 2024 through summer 2025, rental and sales prices per square meter of commercial real estate demonstrated regional variations: in Kyiv, the change amounted to +10% (from \$13.9 to \$15.3), in Kirovohrad region +16%, Chernihiv region +19%, Cherkasy region +13%, Dnipropetrovsk region +5%, Zakarpattia region +8%, Chernivtsi region +6%, and Lviv region +1% [5].

Consequently, regardless of the investment model chosen, unstable cash flows and a high level of investment risk can be observed [7]. The high sensitivity of this segment necessitates the use of dynamic and multifactor models for assessing

investment efficiency, capable of adequately reflecting the volatility of the external environment and the complex structure of income generation in this sector (see Table 4). Effectively, traditional valuation approaches (such as NPV, IRR, etc.) are supplemented by scenario analysis, real options models, and big data-based forecasting tools.

Table 4. Extension of traditional investment efficiency evaluation methods with up-to-date analytical approaches

Valuation method	Application algorithm	Economic meaning / role in the investment environment	Result of the extension
	Discounting of projected cash flows; construction of a base financial scenario; adjustment of parameters under conditions of uncertainty.	Determination of the net economic effect of investments, taking into account the time value of money.	Transition to scenario-based NPV and extended NPV (incorporating real options).
IRR (Internal Rate of Return)	Calculation of the discount rate at which NPV = 0; modeling of alternative return scenarios.	Assessment of the relative profitability of the investment project.	Multi-scenario IRR and improved accuracy of return risk assessment.
Investment payback period	Determination of the payback period of initial investments based on accumulated cash flows (simple or discounted version).	Evaluation of liquidity and the speed of invested capital recovery.	Discounted payback period and integration with long-term trends.
Discounted Cash Flow (DCF)	Forecasting of revenues and expenses; discounting of cash flows; detailed specification of operational parameters (rent, costs, vacancy rate).	Comprehensive assessment of the investment value of the asset.	Improved model accuracy through GIS analysis and predictive machine learning models.
Comparative approach	Analysis of comparable market transactions; price adjustments based on property characteristics; statistical processing of the sample data.	Market valuation based on actual transactions .	Automated valuation models (AVMs) and reduction of subjectivity.

Source: created by the author based on [1; 4-6]

Regarding overheating in the commercial real estate market, it is also possible. Although it is manifested less classically in Ukraine than in developed markets. Under such conditions, market prices and rental rates temporarily deviate from their fundamentally justified levels, which further heightens the sensitivity of the investment environment. Simultaneously, this does not so much change the set of investment performance evaluation methods as it transforms the requirements for

their application, increasing the depth of analysis and the accuracy of underlying assumptions, and promoting the use of automated real estate valuation models.

Conclusions. Based on the findings of the study, it has been established that real estate investments under conditions of macroeconomic instability and increased uncertainty represent an important instrument for capital preservation and growth. In Ukraine, this is confirmed by a sustained positive trend in real estate price indices over the period 2016–2025.

Alongside this, the real estate market is internally heterogeneous, which is reflected in differences in income formation mechanisms, risk levels, and sensitivity to external factors between the residential and commercial segments.

It has been substantiated that the key methodological characteristic defining the specifics of assessing investment economic efficiency is the sensitivity of cash flows to changes in the economic and market environment. Residential property is characterized by relatively low sensitivity, stable demand, and more predictable cash flows, which justifies the use of conservative valuation approaches (NPV, IRR, DCF, payback period) as basic tools. Alternatively, commercial real estate exhibits a high sensitivity to changes in business activity, vacancy rates, rental prices, and macroeconomic conditions, resulting in an increased level of risk and income variability.

Evidence suggests that, under current conditions, traditional methods for assessing investment economic efficiency are being transformed through their integration with scenario analysis, real options models, and big data-based forecasting tools. This integration enables the consideration of multiple market development paths, investor managerial flexibility, and complex nonlinear relationships between factors influencing investment returns. It is clear that for the residential segment, these enhancements play a supplementary role and are primarily aimed at refining forecasts in the event of market instability, whereas in commercial real estate, they represent an essential component of the valuation process, ensuring adequate reflection of high cash flow volatility and risk levels.

In this way, the effectiveness of real estate investment valuation is determined not only by the choice of method but also by the level of its adaptation to the specifics of the segment and the prevailing market conditions. Future studies should examine developing integrated valuation models that combine financial, spatial, and behavioral factors using modern digital technologies, thereby improving substantiation of investment decisions.

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