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A Comparison of Home Purchase and Liquid Lazy Portfolio Returns in Turkey

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ABSTRACT

This study presents a comprehensive comparison between the effectiveness of home purchase and liquid Lazy portfolio strategies for generating historical returns in the Turkish market. The primary aim is to develop a liquid Lazy portfolio that outperforms residential property investments. The study covers the period from January 2010 to June 2023, focusing on high-liquidity assets including the Borsa Istanbul 100 Index, currency exchange rates, gold prices, real estate investment trusts, and major stock market indices. Methodologically, the research involves data pre-processing, logarithmic transformations, and cumulative time series creation. Portfolio optimization centers around maximizing the Sharpe ratio with three test portfolios developed. Findings indicate that all portfolios consistently outperform the benchmark Residential Property Price Index, displaying higher returns and Sharpe ratios despite increased volatility. These insights are relevant for both academic researchers and investors seeking practical applications for portfolio management. It's important to note that historical performance offers insights but not future guarantees. In conclusion, the study highlights the potential benefits of constructing scalable, liquid, and high-return Lazy portfolios as alternatives to traditional home purchases.

Türkiye'de Konut Satın Alma ve Likit Lazy Portföy Getirilerinin Karşılaştırılması

Araştırma Makalesi

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ÖZ

Bu çalışma, Türkiye piyasasında tarihsel veriler kullanılarak, getiri elde etmede ev satın alma ve likit Lazy portföy stratejilerinin etkinliği arasında kapsamlı bir karşılaştırma sunmaktadır. Temel amaç, konut yatırımlarından daha iyi performans gösteren likit bir Lazy portföyü geliştirmektir. Ocak 2010-Haziran 2023 dönemini kapsayan çalışma, Borsa İstanbul 100 Endeksi, döviz kurları, altın fiyatları, gayrimenkul yatırım ortaklıkları ve önemli borsa endeksleri gibi yüksek likiditeye sahip varlıklara odaklanmaktadır. Metodolojik olarak araştırma, veri ön işlemeyi, logaritmik dönüşümleri ve kümülatif zaman serisi oluşturmayı içerir. Portföy optimizasyonu, geliştirilen üç test portföyüyle Sharpe oranının maksimuma çıkarılması etrafında yoğunlaşmaktadır. Bulgular, tüm örnek portföylerin sürekli olarak Karşılaştırmalı Konut Emlak Fiyat Endeksi'nden daha iyi performans gösterdiğini, artan oynaklığa rağmen daha yüksek getiri ve Sharpe oranları sergilediğini göstermektedir. Bu bilgilerin hem akademik araştırmacılar hem de portföy yönetimi için pratik uygulamalar arayan yatırımcılar için faydalı olacağı düşünülmektedir. Çalışmayı değerlendirirken, geçmiş performansın

öngörüler sunduğunu ancak gelecek garantisi vermediğini unutmamak önemlidir. Sonuç olarak çalışma, geleneksel ev satın alımlarına alternatif olarak ölçeklenebilir, likit ve yüksek getirili Lazy portföyleri oluşturmanın potansiyel faydalarını vurgulamayı amaçlamaktadır.

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1. Introduction

The aim of this study is to construct a liquid Lazy portfolio demonstrating superior performance compared to investments in residential property. The key components integral to our research are: Home Purchase, the Residential Property Price Index, Lazy Portfolio and the Sharpe Ratio.

Home Purchase entails the acquisition of residential properties as a form of investment. This conventional approach has garnered considerable attention over the years, primarily due to its historical stability and potential for capital appreciation. Residential properties are tangible assets, providing the investor with both the prospect of rental income and the possibility of long-term capital gains. In Turkey, the demand for real estate has consistently exhibited dynamism, serving both as a means of accommodation and investment. The housing industry in Turkey holds a prominent position among traditional investment options and retains its enduring significance (Korkmaz et al., 2016).

The Residential Property Price Index serves as a critical benchmark within the realm of real estate investments. It measures the relative performance of residential property investments over time, encapsulating fluctuations in property values. Investors and analysts often rely on this index to gauge the overall performance of the residential property market (Wong et al., 2023).

Lazy Portfolio represents an investment strategy characterized by its simplicity and low maintenance requirements. Typically composed of a diversified mix of assets, a Lazy portfolio is designed to provide a balance between risk and return. The allure of Lazy portfolios lies in their hands-off nature, making them an attractive option for investors seeking a hassle-free approach to wealth accumulation (Amadini et al., 2014).

The Liquid Lazy Portfolio strategy offers simplicity, diversification, and liquidity as its primary advantages. Nevertheless, it may falls short in harnessing the full potential for capital appreciation in the real estate market.

The Sharpe Ratio, a fundamental metric in finance, quantifies the risk-adjusted return of an investment. It considers both the investment's return and the risk associated with that return. A higher Sharpe Ratio signifies a more favorable risk-return profile, indicating a potentially superior investment (Knight and Satchell, 2005).

Proceeding to analyse the pros and cons of Home Purchase as an investment strategy, one finds that on one hand residential properties offer stability and the potential for consistent rental income. However residential properties may necessitate substantial upfront capital involve ongoing management responsibilities and can exhibit illiquidity (Engelhardt et al., 2010).

Gebeşoğlu, conducted comprehensive research in Turkey between 2010 and 2018, delving deeply into the intricate relationship between the house price index and various macroeconomic variables. Utilizing the ARDL Model, the study pinpoints a persistent co-integration between house prices and these economic indicators. Notably, the research highlights a negative correlation between heightened returns within Borsa İstanbul and house prices, underscoring the enduring appeal of housing as an investment avenue in the Turkish context. Furthermore, the study accentuates the significant influence of lagged exchange rates on house prices, indicating potential macroeconomic vulnerabilities stemming from fluctuations in exchange rates. Consequently, it posits that policies aimed at stabilizing exchange rates may offer a means to address long-term disparities in house prices (Gebeşoğlu, 2019).

The research conducted by Hatipoğlu in 2021 investigates the relationship between house prices and inflation, focusing on the specific regions of Çankırı, Kastamonu and Sinop in Turkey. The study's findings challenge the conventional wisdom regarding the causal link between house prices and inflation. It is evident from this research that inflation does not exert a substantial influence on the housing market in these regions. Furthermore, the study reveals that fluctuations in housing prices do not significantly impact inflation and utilizing capital market instruments as an alternative to real estate investments is suggested (Hatipoğlu, 2021).

The study titled "A Study on the Determinants of the Housing Price Index: Asymmetric Co-Integration Analysis" by Akyol Özcan (2023) presents a comprehensive investigation into the factors influencing the Housing Price Index (HPI). The research addresses a significant area of interest, namely, the relationship between Mortgage Interest Rates (MIR), the Consumer Price Index (CPI), the US Dollar and their impact on the HPI. The research demonstrates that positive shocks in MIR positively correlate with the CPI, while negative MIR shocks have adverse effects on the HPI, particularly in the long term. Furthermore, the study reveals that positive shocks in CPI exert a negative influence on the housing price index, while negative CPI shocks surprisingly have a positive effect, especially in the short term. It is noteworthy that both positive and negative shocks in the US Dollar do not exhibit statistically significant impacts on the HPI. These findings shed light on the complex dynamics at play within the housing market and underline the importance of considering multiple variables when assessing housing price trends. As such, the study underscores the significance of monitoring CPI and housing loan interest rates for individuals interested in housing investments, offering valuable guidance for both investors and policymakers in the field of real estate economics.

The research by Şanlı and Peker (2023) delves into a comprehensive analysis of the factors influencing house sales in Turkey, with a particular focus on the producer price index (PPI), exchange rates, interest rates and income. Employing the robust ARDL methodology and covering the extensive timeframe from January 2013 to October 2021, the study reveals intriguing empirical findings. Specifically, the research demonstrates that both PPI and exchange rates have a positive impact on house sales, contrary to conventional demand theories. Notably, a 10% increase in PPI corresponds to a substantial 7% rise in house sales, while a similar increase in exchange rates leads to a 4% increase in house sales. In contrast,

mortgage interest rates exhibit the expected negative influence, with a 10% hike resulting in a marginal 0,1% decrease in house sales. These findings challenge conventional economic wisdom by suggesting that the purchase of houses in Turkey serves as both a significant investment and a means to combat inflation. The study also highlights the paradoxical role of foreigners in sustaining housing sales and prices in the face of inflationary pressures driven by exchange rates, shedding light on the unique dynamics of the Turkish housing market.

The study by Yilmaz (2022) investigates the causal links among stock prices, exchange rates and housing prices in the context of Turkey. Utilizing monthly data spanning from March 2013 to January 2022, the research employs Granger Causality analysis to explore the relationships between the House Price index, USD/TL rate, the BIST Construction index and the BIST100 index. The empirical findings yield indicating bidirectional causality between the dollar exchange rate and housing price index, between the BIST Construction index and housing price index and between the BIST100 index and housing price index. However, no causal relationship is detected between the BIST100 index and the Construction index, between the USD/TL rate and the Construction index and between the USD/TL rate and the BIST100 index.

In the study titled "Risk and Return in the Real Estate, Bond and Stock Markets," an exhaustive analysis of risk and return across various investment options is conducted. The outcomes of this analysis highlight the money market as the most advantageous selection for investors in terms of both risk and return. Stocks and real estate emerge as the second and third preferences, respectively, within this assessment (Wolski, 2017).

A comprehensive foundation has been established while transitioning from the introductory and literature review section to the methodology section. Diverse aspects of real estate investments, including inflation, housing price dynamics, causal relationships and risk-return evaluations, have been explored, drawing insights from various studies. Subsequently, in the methodology section, a liquid Lazy portfolio will be constructed and assessed as an alternative to conventional residential property investments. A comparative analysis between Home Purchase and the Liquid Lazy Portfolio reveals performance differentials and risk profiles characteristics of these investment strategies.

2. Methodology

The methodology section follows a quantitative research approach by utilizing numerical data, statistical tools, and objective measurements to analyse and optimize financial assets' performance.

The methodology encompasses sourcing data from "Investing.com" and the "Central Bank of the Republic of Türkiye. Pre-processing involves data cleansing, logarithmic transformations, and the creation of cumulative time series. Visual representation and tabular metrics provide insights. The study shifts to optimize Sharpe ratios using portfolio strategies, underpinned by Microsoft Excel and Solver, resulting in three test portfolios.

The data sources include "Investing.com" for portfolio assets and the "Central Bank of the Republic of Türkiye" for the benchmark "Residential Property Price Index." The dataset covers the time period from January 1, 2010, to June 1, 2023, spanning 162 months. Seven preselected assets are chosen for the study, encompassing diverse financial instruments. These assets are:

XU100: The Borsa Istanbul 100 Index
USDTRY: US dollar to Turkish lira exchange rate
EURTRY: Euro to Turkish lira exchange rate
GOLD TRY: Gold Prices in Turkish Lira
XGMYO: BIST Real Estate Investment Trusts
NDX TRY: The NASDAQ 100 Index in Turkish Lira
SP500 TRY: Standard & Poor's 500 Index in Turkish Lira
TP HKFE01: Residential Property Price Index
Data pre-processing steps include cleaning the data from the sources and converting USD prices to TRY. Monthly logarithmic returns for the assets are calculated, and time series reconstruction is performed using cumulative logarithmic returns.

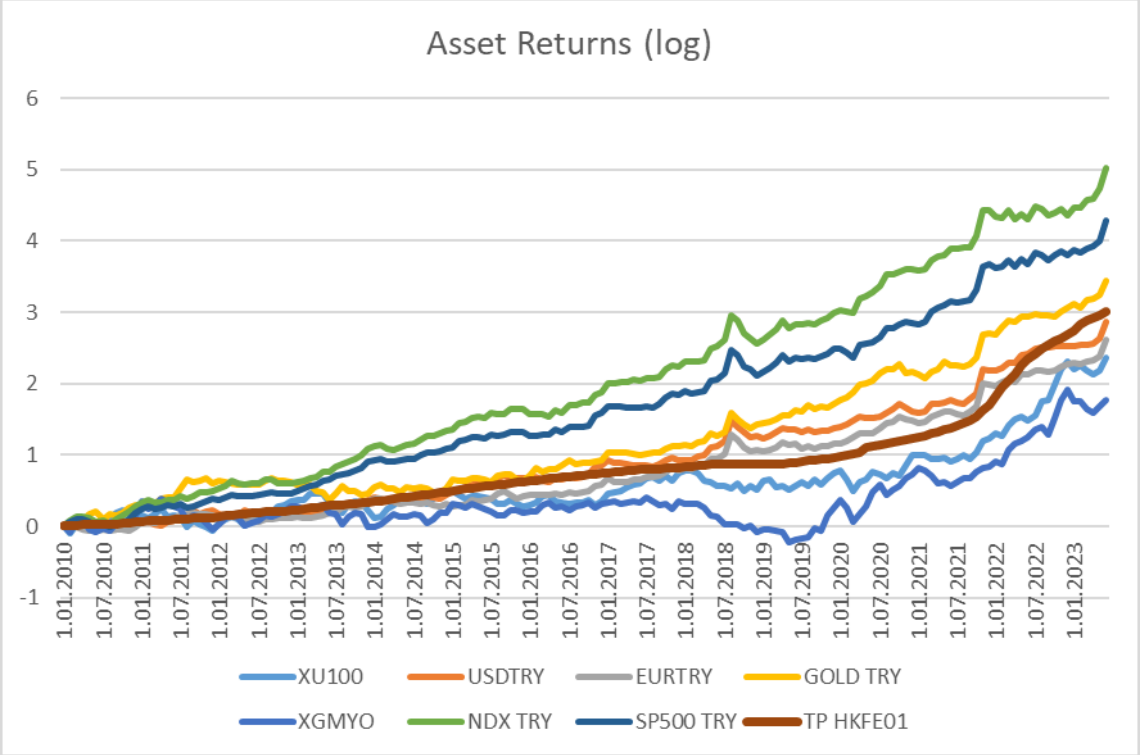

Figure 1. Asset Returns (log)

The visualization in Figure 1 provides a comprehensive overview of the log-transformed returns of the assets under examination. To further delve into the quantitative aspects of these assets, Table 1 presents

the key metrics associated with the preselected assets. This transition allows us to transition from a graphical representation of returns to a more detailed tabular presentation of important asset metrics.

Table 1. Preselected Asset Metrics

ASSET METRICS	XU100	USD TRY	EUR TRY	GOLD TRY	XGMYO	NDX TRY	SP500 TRY	TP HKFE01
MEAN RETURN	0,0145	0,0176	0,0162	0,0212	0,0109	0,0310	0,0264	0,0186
STANDARD DEVIATION	0,0727	0,0519	0,0504	0,0615	0,0821	0,0707	0,0629	0,0245
SHARPE RATIO	0,1999	0,3400	0,3205	0,3446	0,1333	0,4385	0,4197	0,7569
LAST VALUE	10,5380	17,4022	13,6920	30,9797	5,8887	151,7206	72,1190	20,2753

Lazy portfolio optimization is employed to maximize the Sharpe ratio while adhering to specified weight boundaries for the assets. The Sharpe ratio is a measure of risk-adjusted return. The Sharpe ratio is derived through the division of the investment's return by the standard deviation of its returns. .

Three test portfolios are created for evaluation:

Portfolio-1 as Equal-weighted portfolio,

Portfolio-2 for maximum Sharpe ratio optimization without upper boundary restrictions and

Portfolio-3 for maximum Sharpe ratio optimization with a 25% upper boundary restriction to effectively balance risk and returns, particularly relevant when the portfolio includes at least four assets.

3. Results and Discussion

This section shows that the study's findings through visualizations and tabulated metrics, reflecting the returns of various portfolios and assets. These initial presentations provide context for an in-depth discussion of significant observations. Notably, the study attains its aim as portfolios outperform both the benchmark index and individual assets in Türkiye, exhibiting higher Sharpe ratios. However, this outperformance is coupled with heightened volatility compared to the benchmark index. The ensuing discussion section delves into these implications, offering insights into the finer details. Lastly, the section concludes by suggesting potential directions for future research, considering various aspects for refining the approach.

Returns of lazy portfolios and the Residential Property Price Index are visualized in Figure 2. Optimized portfolio metrics are tabulated in Table 2. 12-month returns of lazy portfolios and the Residential Property Price Index are depicted in Figure 3.

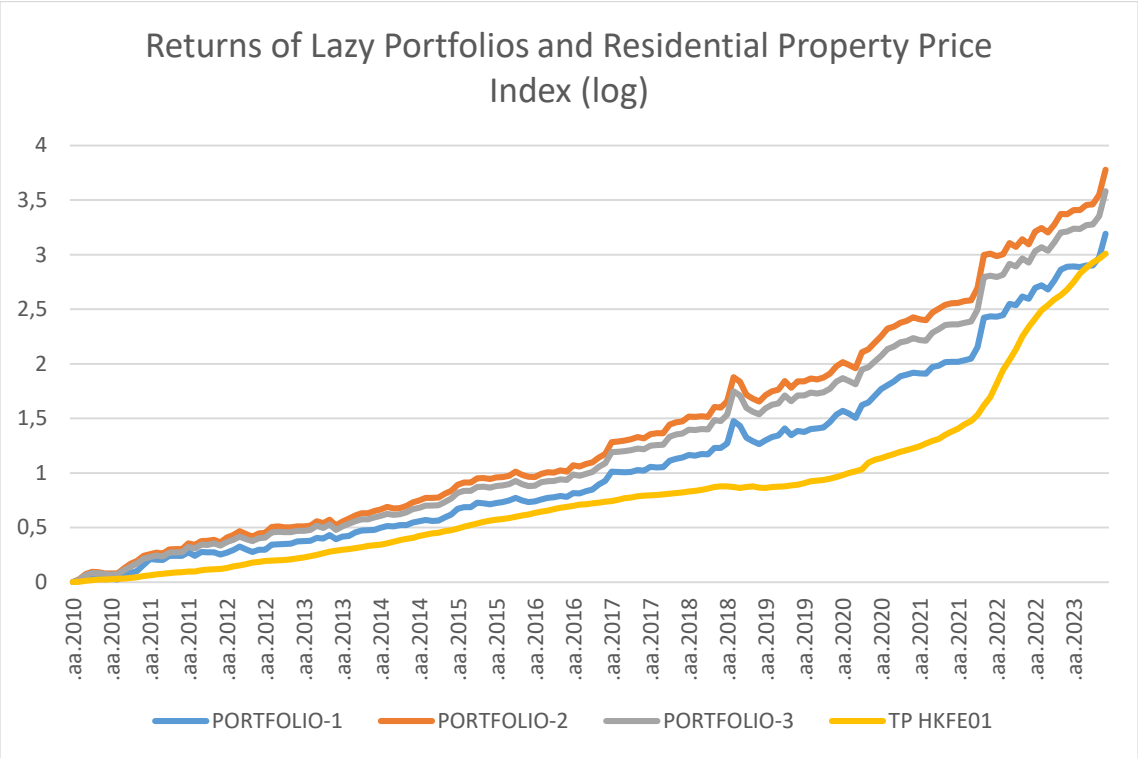

Figure 2. Returns of Lazy portfolios and Residential Property Price Index (log)

Table 2 provides an in-depth overview of the optimized portfolio metrics. This table showcases the composition and performance of three sample portfolios (Portfolio-1, Portfolio-2, and Portfolio-3). Each portfolio reflects unique weight distributions across various assets, contributing to the study's broader exploration of investment strategies. The metrics encapsulated in this table offer quantitative insights into asset allocations, mean returns, standard deviations, Sharpe ratios, and last values.

Table 2. Optimized Portfolio Metrics

PORTFOLIO METRICS	PORTFOLIO-1	PORTFOLIO-2	PORTFOLIO-3
XU100	14,28%	25,00%	25,00%
USDTRY	14,28%	7,00%	13,00%
EURTRY	14,28%	0,00%	0,00%
GOLD TRY	14,28%	26,00%	25,00%
XGMYO	14,28%	0,00%	0,00%
NDX TRY	14,28%	42,00%	25,00%
SP500 TRY	14,28%	0,00%	12,00%
TOTAL WEIGHTS	**100%**	**100%**	**100%**
MEAN RETURN	0,0197	0,0233	0,0221
STANDARD DEVIATION	0,0429	0,0476	0,0455
SHARPE RATIO	0,4587	0,4903	0,4862
LAST VALUE	24,3062	43,7939	35,9371

Figure 3 shows the 12-month returns of both lazy portfolios and the Residential Property Price Index, providing a comparative view of their performance in relation to the benchmark index. Additionally, three test portfolios are crafted:

Portfolio-1 featuring an equal-weighted distribution,

Portfolio-2 optimized for the highest Sharpe ratio without upper boundary limitations and

Portfolio-3 calibrated for maximum Sharpe ratio while maintaining a 25% upper boundary.

These portfolios provide detailed insights into various performance scenarios, contributing to a more comprehensive understanding of their potential historical returns.

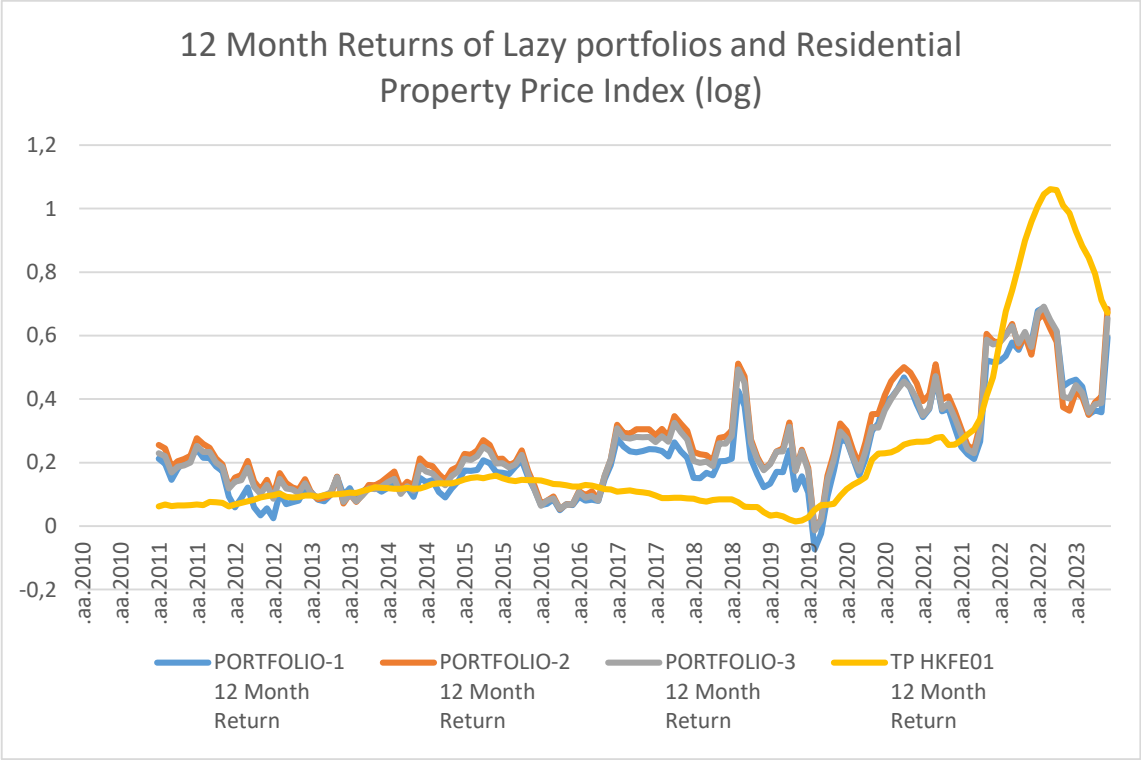

Figure 3. 12-month returns of lazy portfolios and the Residential Property Price Index

The findings emphasize several key observations: The study's aim which is to develop a liquid Lazy portfolio that outperforms residential property investments is achieved. All portfolios outperform the benchmark index in terms of returns. The portfolios also exceed the returns of individual assets in Türkiye. Portfolios exhibit higher Sharpe ratios compared to preselected assets. All portfolios show greater volatility than the benchmark index. Furthermore, it's worth noting that payback periods for major U.S. stock market indexes are typically shorter than those for residential properties in Turkey.

The discussions delves into the implications of the findings are: The benchmark index may exhibit lower volatility when compared to the returns of home investors within the provided range in Turkey. Benchmark index returns exhibit monthly fluctuations, whereas home investor returns have more

significant annual changes. Investor returns are subject to discontinuities due to factors like new rentals and non-payment risks. Short-term portfolio volatility might be less significant for long-term investors. Comparison with Past Studies; despite an extensive literature review, no previous study has been found to introduce the concept of “to develop a liquid lazy portfolio that outperforms residential property investments”. In contrast to prior studies that primarily explored the interactions between assets and economic variables, this study focuses on providing portfolio recommendations aimed at maximizing Sharpe ratios for investors. This represents a shift from theoretical analysis to practical investment guidance.

Wolski's study (2017) highlighted the priority of stocks comparing real estate in terms of risk and return. In this study, portfolios optimized for Sharpe ratios do not include XGMYO. Hatipoğlu's study (2021) challenges the conventional wisdom by suggesting that inflation does not significantly affect the housing market in certain Turkish regions. This contradicts the findings of other studies that emphasize the importance of monitoring inflation in housing investments. Study reveals that fluctuations in housing prices do not significantly impact inflation and utilizing capital market instruments as an alternative to real estate investments is suggested. The absence of XGMYO in portfolios created by maximizing the Sharpe ratio in this study supports Hatipoğlu's finding. While Gebeşoğlu's research (2019) indicates a negative correlation between stock market returns and house prices, Yilmaz's study (2022) identifies bidirectional causality between stock prices and housing prices. The portfolio approach in this study offers a robust strategy for effectively managing and resolving these conflicts.

This study has some limitations: First, it relies on historical data from January 2010 to June 2023, which may not be indicative of future market behavior. Second, the study's examination is confined to a specific subset of assets, potentially restricting the applicability of its findings to the broader investment landscape. Third, the analysis does not incorporate transaction costs, tax implications, or fees, which can significantly affect real-world investment performance. Lastly, the study does not consider the potential impact of varying market conditions or external factors, thereby underscoring the need for caution when extrapolating its conclusions to real-world investment scenarios.

While previous studies have contributed to our understanding of the dynamics between economic variables and the housing market, the current study seeks to bridge the gap by offering tangible portfolio recommendations that align with investor objectives. The existence of contradictory findings in the literature underscores the complexity of the subject matter and the need for a diversified approach to investment decision-making.

4. Conclusion

This research paper presents a comprehensive comparison between home purchase and liquid Lazy portfolio strategies for generating historical returns in the Turkish market. The study aims to develop a liquid Lazy portfolio that outperforms residential property investments, holding significance for both academic research and practical applications by investors. Through analysis spanning from January

2010 to June 2023, focusing on high-liquidity assets, the research employs methodology including data pre-processing, logarithmic transformations, and cumulative time series creation. Portfolio optimization, centred on maximizing the Sharpe ratio, results in three test portfolios. .The findings indicate that all portfolios consistently outperform the benchmark Residential Property Price Index, exhibiting higher returns and Sharpe ratios, albeit with increased volatility. These outcomes have relevance for academic researchers expanding their understanding of investment strategies and investors seeking practical portfolio management applications.

Potential directions for future research can explore comprehensive cost analysis, assessing the impact of transaction costs, taxes, and fees on investment strategies. Researchers should consider utilizing different benchmark indexes aligned with specific investor requirements, allowing for customized portfolio construction and tailoring to meet individual preferences and objectives.

This research paper underscores the potential advantages of constructing liquid, scalable, and high-return Lazy portfolios as a viable alternative to traditional residential property investments in the Turkish market.

Statement of Conflict of Interest

Author has declared no conflict of interest.

Author's Contributions

The contribution of the authors is 100%.

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