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Optimal Portfolio Construction Under Market Inefficiency: The Role of Firm Size and Financial Leverage in Iraq

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Abstract

This research investigates the influence of the size of a company and of the company's debt (leverage) on how investment portfolios perform on the Iraqi Stock Exchange. To accomplish this, investment portfolios were constructed using size and leverage classifiable monthly data over time. These were analyzed using a number of different metrics to determine portfolio performance such as monthly returns, portfolio beta, the Sharpe and Treynor ratios, Jensen's alpha, and the information ratio. A quantitative approach using the Generalized Estimation Equations (GEE) model was used for the analysis to determine performance differentials among the sub-portfolios as opposed to the sample portfolio; the sample portfolio served as a baseline for the analysis. The analysis noted that the portfolios that were large and had lower debt (leverage) were, on average, of a higher performance and that that performance was more stable over time relative to other portfolios and the sample portfolio. The findings thus suggest that, for portfolios of large size, marginal debt levels facilitate the attainment of superior performance. The indicator analysis also confirmed that Jensen's alpha was the most effective metric to identify and confirm performance differentiation, likely due to that performance being superior. To improve portfolio performance efficiency within a volatile economy, the study encourages investment strategies that reduce portfolio leverage focused on large company stock for portfolio managers and investors on the Iraqi Stock Exchange.

Keywords: Firm Size, Financial Leverage, Optimal Portfolio Performance, Markowitz Portfolio Model, Portfolio Performance Evaluation Indicators, GEE Model.

JEL Classification: C13, G11, G12, G32, L25

1. Introduction

Modern portfolio theory first recognized risk and return relationship at the core of finance. Since risk is necessary to be taken, developing models which measure risk-return relationship to make

investment choices is the basis of risk-return relationship. Despite being the basis of finance, the models which build upon portfolio theory face questions. As Sharpe (1964) and Lintner (1965) attest, the capital of finance model has numerous stock return predictions. Lintner Sharpe models fail to capture the return ratios because of idiosyncratic risk. Therefore, the return on an asset must be taken into consideration.

In 1993, with the introduction of the three-factor model by Fama and French, a different perspective was introduced by inserting the components firm size (SMB) and market-to-book (HML) in the CAPM model. Research supports that small caps make a higher return than large caps, and this is a return that is not attributable to market risk. Also, as shown by Fama and French, firm size is an important determinant of expected return as it indicates the varied levels of business risk, the degree of liquidity, and the financing accessibility. In the same way, the works of Modigliani and Miller (1963) and Hamada (1972) illustrated the effects of leverage on risk and return by increasing it through the cost of equity and capital structure. This line of thought was later on applied on portfolio management which showed that the different levels of leverage a firm employ is also reflected in the risk adjusted performance and the efficiency of the portfolios.

There have been notable changes in the ways in which portfolios are constructed, adding to the financial characteristics of firms, mainly size and leverage, as primary criteria in designing portfolios that seek to surpass standard market indices. The limitations of traditional models in accounting for multidimensional risk led to a need to study how accounting data and the financial structure of firms correlate with performance. Thus, the purpose of this study is to assess the role of a firm's size and financial leverage, singularly and jointly, in the performance of an optimal investment portfolio. The study also assumes that there is no significant difference in the average performance of the portfolios classified by size or leverage and that of the benchmark portfolio, as defined by the performance evaluation criteria used in the study.

2. Literature Review

One of the most significant relationships that has provided the foundation of modern financial theory is the connection between the {structural features of companies—mainly their size and leverage—and the returns of investment portfolios.} The first work that sparked modern financial theory was the work of Markowitz (1952) when he developed the theory of diversification and the efficient portfolio, resulting in an optimal portfolio. This theory provided the foundation for the study of the diversification of portfolios, and the risk-return trade-off. Since then, a stream of studies has concentrated on the internal variables of companies (the focus of the investment) and their impact on the return and optimal portfolio construction. The works of Sharpe (1964), Lintner (1965), and Mossin (1966) provided an extension to this body of work with the CAPM, which made the expected return a linear function of the systematic risk, represented by the beta coefficient. This model ushered investment appraisal into a quantifiable domain with models such as the Sharpe Ratio, the Treynor Ratio, and Jensen's Alpha. Concurrently, the work of Modigliani and Miller (1958) on capital structure marked a significant milestone in the understanding of the impact of leverage on the overall market value of a firm.

Originally, they theorized leverage-neutral positions in perfect market scenarios until Stiglitz (1969), Myers (1977), Jensen and Meckling (1976), and Myers and Majluf (1984) looked into and adjusted this notion by asserting the definition of capital structure must consider the economically real phenomena of bankruptcy costs, agency conflicts, and information asymmetry. These inputs formed the basis of other alternative theories, especially the Pecking Order and Trade-off theories, that elucidate the practical reasons underlying the performance

differential of portfolios containing companies with high and low leverage. In terms of volume, the first important empirical contributions were Banz (1981) and the discovery of the ` size effect` which showed that, all else equal, smaller firms earned higher returns than larger firms. This was supported by Reinganum (1981) and Bhandari (1988). In what was a major paradigm shift in finance, Fama and French (1992, 1993) reframed the return equation by including the size and book-to-market ratio in one of their three-factor models, thereby closing a major gap in the synthesis of theory and empirical work. In the same manner, the 1990s also saw the extension of studies on the leverage amassed to include the performance of stocks and investment portfolios. This was the case in the studies by Rajan and Zingales (1995), Frank and Goyal (2003), and Booth et al. (2001). The effect of leverage on performance depends on the market and the degree of its financial development. It was observed that there are firms with considerable leverage and, during an economic upturn, such firms can accrue more benefits, however, during an economic downturn, such firms are more volatile, and this scoped on the portfolios that contains them. This growth also coincided with an enhanced concern for the impact of institutional factors on investment portfolios. While Chen, Roll, and Ross (1986), Carhart (1997), and Pastor and Stambaugh (2003) expanded the list of factors to include liquidity and excess returns.

The research done over the last 20 years has allowed a deeper understanding of size and leverage individually. Recent studies by Fama and French (2015), Berk and van Binsbergen (2017), and Nguyen and Ramakrishnan (2018), assess the impact of size and leverage since the characteristics of the financial market and its market organizing structure influence the effect of size and leverage. Generally, larger companies tend to have stable and long-term performance, whereas, companies with high market leverage, have a greater height of fluctuation and are more sensitive to market changes and trends. The research problem in this case is the understanding relationship of company characteristics (market capitalization, leverage) with the performance of these companies' stock in the Iraq Stock Exchange in the construction of optimal investment portfolios. Despite the existence of a great number of studies that try to tackle the relationship of size and/or leverage, and the impact of such variables on the return and risk of an investment portfolio in a developed market, the Iraqi environment failed to provide the necessary academic groundwork to study the same variables. Moreover, one may ask whether portfolios with larger market capitalization or leverage outperform their counterparts, including the portfolio in question, and whether such performance metrics as Sharpe, Traynor, Jensen Alpha, and information ratio can accurately describe this superiority in the local market context.

Considering everything mentioned, this research adds to the financial literature by analyzing the effect of the individual characteristics of the firm size and firm leverage on the financial performance of the optimal investment portfolios on the Iraq Stock Exchange. This is an emerging market with unique financial structures and differing degrees of transparency and liquidity. The integration of classical theories modern portfolio theory and contemporary asset pricing theory with theories of value and contemporary empirical work in an emerging market is what gives the study its uniqueness. This adds to the investment performance debate in less developed markets.

3. Data and Methodology

3.1. Data

The aim of this study was to examine the effect of company size and leverage on the creation of optimal investment portfolios on the Iraq Stock Exchange. Data for this study consisted of the annual closing prices and the corresponding shares traded for each of the years spanning 2014

to 2024. This dataset was then sorted based on company size to create upper and lower third categorizations for the large and small sized companies. The same dataset was also utilized to classify companies based on total assets and total debt, to determine high and low leverage based on the total debt. Further, the dataset contained monthly closing prices for each month during the 2014 to 2024 period, which was 132 months in total. This would help in calculating stock and market index monthly returns using the natural logarithm method and hence the formation of annual portfolios. This study involved 33 companies from different sectors of the Iraq Stock Exchange which satisfied the requirements of uninterrupted trading for the full period of the study and the annual financial statements being available for all years of the study. The return on 91-day Iraqi Treasury bills was used as the risk-free rate of return, which was annualized and compounded to obtain the rate used for various portfolio performance measurements. Data were obtained from the Central Bank of Iraq.

3.2. Methodology

With the Markowitz model (1952) in mind, and the optimization of portfolios and the allocation of optimal weights programmed with Python in the Google Colab environment, the model's functionality was employed in achieving construction of the portfolios by size (large, small) as well as by leverage (high, low) in addition to the reference portfolio which consisted of the entire sample of the study. Quantitative measures, such as the Sharpe and Treynor indices, Jensen's alpha, and the information ratio, were employed as assessment tools. The program computes the instances and highlights the sub-portfolios that exceed the benchmark portfolio and exports the findings to an Excel file for further analysis and easier accessibility to study the relative outperformance. This was instrumental in testing the primary hypothesis of the study, which is the degree of the effect that the size and leverage of a firm have on the performance of the investment portfolio.

3.3. Indicators

First, let's define the following symbols: (R_p) is the portfolio return, (R_m) is the market return, (w_j) and (w_i) represent the relative weight of the investment in asset or stock number i and j within the portfolio, rt: Return on the stock (i) at time (t); Pt: Closing price of the stock at time (t); Pt-1: Closing price of the stock at time (t-1); ln: Natural logarithm. (Rf) is the risk-free rate of return, (σp) and (βp) are the portfolio beta, (αp) is Jensen's alpha, (IR) is the information ratio, (Rp - Rf) is the portfolio's excess return over the risk-free rate of return, (Rm - Rf) is the market's excess return, (Sp) is the Sharpe index, (Tp) is the Trenor index, ($Cov(R_i, R_j)$) are the common variance of stock returns, and (σ^2_m) is the market variance of returns.

3.3.1. portfolio return:

One of the earliest indicators in modern portfolio theory is portfolio return. In particular, this is one of the first indicators tackled by Markowitz (1952) in portfolio performance evaluation. He viewed total return as the weighted mean of the returns of the individual assets, an indicator of the efficiency of the assets allocation in obtaining the optimal position in the return-risk tradeoff. Markowitz formed this idea in his article published in the Journal of Finance, in which he stated that the optimal assets should be chosen based on their return and variance. As shown in Corner et al. (2023), this indicator is computed as follows:

$$R_p = \sum_{i=1}^{n} w_i \cdot R_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..(1)$$

Logarithmic return is one of the integral mechanisms of financial modeling. Paul A. Samuelson was the first to systematically incorporate it into his investment methodology in the paper, "Rational Theory of Warrant Pricing" in 1965. Samuelson was able to utilize this type of return because of the time-adding property it possesses, meaning it can be compounded across different time horizons, which makes it suitable for the geometric Brownian motion framework which is foundational in financial derivatives pricing (Samuelson 1965). Samuelson also noted that logarithmic return indicates the right price of the financial asset and is comparatively superior to the simple return in the analysis of complex financial datasets. The indicator can be derived using the formula stated in Panna (2017).

$$r_t = \ln\left(\frac{P_t}{P_{t-1}}\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

3.3.2. portfolio risk:

Regarding portfolio risk, in 1959, Markowitz conceptualized it as a manifestation of volatility in the returns, stating that risk can be lowered through diversification due to the reduction of the unsystematic risk associated with the assets. This phenomenon was further analyzed in his book Portfolio Selection, where he underscored the relevance of examining variance and standard deviation. This measure is computed per the formula given in Hult et al. (2012):

$$\sigma_p = \sqrt{\sum_{i=1}^{n} \sum_{j=1}^{n} w_i w_j \cdot \mathrm{Cov}(R_i, R_j)} \dots\dots\dots\dots\dots\dots\dots (3)$$

3.3.3. Sharpe ratio:

The measurement of risk-adjusted performance had been proposed by William Sharpe in 1966, where he introduced a new performance measure in The Journal of Business which captured the excess returns of a portfolio in relation to its risk (i.e., standard deviation). In this article, Sharpe stressed on the point that an investor needs to strike a balance between return and total risk. The ratio is computed using the formula stated by Mahesh and Laha (2019):

$$S = \frac{R_p - R_f}{\sigma_p} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

3.3.4. Traynor ratio:

Jack Traynor (1965) was the first to develop the Traynor ratio that measures performance in terms of systematic risk using the beta coefficient in place of standard deviation. Traynor published the initial formulation of the ratio in the Harvard Business Review, where he assumed that market risk is of primary concern to the diversified investor, as opposed to overall risk. The ratio can be calculated as reported in Celenli Basaran et al, (2025)':

$$T = \frac{R_p - R_f}{\beta_p} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

3.3.5. Alpha:

In his 1968 work, Jensen suggested utilizing CAPM's methodology to formulate Jensen's alpha to determine the excess return obtained after controlling for risk, which has since then been used as the yardstick for measuring the competency of an active manager. Jensen was the first to describe the concept in his article published in The Journal of Finance, where he rationalized the need to measure performance and compare it with the return that should be received based on

the risk of the market. The measure is computed as follows, as stated in Chincarini and Kim (2007):

$$\alpha = R_p - \left[R_f + \beta_p\left(R_m - R_f\right)\right] \dots\dots\dots\dots\dots\dots\dots\dots (6)$$

3.3.6. The Information Ratio:

The Information Ratio was developed by Grinold and Kahn (1995) in order to compare the performance of active managers to a benchmark. This ratio balances the excess return of a portfolio with the volatility of that return. They wrote about this in their book titled "Active Portfolio Management". They argued that the ratio serves as a proxy for the quality of decisions made by managers during the investment process. According to Chincarini & Kim (2007), this measure is computed using the following formula:

$$IR = \frac{R_p - R_b}{\sigma_{(R_p - R_b)}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

4. Results and Discussion

4.1. Sharpe Ratio:

Table 1 indicates that all the portfolios (the large, the small, and the low leverage ones) had the same number of outperformance, which accounted for 1; however, the high-leverage portfolio had 0. The findings portray that the outperformance regarding the risk-adjusted performance was the same for the portfolios, portraying the total risk and total return of the portfolios. Hence, there was a case of return-risk equilibrium for the Iraqi market; thus, this finding aligns partially the findings of Sharpe (1966) and Fama and French (1992) because they observed a small portfolio to derive a better Sharpe ratio in efficient market. It, however, stands to reason that the reason for the negligible differentiation between the portfolios in this study is a product of the lack of adequate investment diversification when it comes to the Iraqi Stock Exchange which minimizes size to be an investment strategy that could consistently outperformed.

Table (1) shows the Sharpe Ratio values.

Years	Sample stock portfolio	Big Size portfolio	Small Size portfolio	High Leverage portfolio	Low Leverage portfolio
2014	1.008668715	-0.453963124	0.337072686	0.761274271	0.851902296
2015	0.435526809	0.270145654	0.415640889	0.050943706	0.270145654
2016	1.573921457	1.262279414	0.672741467	0.555085686	0.655937017
2017	1.656734145	0.023859833	1.335452221	0.857538133	0.053896784
2018	1.146560567	1.074940704	1.1601813	1.049761858	1.085033519
2019	2.453851179	0.462990648	0.24459508	0.258553758	2.619532106
2020	2.213143283	1.979860649	0.350599406	1.120788901	1.408446017
2021	3.627380058	3.323195922	1.646278669	3.142616211	1.977226932
2022	0.742079368	6.665231899	0.108845348	0.230047205	0.510035423
2023	4.714450971	4.034752897	2.62990849	4.630584051	2.213112762
2024	2.689486796	2.687698734	0.523406199	1.679956613	1.585550337
Ava.	2.023800305	1.939181203	0.856792887	1.303377308	1.202801713
Number of Excellences		1	1	0	1

Source: Prepared by the researchers using Python libraries

4.2. Treynor Ratio:

From the data provided in Table 2, the small cap stock portfolio obtained 6 cases of clear superiority, while the large cap portfolio obtained 5. On the other hand, the performance of the high and low leverage portfolios declined to 3 and 4 cases, respectively. These results show that the size-based portfolios were better at gaining higher returns over unit systematic risk (beta). This is in line with what Banz (1981) and Chan & Chen (1991) suggested, that is the small companies in developing economies are conquering the market in the relative sense due to the inefficient pricing of systematic risk. The small difference in this study, however, is in the large and small portfolios, which shows that the Iraqi market is inefficient as stock movements are predominantly due to institutional and speculative activity rather than market risk (theoretical).

Table (2) shows the Treynor Ratio values

Years	Sample stock portfolio	Big Size portfolio	Small Size portfolio	High Leverage portfolio	Low Leverage portfolio
2014	-0.44776056	-0.37017694	0.05956802	-0.15622019	0.64759697
2015	0.25970178	0.0924444	0.47772469	-0.05710366	0.0924444
2016	0.47755182	0.56049015	0.27582052	0.20133532	0.31149533
2017	1.17660475	0.01162079	1.51997923	-0.69168516	-0.39436126
2018	0.16506287	0.1845437	0.19706591	0.1742025	0.18427273
2019	1.39382927	-1.41638176	0.11802764	7.70522355	3.67750122
2020	0.46481429	0.55924731	0.11045951	0.3047036	0.40691319
2021	1.11900107	0.85118614	0.47510551	0.86224171	0.79525429
2022	-0.59159472	1.70280819	-0.14340909	-0.86007568	-0.56646343
2023	1.31558788	1.04126113	1.70182716	1.31344574	1.17560007
2024	1.18772974	1.07714998	0.29512924	0.65616322	0.80126917
Ava.	0.59277529	0.39038119	0.46248167	0.85929372	0.64832024
Number of Excellences		5	6	3	4

Source: Prepared by the researchers using Python libraries

4.3. Jensen's Alpha:

Within the large-cap segment, we observe the highest relative returns being achieved in the large-cap portfolios (10 cases), followed by the low-leverage portfolios (7 cases), high-leverage portfolios (6 cases), and small-cap portfolios (4 cases). This demonstrates that large-cap portfolios that are low risk had positive risk adjusted returns and are thus able to beat the market. This is in agreement with the findings of Lakonishok, Shleifer and Vishny (1994) and Jegadeesh & Titman (1993), who state that large, stable company portfolios achieve positive alpha in inefficient markets. This is primarily due to the characteristics of the Iraqi market, where the available investment alternatives are limited and large portfolios tend to draw the interest of local institutional investors who are looking for stable and larger portfolios.

Table (3) shows the Jensen's Alpha values

Years	Sample stock portfolio	Big Size portfolio	Small Size portfolio	High Leverage portfolio	Low Leverage portfolio
2014	-0.08724418	0.067810835	2.571191372	-0.81965483	1.402607732
2015	0.55885874	1.047100958	0.421366785	-0.08633545	1.047100958
2016	0.788897181	1.009764279	0.547205578	0.515003436	0.450659066
2017	0.466610853	0.198263087	0.33579877	0.117049338	0.013879211
2018	0.722829137	0.906550413	2.736472919	1.879853868	0.93226076
2019	0.175509005	0.347907934	0.331015198	0.285305687	0.223232492
2020	0.244737969	0.321189716	0.090649672	0.317751354	0.555691169
2021	0.191677656	0.454759702	0.25166587	0.434109042	0.72562426
2022	0.173719499	2.290027888	0.07875669	0.370941456	0.33598044
2023	0.419806788	0.544014872	0.380903935	0.529990414	0.178455188
2024	0.373497531	0.630196404	0.058196448	0.126777525	0.329497168
Ava.	0.366263652	0.710689644	0.709383931	0.333708349	0.563180768
Number of Excellences		10	4	6	7

Source: Prepared by the researchers using Python libraries

4.4. Information Ratio:

The large-cap portfolios repeated their previous performance first in ranking (5 instances), next came the low and high leverage portfolios (3 instances each), followed by the small-cap portfolios (2 instances). This indicates that the larger portfolios were further most likely to continue earning extra returns over the benchmark index for a reasonable level of risk. This corresponds to the literature on the relation between consistency of performance and size of the firm (Elton and Gruber, 1995; Roll, 1992), where larger portfolios seemed to perform with less variation due to better and higher disclosure and information. Nevertheless, the fact that low leverage was ranked second highest implies that more conservative approaches are a better fit for the extremely volatile Iraqi market.

Table (4) shows the Information Ratio values

Years	Sample stock portfolio	Big Size portfolio	Small Size portfolio	High Leverage portfolio	Low Leverage portfolio
2014	2.0447191	1.0707263	1.0671892	1.7978123	1.4442829
2015	1.1657667	0.843243	1.013253	0.825372	0.843243
2016	3.6438072	2.062232	1.6352184	1.6252996	1.6035051
2017	2.4993469	0.7501377	2.1009656	1.4223547	0.3942282
2018	3.1380449	2.0979329	1.4815961	1.5071985	2.0984424
2019	2.2910499	3.3099195	2.3170072	2.3996901	2.3142049
2020	2.5402175	2.3166638	0.5974669	1.4841165	1.7194234
2021	0.9243571	3.3252638	1.4911771	2.9314336	2.0517913
2022	3.3855412	7.0472834	1.2416384	2.3640079	4.0079002
2023	1.399526	3.5522537	0.3688345	2.5149714	-0.728106
2024	1.4098926	2.6716596	-0.092491	0.166575	1.0738469
Ava.	2.2220245	2.640665	1.2019868	1.7308029	1.529342
Number of Excellences		5	2	3	3

Source: Prepared by the researchers using Python libraries

4.5. Hypothesis Testing:

To test the above Hypothesis, Generalized Estimating Equations (GEE) we used. This method is well-suited for analyzing panel data, which includes repeated measurements and time-dependent variables, and it can address the heterogeneity of the normal distribution revealed by the Shapiro-Wilk test results for some indicators.The GEE results showed that most sub-portfolios exhibited statistically significant coefficient values ($p < 0.05$), which means rejecting the null hypothesis (H_0) in favor of the alternative hypothesis (H_1) in most cases, Specifically:

The large-cap portfolios and their coefficients ($\beta = 0.344$ for Jensen alpha, $\beta = 0.419$ for the information ratio, $p < 0.01$) performed significantly better than the sample portfolio, indicating their efficiency in maximizing risk-adjusted return. Conversely, small-cap portfolios with statistically significant negative β coefficients underperformed the sample portfolio, reflecting their limited ability to generate stable returns. Highly leveraged portfolios exhibited significant negative coefficients in both the Sharpe index and the information ratio, indicating that high leverage leads to increased risk without corresponding gains. Meanwhile, low-leverage portfolios showed significant positive β in the Jensen alpha, confirming their stable performance and low sensitivity to market fluctuations. Therefore, we reject all sub-hypotheses and accept the alternative hypotheses.

Table (5) Normality Test

Portfolio	Indicator	Shapiro Wilk_Stat	P-value	Decision
Sample stock portfolio	Sharpe	0.937	0.484	Normal
	Treynor	0.896	0.164	Normal
	Jensen's Alpha	0.967	0.852	Normal
	Information Ratio	0.945	0.585	Normal
Big Size portfolio	Sharpe	0.912	0.255	Normal
	Treynor	0.961	0.781	Normal
	Jensen's Alpha	0.829	0.023	Not normal
	Information Ratio	0.852	0.045	Not normal
Small Size portfolio	Sharpe	0.849	0.042	Not normal
	Treynor	0.773	0.004	Not normal
	Jensen's Alpha	0.636	0.000	Not normal
	Information Ratio	0.980	0.966	Normal
High Leverage portfolio	Sharpe	0.799	0.009	Not normal
	Treynor	0.606	0.000	Not normal
	Jensen's Alpha	0.846	0.038	Not normal
	Information Ratio	0.959	0.756	Normal
Low Leverage portfolio	Sharpe	0.965	0.832	Normal
	Treynor	0.787	0.006	Not normal
	Jensen's Alpha	0.944	0.563	Normal
	Information Ratio	0.963	0.803	Normal

Source: Prepared by the researchers using Python libraries

Table (6) Testing the statistical differences between the sub-portfolios and the sample portfolio

Indicator	Portfolio	coef	Z	std_Err	P-Value	Conf_Lower	Conf_Upper
Sharpe	Sample	2.024	5.435	0.372	0.000	1.294	2.754
Sharpe	Big Size	-0.085	-0.140	0.607	0.889	-1.273	1.104
Sharpe	Small Size	-0.720	-4.108	0.175	0.000	-1.064	-0.377
Sharpe	High Leverage	-0.821	-3.418	0.240	0.001	-1.292	-0.350
Sharpe	Low Leverage	-1.167	-4.511	0.259	0.000	-1.674	-0.660
Treynor	Sample	0.593	21.271	0.028	0.000	0.538	0.647
Treynor	Big Size	-0.202	-4.274	0.047	0.000	-0.295	-0.110
Treynor	Small Size	0.267	3.234	0.082	0.001	0.105	0.428
Treynor	High Leverage	0.056	1.463	0.038	0.144	-0.019	0.130
Treynor	Low Leverage	-0.130	-5.485	0.024	0.000	-0.177	-0.084
Alpha	Sample	0.366	35.436	0.010	0.000	0.346	0.387
Alpha	Big Size	0.344	14.142	0.024	0.000	0.297	0.392
Alpha	Small Size	-0.033	-1.591	0.020	0.112	-0.073	0.008
Alpha	High Leverage	0.197	9.283	0.021	0.000	0.155	0.238
Alpha	Low Leverage	0.343	8.622	0.040	0.000	0.265	0.421
IR	Sample	2.222	60.586	0.037	0.000	2.150	2.294
IR	Big Size	0.419	5.882	0.071	0.000	0.279	0.558
IR	Small Size	-0.491	-10.327	0.048	0.000	-0.584	-0.398
IR	High Leverage	-0.693	-16.067	0.043	0.000	-0.777	-0.608
IR	Low Leverage	-1.020	-27.946	0.037	0.000	-1.092	-0.948

Source: Prepared by the researchers using Python libraries

5. Conclusions:

The evidence suggests, and it should be properly documented, that building portfolios according to the size of the company has a clear advantage over leveraging strategies on the Iraq Stock Exchange. Large-cap firms achieved the highest level of stable and sustainable performance, on average, compared to the other portfolios and Jensen Alpha on average outperformed with the highest number of outperformance (10). It is because of the outperforming large firms and their robust financial structure that they were able to absorb market shocks through diversified income and funding, resulting in more stable returns in a poorly efficient market with shallow depths. On the contrary, small-cap firms demonstrated more erratic performance, albeit achieving higher returns on average, and their performance reverted more and more frequently. The high unsystematic risk of these firms decreased the investment efficiency, being more in line with the theory, and a small company by definition. the small company is more volatile and illiquid.

On the other hand, the analysis of leveraged portfolios showed that low-leverage portfolios were more efficient in risk-return trade-off than the high-leverage portfolios. This is in line with the common theories of finance that more debt brings more strain on profits and lowers financial health. In terms of measuring tools, other than the Jensen Alpha, most financial performance measuring tools that were concerned on measuring the difference of returns on a portfolio in relation to risk and the returns on different portfolios linearly, such as the Sharpe and Traynor measures, were inadequate in analyzing the portfolios and obtaining what profits were made in relation to the other systematic risks. Thus, it is worth mentioning that the optimal portfolio construction on the Iraqi market can be on the low leveraged portfolios of large corporations with the Jensen Alpha measure as that is the most suitable measure for the investment performance

in the high volatile, low information efficient emerging market. Hypothesis results brought to light substantial contrasts with regards to portfolio performance influenced by company size and the level of leverage. Results also portray that the most effective portfolio construction strategy in the Iraqi market is centered on low-leverage, large-cap firms considering their financial flexibility and potential to provide consistent returns with reasonable risk.

Additionally, the outcomes demonstrate that, unlike all other indices, Jensen's Alpha is the singularly superior indicator of portfolio performance since it exemplifies the capacity to realize returns that exceed expectations based on the market model while considering systematic risk. These findings corroborate the theoretical patterns demonstrated by Fama & French (1992) and Titman & Wessels (1988). These findings, however, barely coincide with some of the results from the emerging markets that identified a positive relationship between moderate leverage and performance. This discrepancy is due to the specific features of the Iraqi market characterized by low trading efficiency, high systematic risk, and weak market pricing effectiveness.

Conflict of Interest:
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