

ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

COMPARATIVE ANALYSIS OF HEDGE FUNDS AND MUTUAL FUNDS RISK-ADJUSTED PERFORMANCES*

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Benmahi, Hind & Avcı, Emin (2023). Comparative Analysis of Hedge Funds and Mutual Funds Risk-Adjusted Performances. *Aurum Sosyal Bilimler Dergisi*, 8(1), 31-47.**Abstract**

Collective investment schemes have been utilizing distinct investment strategies to exploit opportunities offered by the financial markets. Among the alternative collective investment schemes, hedge funds and mutual funds have been attracting great interest. The objective of this study is to compare the risk-adjusted performance of hedge fund strategies with mutual funds strategies. The hedge fund indexes and mutual funds indexes, which are calculated by different database providers are utilized for this purpose. In this study, the indexes from three database providers (Eurekahedge, Credit Suisse, Center for International Securities and Derivatives Markets (CISDM)) are analyzed for the 2008-2021 period using distinct performance measurement metrics as Alpha based on the Capital Asset Pricing Model (CAPM), the Sharpe ratio and Sortino ratio; moreover, the MSCI World index has been taken as a benchmark. The findings demonstrated that the majority of hedge fund indices performed better than the benchmark MSCI World and provide better risk-adjusted performance than mutual funds.

Keywords: Hedge Funds, Alpha, Sharpe Ratio, Sortino Ratio

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SERBEST FONLAR VE YATIRIM FONLARININ RİSK AYARLI PERFORMANSLARININ KARŞILAŞTIRMALI ANALİZİ

Öz

Kolektif yatırım kuruluşları, finansal piyasaların sunduğu fırsatlardan yararlanmak için farklı yatırım stratejileri uygulamaktadırlar. Çeşitli kolektif yatırım kuruluşları arasında serbest fonlar (hedge fon) ile yatırım fonları (mutual funds) büyük ilgi çekmektedir. Bu çalışmanın amacı, serbest yatırım fonu stratejileri ve yatırım fonu stratejilerini riske göre ayarlanmış performansları üzerinden karşılaştırmaktır. Bu amaçla farklı veri tabanı sağlayıcıları tarafından hesaplanan serbest fon ve yatırım fonu endeksleri kullanılmıştır. 3 farklı veri tabanından (Eurekahedge, Credit Suisse, Center for International Securities and Derivatives Markets (CISDM)) elde edilen endeks verileri ile yatırım fonu ve serbest yatırım fonlarının performansları 2008-2021 dönemi için alternatif risk ölçütleri kullanılarak analiz edilmiştir. Performans ölçütleri olarak Varlık Fiyatlama Modeline (CAPM) dayanan Alfa, Sharpe rasyosu ve Sortino rasyosu kullanılmıştır. Ayrıca, MSCI Dünya endeksi de referans olarak alınmıştır. Çalışma sonunda elde edilen bulgular, serbest yatırım fonu stratejilerinin çoğunlukla MSCI World endeksinden daha iyi performans gösterdiğini ve yatırım fonlarına kıyasla daha iyi riske göre ayarlanmış performans sağladığını göstermiştir.

Anahtar kelimeler: Serbest Yatırım Fonları, Alpha, Sharpe Rasyonu, Sortino Rasyonu

1. INTRODUCTION

Collective investment schemes (CIS) are pools of investment capital that are intended to invest in financial or non-financial assets. These investment pools retain money from an extensive scope of investors and aggregate it into one individual fund (Stowell, 2010) and are operated by managers who invest in the place of their investors. The most well-known CIS are the mutual funds, which offer a variety of investment opportunities to their investors and have been traded almost for a century. Over time, a new generation of mutual funds has been introduced to satisfy changing investors' expectations. For the last few decades, hedge funds, a type of mutual fund with lax regulations and a more flexible investment style, have become popular in the international arena.

The main objective of mutual funds and hedge funds is to generate returns for investors through diversification and preserve their capital so, they implement several investment strategies and hold numerous assets to achieve their goals (Ackermann,1999). Yet, these represent their only similarities, as both funds diverge in terms of management, characteristics, and legal structure. Even being a member of the mutual funds family, hedge funds and classical mutual funds remain different and still do not share the same characteristics. Therefore, their potentials to produce excess return also differ. Hedge funds and classical mutual funds are renowned to be highly alluring investment alternatives for investors and institutions as they persisted to yield big profits over the years. Yet, which fund is superior in terms of performance is a continuously arising question.

This study attempts to compare the performances of hedge funds and mutual funds, which are adopting typical fund management strategies, to figure out which fund offers superior risk/return performance and therefore is more lucrative for investors. To carry out this study, both funds' performances, which are measured by fund indexes, are analyzed from 2008 through 2021 by the use of risk-adjusted

performance measurement tools, the Capital Asset Pricing Model, the traditional Sharpe ratio, and the Sortino ratio.

The findings revealed that hedge fund strategies, on average, achieve excess returns (alpha) when the majority of mutual fund indices do not produce significant alphas. Furthermore, hedge fund strategies' indices tend to perform better than the benchmark MSCI World whereas most mutual funds' indices failed to outperform the benchmark. It is not possible to assume that hedge fund strategies always do better than mutual funds following the same strategies. Yet, the majority of hedge fund strategies provide better risk-adjusted performances than mutual funds and represent an attractive investment opportunity for investors. Hedge fund strategies' prevailing performance is generally due to the flexibility of hedge fund investments, the active management, and the unique characteristics of hedge funds such as liquidity, incentive fees, lock-up periods, and high watermark.

The paper is organized as follows: Section 1 covers the main differences between hedge funds and mutual funds. Section 2 reports the literature review of hedge funds and mutual funds performance comparison. Section 3 covers the methodological framework and section 4 presents the findings. Finally, section 5 concludes.

2. MUTUAL FUNDS VS HEDGE FUNDS

Mutual funds and hedge funds are investment pools that attempt to outperform the capital markets. They employ distinct investment strategies and are composed of different investment securities (Stowell, 2010). Despite these similarities, hedge funds and mutual funds are based on distinct regulatory and legal structures and exhibit numerous dissimilarities Table 1 summarizes these differences.

Table 1. Hedge Funds vs Mutual Funds

	Hedge Funds	Mutual Funds
Placement conditions	Free	Limited
Return target	Absolute	Relative
Number of owners	Few	Many
Investors	Pensions & endowment funds, wealthy individuals	Retail investors
Liquidity	Limited	High
Transparency	Disclosure for investors only	Reports disclosed annually
Fees	Performance and fixed based	Fixed

As presented in Table 1, the first distinction between mutual funds and hedge funds is related to their establishment. Mutual funds are generally created as corporations and are provided by several sponsors like insurance firms, banks, brokerage houses, and mutual fund complexes within the government rules that offer distinct investment strategies (Chordia, 1996), while hedge funds are established as limited partnerships between managers and investors and have more freedom to employ high-risk investments (Stefanini, 2006). Therefore, hedge funds exhibit a tiered partnership structure with restricted placement rules whereas placement rules for mutual funds are free.

Each investment used to have a performance target, which is indeed used for assessing the investment return. Mutual funds aim to achieve a relative performance and rely on the markets' directions where they are invested, while hedge funds seek to secure absolute returns unconditional to the market and do not relate to a benchmark but instead rely on distinct investment strategies (Stefanini, 2006).

Mutual funds offer large amounts of liquidity and permit their investors to buy and sell daily. On the contrary, hedge funds are characterized by limited liquidity as they present lock-up periods which restrict investors to sell certain stocks and assets or pull out of their investments. Hedge fund investors can pull out their investments only quarterly and often for an extended period (Liang, 1999).

Not all investors are eligible for every investment type, there can be some regulatory restrictions or institutional limitations. Mutual funds are accessible to all investors, they are open for buying and selling to the general public (Ackermann, 1999). Mutual funds require generally a low minimum investment threshold (SEC, 2016). Investors can hold them without any mediator distribution channel and also they can direct their savings to distinct sorts of mutual funds such as open/closed-end, unit investment trust, and exchange-traded funds (SEC, 2016). Retail investors represent the largest portion of the mutual fund investor base. On the contrary, hedge funds are particularly accessible to people with high income and savings amounts namely "Accredited Investors", or big institutions with a significant investment experience like pensions, endowments, insurance firms, and foundations (Fung et al., 1999). Investors can invest in four hedge fund alternative investments: Direct investing in a particular hedge fund, a portfolio of hedge funds, a hedge fund index, or investing in a fund of funds (Nicholas, 2004). Besides, the minimum investment requirements are in general very excessive, typically \$1 million or more (Sec, Rule 501 of Regulation D).

Mutual funds are strongly regulated by legal authorities contrary to hedge funds, they are bound by regulations restricting the instruments authorized and supervising the construction of their portfolio. The Security and Exchange Commission (SEC) in the US, and the European Commission in Europe are in charge of monitoring and supervising mutual funds. These regulations reduce the flexibility of management in terms of business procedures, capital adequacy, and structural organization (Stefanini, 2006). Compared to mutual funds, hedge funds benefit from a lacking regulatory system. There are no restrictions for hedge fund managers and hedge funds are not subject to the SEC rules because of the secretive nature of their strategies, which enable hedge fund managers to raise a fund distinguished by specific features in terms of the financial instruments used, the management style, the organizational structure and the legal form (Liang, 1999).

The fee structures for both are also significantly different. The fee structure of mutual funds relies generally on the asset size of funds (Agarwal et al., 2000); mutual funds assign management fees that represent a percentage of the money managed by the fund, it is mainly between 0.5% and 1% (Liang, 1999). Management fees include mutual funds' expenses such as distribution fees, securities transaction fees, and shareholder transaction charges, it also involves the profit achieved by mutual

fund managers. In contrast, hedge funds have a double-layer fee structure with a bonus incentive (Ackermann et al., 1999). Performance fees are usually around 20% of the hedge fund profit and they represent an incentive for managers to ameliorate their performance (Fung et al., 1999). The second charged fees are management fees and they constitute a percentage of the hedge fund's asset value, management fees can vary between %1 to %5 of the hedge fund's net asset value (Stefanini, 2006). Management fees assigned by hedge funds are much higher than the fees charged by mutual funds and they are expected to cover the operating costs of managers. Yet, hedge funds adopt a mechanism called high-water marks which keep managers from collecting performance fees in the ongoing period when hedge funds achieve poor performance compared to the previous periods (Stowell, 2010).

Although not listed in Table 1, the investment strategies followed by both funds are not the same. Hedge funds are authorized to invest in nearly everything from stocks, real estate, public securities, and life insurance to cryptocurrency. They have the flexibility to employ a wide array of trading styles like short selling, using leverage, and using derivative securities. With this active management, hedge funds can perform better than the market and their main goal is to generate absolute returns despite their investments' risk level (Stowell, 2010). Whereas mutual funds are limited to less flexibility in investments, and their use of derivatives and leverage is regulated in a way that restricts their possible returns (Stefanini, 2006). For hedging purposes, however, a new breed of mutual funds started to undergo hedge fund alike exposure and employ typical hedge fund strategies. Such hedge fund strategies include (Stefanini, 2006; Acaravcı Kakilli, 2010; Credit Suisse, 2022):

Convertible arbitrage: This strategy attempts to benefit from price differences in convertible securities like convertible bonds, warrants, and convertible preferred stocks.

Fixed Income: This strategy aims to generate profits from inefficiencies and mispricing of fixed-income assets and their derivatives in the general market.

Market Neutral: This strategy pursues a zero-net exposure to the market using a market-neutral portfolio like holding a factor neutral or a dollar-neutral portfolio. Returns are generated through the associated mispricing of the traded securities.

Event-driven: This strategy tries to take advantage of opportunities possibly emerging from special events like mergers & acquisitions, liquidation, restructuring, or bankruptcy.

Multi-strategy: It involves more than a single strategy, managers choose to allocate their capital among several strategies such as credit and event-driven to profit from the potential opportunities.

Global Macro: For this strategy, managers can invest in almost any market adopting any financial tool. They use a top-down technique to construct their portfolios and aim to create gains from the variations of asset classes and markets.

Managed Futures: This strategic investment is essentially in futures by professional managers directly or through a Commodity Trading Advisor (CTA). They make use of a wide array of listed derivatives such as equity indices, bond indices, treasuries, currencies, commodities, and interest rates.

Long/Short Equity: In this strategy, managers benefit from price inefficiencies by holding a long position on an asset, which is perceived as being underpriced, and short-selling an asset, which is perceived as being overpriced.

Emerging Markets: This strategy involves investments in equity or debt issued by governments or firms from less developed countries. Managers are seeking arbitrage opportunities in these markets.

3. HEDGE FUND AND MUTUAL FUND PERFORMANCES COMPARISON: LITERATURE REVIEW

Several studies dealing with mutual funds or hedge funds or both have been published in the relevant literature, however, the literature given here is limited to the studies, which focus on the performance comparison of both. Numerous study types of research compared these funds scrutinizing the similarities and the discrepancies between these two funds' risk-adjusted performances and risk exposures (Ackermann et al. 1999, Liang 1999; Brown et al., 1999; Capocci and Hübner, 2004).

Ackermann et al. (1999) and Liang (1999) analyzed the differences between hedge funds, mutual funds, and selected market indices, hence they advance that hedge funds continuously beat mutual funds but not always market indices. They further argue that hedge funds' outperformance is related to their flexible nature and their motivating incentives and also due to the strict legal regulations that hinder mutual funds' performance. Moreover, they also assume that the returns of hedge funds exhibit higher volatility than the returns of mutual funds and market indices. Brown et al. (1999), and Capocci and Hübner (2004) analyzed the performance dissimilarities and persistence of performance among both types of funds. They assert that hedge funds perform better than mutual funds continuously and advance that hedge fund performance persistence is due to their investment flexibility instead of luck as claimed by Kosowski et al. (2007). For Turkish hedge funds, Çağıl and Hosseini (2011) examined the performance of Turkish funds and they deduced that Turkish hedge funds are unable to perform better than mutual funds. In his paper, Stulz (2007) compiled the literature differentiating hedge funds and mutual funds performances, he declared that the hedge fund industry's growth is mostly linked to its superiority to the mutual fund industry and its strength to offer complicated investment strategies that mutual funds fail to provide.

Another strand of research attempted to disclose the potential explanations behind hedge funds' performance. Agarwal et al. (2009) studied hedge funds, mutual funds, and hedge mutual funds (HMF) performances. HMFs are mutual funds that implement typical hedge fund strategies but do not take advantage of the fee structure and the regulation lacking that are specific to hedge funds. Agarwal

et al. (2009) argued that despite implementing similar investment strategies, hedged mutual funds failed to surpass hedge funds however they could perform better than traditional mutual funds which the authors ascribed to their use of flexible investment strategies and the experience of managers adopting typical hedge fund strategies. They declared that the lack of regulation, investment selection flexibility, and managerial experience are the key points behind hedge funds' superior performance. In the same direction, Eling and Faust (2010) tried to elucidate hedge funds' superior performance by analyzing emerging markets data as these markets are known for their limitations on short selling and the use of derivatives, they were seeking additional factors explaining hedge funds' outperformance. They assumed based on their findings that hedge funds' superior performance in emerging markets is associated with their strength to alter actively their asset distribution.

4. COMPARATIVE ANALYSIS OF HEDGE FUNDS AND MUTUAL FUNDS PERFORMANCES

The objective of this study is to compare hedge fund strategies' performance with mutual funds adopting similar investment strategies. For this purpose, Capital Asset Pricing Model (CAPM), the Sharpe ratio, and the Sortino ratio will be utilized to assess the performance of each fund, where the fund performances are measured based on the fund index, according to the strategy employed.

4.1. Data and Descriptive Statistics

Comparative analyses of the performances of hedge funds and mutual funds, following similar investment strategies, have been studied by the use of hedge fund indices and mutual fund indices. The data for hedge fund indices are gathered and studied from January 2008 to December 2021. The data has been collected from three databases, namely Eurekahedge, Credit Suisse, and the Center of International Securities and Derivatives Markets (CISDM), which are the most representative databases for the hedge fund industry.

The Eurekahedge Global Hedge Fund Database consists of 29,643 hedge funds as of 2022, including inactive funds and Funds of Funds (FOF) – *not included in this research* - . Eurekahedge includes only the largest funds in its index which omit several other funds even followed by the database. The funds that are active at least for a year and that have \$50 million in Assets Under Management are included in the database. Furthermore, twin funds and similar funds that have been traded with different currencies are excluded (Eurekahedge, 2022).

On the other hand, the Credit Suisse Hedge Fund Database follows almost 9,000 funds. Credit Suisse takes in its index only funds that present the investment limitation (at least \$50 million), audited financial statements and actively traded for at least for one-year; moreover, twin funds are excluded as well. Credit Suisse indices are not limited to a certain region and can involve funds operated in numerous countries in the world (Credit Suisse, 2022).

The Morningstar CISDM Database tracks more than 6,000 hedge funds including funds of funds and CTAs. CISDM incorporates only the largest funds in its index from a large number of funds followed. Audited

financial statements and minimum asset conditions are not obligatory for funds to be incorporated, yet, duplicate funds are eliminated in the index calculation methodology (CISDM, 2022).

Table 2 illustrates the number of hedge funds for each investment strategy under three databases. "Global Index" is the hedge fund index, which represents all the hedge funds in three of the databases, regardless of their investment strategy including strategies not included in this study.

Table 2. Number of Funds in Each Strategy under Three Databases

	Eurekahedge	Credit Suisse	CISDM
Convertible Arbitrage	92	12	86
Fixed Income	533	29	73
Market Neutral	35	19	112
Event Driven	144	30	110
Multi-Strategy	386	18	322
Global Macro	242	20	203
Managed Futures	425	30	460
Long/Short Equity	1363	71	2052
Emerging Markets	415	42	270
Global Index	3464	273	3770

Data for mutual fund indices are collected and analyzed from Yahoo Finance (2020) for the period starting from January 2008 until December 2021. Table 3 exhibits mutual fund indices picked for comparative analysis. The different mutual funds' indices were selected for their similarities with hedge fund strategies and Vanguard 500 index was selected as a global proxy since it tracks the Standard & Poor's 500 index.

Table 3. Mutual Fund Indices

MUTUAL FUND	STRATEGY	INDEX
Vanguard 500	Global	VFINX
Boston Partners Long Short Equity	Long Short Equity	BPLEX
Calamos Convertible Income Fund	Convertible Arbitrage	ARBNX
DWS Global Macro	Global Macro	DBISX
Guggenheim Seriestrust Managed Futures Strategy	Managed Futures	RYMTX
Blackrock Event-Driven Strategy	Event Driven	BALPX
SA Global Fixed Income	Fixed Income	SAXIX
Elfun Diversified Fund	Multi-Strategy	ELDFX
Calamos Market Neutral Fund	Market Neutral	CVSIX
Blackrock Emerging Markets Fund	Emerging Markets	MADCX

To measure the performance of the different hedge fund indices and compare them with mutual funds indices, benchmarking is essential. Morgan Stanley Capital International (MSCI) World is selected as a proxy for market return. Data for the MSCI World Index has been collected from Morgan Stanley's official website.

Table 4 displays the descriptive statistics of returns for hedge fund indexes and mutual funds index; plus the distinct strategies' indices adopted by them for the three databases over the period. According to the results, mutual funds' indices mainly provide positive average returns (mean) except for the Managed Futures strategy. On the other hand, all hedge fund strategies generate positive means for EurekaHedge and CISDM. Only the Credit Suisse database registers a negative average return with the Market neutral strategy.

Table 4. Descriptive Statistics for Hedge Funds and Mutual Funds Index Returns

Indices	MUTUAL FUND		EUREKAHEDGE		CREDIT SUISE		CISDM	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Global Index	0,0095	0.045	0.0052	0.015	0.0032	0.016	0.0046	0.020
Convertible Arbitrage	0.0023	0.014	0.0049	0.011	0.0036	0.021	0.0054	0.018
Fixed Income	0.0006	0.014	0.0047	0.013	0.0032	0.017	0.0028	0.020
Market Neutral	0.0029	0.016	0.0030	0.006	-0.0007	0.034	0.0038	0.008
Event Driven	0.0060	0.068	0.0061	0.023	0.0033	0.021	0.0060	0.021
Multi-Strategy	0.0049	0.039	0.0048	0.015	0.0040	0.015	0.0022	0.013
Global Macro	0.0040	0.052	0.0047	0.012	0.0044	0.027	0.0041	0.015
Managed Futures	-0.0008	0.027	0.0050	0.015	0.0025	0.029	0.0046	0.023
L/S Equity	0.0066	0.046	0.0056	0.022	0.0039	0.022	0.0048	0.021
Emerging Markets	0.0054	0.063	0.0054	0.025	0.0034	0.027	0.0065	0.041
MSCI World	0.0053	0.047						

When compared to mutual funds, hedge funds have significantly higher average returns for Convertible Arbitrage, Fixed Income, Global Macro, and Managed Futures strategies indices. Yet, mutual funds following Multi-Strategy and Long/Short Equity strategies surpassed hedge funds in terms of average returns advancing all the databases. Furthermore, Market Neutral, Event Driven and Emerging Markets mutual funds indices generated higher average returns than Credit Suisse hedge funds following the same strategies. Compared with the MSCI World as a benchmark, the majority of mutual funds and hedge fund indices recorded lower average returns than the market benchmark for the period.

Mutual funds strategies indices exhibit higher volatility than most hedge fund strategies indices and higher than the market for certain strategies. On the other hand, hedge fund strategies seem to expose less risk than the market. Generally, hedge fund strategy indices with a lower risk exposure do not always outperform mutual funds adopting the same strategy according to average returns' results but can mainly outperform mutual fund indices for some strategies.

Aiming to compare the performances of hedge funds and mutual funds indices implementing identical strategies, average returns remain deficient for this purpose. The risk exposure of these strategies should be considered to compare the performances of these funds' indices. Alpha based on the CAPM, the traditional Sharpe ratio, and the Sortino ratio has been used as risk-adjusted performance measures.

4.2. Methodology

To compare hedge funds' performances with mutual funds' performances according to their strategies, three performance measurement tools were employed: Alpha, the Sharpe ratio, and the Sortino ratio.

Alpha is a risk-adjusted performance measure that determines the performance of an investment considering risk. Alpha is utilized as a performance measurement tool to determine if an investment strategy can outperform the market or its edge and if a trader or a manager has succeeded to beat the market return in a certain period (Kowoski, 2007). A positive alpha reveals a superior performance and all investors are seeking a significant positive alpha (Fung et al., 2001). The Alpha(α), which is calculated by the use of the Capital Asset Pricing Model (Sharpe 1964, Lintner 1965), is often referred to as the Jensen's Alpha (1968).

CAPM is estimated by the use of the following regression:

$$R_{it} - R_{ft} = \alpha_{it} + \beta_i(R_{Mt} - R_{ft}) \quad \#(1)$$

where R_{it} is the return of a fund i at time t , R_{ft} is the risk-free return at time t , and R_{Mt} is the market portfolio's return at time t . The α_i represents the intercept of the regression (Patro, 2001).

The Sharpe ratio (1966) estimates the risk premium in comparison to the overall risk of a portfolio, the overall risk includes systematic and unsystematic risk and is referred to as the standard deviation of a portfolio (Bodi, Marcus & Kane, 2005). The Sharpe ratio (1966) is estimated through the calculation of the difference between hedge fund or mutual fund return (r_i) and the risk-free rate (r_f), then dividing the difference by the fund's volatility which is measured by the standard deviation (σ_i). The formula applied for each fund index is:

$$\text{Sharpe Ratio} = \frac{(r_i - r_f)}{\sigma_i} \quad \#(2)$$

The Sortino ratio (1994) is an extension of the Sharpe ratio and was introduced to account for asymmetric ties in return distributions. The Sortino ratio adopts downside deviation as a measure of risk. The downside deviation only considers returns below a minimum acceptable return (MAR) or a target return, the minimum acceptable return can constitute an average return or any targeted return. The Sortino ratio of each fund (i) is estimated by measuring the spread between both types of funds' return (r_i) and the minimum acceptable return (MAR) which is the one-month T-bill (r_f), then dividing the excess return by the fund's downside deviation ($\sqrt{E(\text{Min}(r_{it} - \text{MAR}), 0)^2}$). Sortino ratio is calculated by the use of equation 3:

$$\text{Sortino Ratio} = \frac{E(r_{it} - \text{MAR})}{\sqrt{E(\text{Min}(r_{it} - \text{MAR}), 0)^2}} \quad \#(3)$$

5. EMPIRICAL FINDINGS

Table 5 reports mutual funds and hedge fund strategies' indices performance results for the comparison period. Hedge fund Global Indices represent the performance of the different strategies under the Eurekahedge hedge, Credit Suisse hedge, and CISDM hedge fund index, whereas Vanguard 500 index (see Table 3) is used as a proxy for mutual funds global index since it tracks the Standard & Poor's 500 indexes. Alpha was computed for the distinct hedge strategies indices for the three databases and the different mutual fund indices following the same strategies over the period with the percentage of the significance level of 1%, 5%, and 10%.

Table 5. Hedge Funds and Mutual Funds Strategies' (α)

	MUTUAL FUND	EUREKAHEDGE	CREDIT SUISSE	CISDM
Global Index	0.0044*	0.0034*	0.0013***	0.0022*
Convertible Arbitrage	0.0016	0.0037*	0.0018***	0.0036*
Fixed Income	0.0001	0.0032*	0.0017***	0.0012
Market Neutral	0.0017**	0.0021*	-0.0023	0.0029*
Event Driven	0.0032	0.0036*	0.0011	0.0046*
Multi-Strategy	0.0014	0.0030*	0.0024*	0.0007
Global Macro	-0.0004	0.0034*	0.0029***	0.0032*
Managed Futures	-0.0013	0.0043*	0.0019	0.0039**
L/S Equity	0.0039	0.0030*	0.0014***	0.0034*
Emerging Markets	-0.0003	0.0029*	0.0007	0.0044***

* 1 % significance; ** 5% significance; *** 10% significance

For this timespan, almost all mutual fund strategies produce insignificant alphas except just Global Index and Market Neutral. In contrast to mutual funds, hedge fund strategies register more significant alphas suggesting that hedge fund managers achieve a better performance than mutual fund managers. The strategies' indices generating insignificant alphas for hedge funds are Market Neutral, Event-Driven, Managed Futures, and Emerging markets for the Credit Suisse database and Fixed Income and Multi-strategy for CISDM. For hedge fund strategies' significant results, it can be stated that the Credit Suisse database is achieving a lower performance than the other databases which can arise from the difference in the number of hedge funds, as Credit Suisse exhibits fewer funds in comparison to Eurekahedge and Credit Suisse. Besides, managerial skill can also be a factor that makes a difference in the returns achieved by hedge fund strategies.

While most of the mutual funds' alphas are insignificant, the significant Global Index (represented by Vanguard Global) for mutual funds outperforms global hedge fund indices. Moreover, Market Neutral strategy managed by mutual funds also outperforms Credit Suisse's Market neutral strategy followed by hedge funds. This outperformance can stem from the period studied (2008-2021) as it corresponds to the period after the Great Financial Crisis and the lack of a bear market ever since. Besides, the Vanguard index is infamous for its low expense ratios, thus, owing to their higher fees, hedge funds might not have matched the net performance of the Vanguard index for this period. Concerning other mutual funds

adopting strategies similar to hedge funds, with their non-significant alphas they could not outperform the market index.

Table 6. Hedge Funds and Mutual Funds Strategies 'Sharpe ratio'

	MUTUAL FUND	EUREKAHEDGE	CREDIT SUISSE	CISDM
Global Index	0.197	0.305	0.166	0.200
Convertible Arbitrage	0.136	0.377	0.152	0.266
Fixed Income	0.015	0.318	0.160	0.119
Market Neutral	0.152	0.352	-0.035	0.403
Event Driven	0.081	0.238	0.135	0.251
Multi-Strategy	0.112	0.287	0.228	0.136
Global Macro	0.069	0.332	0.144	0.233
Managed Futures	-0.044	0.300	0.071	0.179
L/S Equity	0.099	0.227	0.154	0.205
Emerging Markets	0.079	0.196	0.110	0.146
MSCI		0.103		

Overall, most hedge fund strategies' indices scored alphas significantly different than zero for the majority of the strategies and therefore, performed better than the market and their mutual fund peers. Nevertheless, hedge funds do not always outperform mutual funds since the Vanguard mutual fund index could surpass the global hedge fund indices and the Market Neutral strategy mutual fund index could outperform the Credit Suisse Convertible Arbitrage index.

Fund performance comparison just by the use of alpha may not be sufficient for all investors and managers. For that, additional measures can be employed to evaluate the risk-adjusted returns. Table 6 illustrates performance measurement with the Sharpe ratio for the global indices and the different strategies indices of both funds for the time interval.

All hedge fund strategies register higher Sharpe ratios than the MSCI world index for Eurekahedge and CISDM and for most strategies from the Credit Suisse database except for Market Neutral and Managed Futures. For mutual fund indices, six strategies indices (Fixed Income, Event Driven, Global Macro, Managed Futures, Long/Short Equity, and Emerging Markets) failed to produce a Sharpe ratio better than the benchmark MSCI World index.

In comparison with hedge funds, all mutual funds' strategies generate lower risk-adjusted returns (Sharpe ratios) than hedge fund strategies' indices of Eurekahedge and CISDM. Only the Market Neutral Mutual fund index could provide a higher Sharpe ratio than the Credit Suisse Market Neutral index but couldn't outperform the rest of the strategies for this database. For global indices, mutual funds delivered a higher Sharpe ratio than Credit Suisse's global hedge fund index which can be related to the period study or the difference in expense fees. The underperformance of high-fee hedge funds can also result from the growing availability of information or hedge funds' managerial skills.

Adjusting for risk is essential to compare and evaluate a fund’s performance. In fact, after considering risk, the findings differed from the average returns results. Hedge fund strategies indices’ outperformance became more evident as they performed better than mutual strategies’ indices with the only exception of Market Neutral strategy for Credit Suisse.

Table 7. Hedge Funds and Mutual Funds Strategies ‘Sortino ratio’

	MUTUAL FUND	EUREKAHEDGE	CREDIT SUISSE	CISDM
Global Index	0.222	0.384	0.177	0.230
Convertible Arbitrage	0.156	0.362	0.121	0.175
Fixed Income	0.016	0.241	0.088	0.074
Market Neutral	0.166	0.363	-0.021	0.613
Event Driven	0.077	0.228	0.126	0.243
Multi-Strategy	0.113	0.343	0.202	0.141
Global Macro	0.071	0.788	0.132	0.653
Managed Futures	-0.072	0.628	0.121	0.340
L/S Equity	0.109	0.270	0.178	0.225
Emerging Markets	0.088	0.235	0.120	0.184
MSCI		0.109		

Compared to alpha’s results, Eurekahedge and CISDM Global indices were underperforming the mutual fund global index but became outperforming following the Sharpe ratios’ results. These outcomes can arise from the risk adjustment related to the distinct measurement tools, it can be explained by the standard deviation that makes a difference when calculating the Sharpe ratio. Within a downside risk framework, Sortino ratios were estimated in Table 7 for global indices and the different strategies of both funds.

All hedge fund strategies’ indices register higher Sortino ratios than the MSCI World benchmark for Eurekahedge and CISDM. For Credit Suisse, only the Market Neutral strategy failed to provide a higher Sortino ratio than the market. On the other hand, five mutual fund indices didn’t deliver higher Sortino ratios than the market (Fixed Income, Event Driven, Global Macro, Managed Futures, and Emerging Markets).

In comparison to hedge funds, most mutual funds strategies reported low Sortino ratios than hedge fund strategies. They could only outperform Credit Suisse Market Neutral and Convertible Arbitrage strategies but could not beat any hedge fund strategies from the other databases. For the global fund indices, only Credit Suisse’s global hedge fund index produced a lower Sortino ratio than the mutual global index for this study period.

The Sortino ratio’s findings are almost identical to the Sharpe ratio’s outcomes with the only exception of the Credit Suisse Convertible Arbitrage index. Indeed, after considering only downside deviation for Sortino’s calculation, the Credit Suisse Convertible Arbitrage strategy appear to underperform the mutual fund adopting the same strategy which involves high bad volatility which made it lose in term

of performance. As a whole, hedge fund strategies demonstrated solid performance and a noticeable dominance against mutual funds.

6. CONCLUSIONS

A comparison between hedge funds and mutual funds was elaborated to figure out which fund outperforms according to the strategy implemented by the distinct funds. Unlike previous studies, Liang (1999) and Capocci & Hübner (2004) which assumed that hedge funds have always higher realized returns than mutual funds, this study shows that when risk is not considered, hedge funds do not always outperform mutual funds adopting the same strategy according to average returns' results but can outperform for the majority of strategies.

However, when risk is considered and performance is measured using Alpha, the findings revealed that hedge fund strategies, on average achieve excess returns (significant alphas) when the majority of mutual funds do not produce significant alphas. With this outcome, these findings join those of Ackermann et. al. (1999), Brown et al. (1999), Liang (2001), Kat (2001), and Eling and Faust (2010) which assume that hedge funds provide better alphas than mutual funds and that they can perform better than mutual funds.

Sharpe and Sortino ratios' findings revealed that most hedge fund strategies generate better risk-adjusted returns than mutual funds adopting the same strategy. All the strategies from Eurekahedge and CISDM provided higher risk-adjusted returns than mutual fund strategies and only Convertible Arbitrage and Market Neutral strategies failed to generate higher risk-adjusted returns for Credit Suisse Database. Liang's (1999) and Schneeweis & Martin's (1998) results are consistent with this study with higher Sharpe ratios for hedge funds compared to mutual funds. Furthermore, hedge fund strategies' indices tend to perform better than the benchmark MSCI World whereas most mutual funds' indices failed to outperform the market benchmark. Nevertheless, it is not possible to assume that hedge fund strategies always do better than mutual funds following the same strategies. An underperformance of a hedge fund can result from their higher fees, indeed a hedge fund might not match the net performance of a mutual fund or also stem from the growing availability of information or hedge funds' managerial skills.

Overall, hedge fund strategies mainly provide better risk-adjusted performances than mutual funds and represent an attractive investment opportunity for investors. These findings are similar to the conclusions of Ackermann et. Al (1999), Agarwal et. al (2009), Liang (1999), Brown (1999), Schneeweis & Martin (1998), Liang and Kat (2001), Capocci & Hübner (2004), Stulz (2007), Eling & Faust (2010) in which they argue that hedge funds dominate mutual funds and provide better risk-adjusted returns.

Hedge fund strategies' prevailing performance is generally due to the flexibility of hedge fund investments, the active management, and the special characteristics of hedge funds such as liquidity, incentive fees, lock-up periods, and high watermark provisions. On the other hand, hedged mutual funds

are affected by their regulatory system. Yet, since they offer lower minimum investment requirements and more liquidity, new investors with less experience and low incomes can undergo hedge fund alike exposure by investing in funds adopting specific hedge fund strategies.

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Declaration of Conflict of Interest

The authors have no conflicts of interest to declare.

Katkı Oranı Beyanı

Yazarlar çalışmaya eşit oranda katkı vermiştir.

Declaration of Contribution

The authors have equally contributed to the manuscript.

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