

Evaluating the Efficiency of the Single Indicator Model in Building the Optimal Financial Portfolio - Application study on institutions listed in the Qatari financial market

تقييم كفاءة نموذج المؤشر الواحد في بناء المحفظة المالية المثلى - دراسة تطبيقية على المؤسسات المدرجة في السوق المالي القطري

BENZIDI ABDELLATIF ¹

¹ Ahmed Draia University, Algerian-African economic integration laboratory-Adrar (Algeria),
a.latifbenzidi@gmail.com

Received: 07/08/2025

Accepted: 17/09/2025

Published: 30/09/2025

Abstract:

This study aims to evaluate the effectiveness of the single-index model in constructing the optimal financial portfolio, by applying it to institutions listed on the Qatar Financial Market during the period 2020-2024. Monthly closing prices were used as the basis for calculating logarithmic returns for both the institutions' financial assets and the market index, in addition to estimating the single-index model coefficients (alpha and beta) for each financial asset.

In addition to the above tools, the Treynor index was used to determine risk-adjusted performance, and to determine the optimal cutoff rate and weights for selected financial assets within the optimal financial portfolio. One of the most important findings is that the single-index model constitutes an effective framework for building a financial portfolio that achieves performance that exceeds the market.

Keywords: Financial Assets; Optimal Financial Portfolio; Single Index Model; Treynor Index; Qatar Financial Market.

JEL Classification Codes: G10, G11, G14

ملخص:

تهدف هذه الدراسة إلى تقييم كفاءة نموذج المؤشر الواحد في بناء المحفظة المالية المثلى، وذلك من خلال تطبيقه على المؤسسات المدرجة في السوق المالي القطري خلال الفترة 2020-2024. تم اعتماد أسعار الإغلاق الشهرية كأساس لحساب العوائد اللوغاريتمية لكل من الأصول المالية للمؤسسات ومؤشر السوق، بالإضافة إلى تقدير معاملات نموذج المؤشر الواحد (ألفا وبيتا) لكل أصل مالي. وعلاوة على الأدوات أعلاه تم استخدام مؤشر ترينور لتحديد الأداء المعدل حسب المخاطر، وتحديد معدل القطع والأوزان المثلى للأصول المالية المختارة ضمن المحفظة المالية المثلى، ومن أهم النتائج المتوصل إليها محدودية نموذج المؤشر الواحد في تحقيق أداء أفضل للمحفظة المالية المثلى مقارنة بمحفظة السوق القطري.

كلمات مفتاحية: الأصول المالية، المحفظة المالية المثلى، نموذج المؤشر الواحد، مؤشر ترينور السوق المالي القطري.

تصنيفات JEL: G10، G11، G14

INTRODUCTION:

The economic and financial world is witnessing rapid developments, making investment management in general and portfolio construction in particular a complex challenge for investors, whether natural or legal persons. With the increasing number and diversity of available financial assets, making effective investment decisions that achieve maximum returns with minimal risk becomes vital. In this regard, numerous models and theories have emerged that seek to manage the portfolio construction process, most notably the modern portfolio theory founded by Harry Markowitz, which introduced the concept of optimal diversification. However, applying the Markowitz model has faced practical difficulties due to the need to estimate a large number of covariances and correlations.

In order to meet these challenges, William Sharp introduced the Single Index Model, which is regarded as a simplification of Markovitz's model. This model assumes that the return rate of financial assets is influenced by general factors, and the single factor is the overall market index and the special factors of each asset.

Qatar's financial market is regarded as one of the emerging markets in the Gulf region, which makes it a fertile environment for studying and applying the financial portfolio management model, and makes Qatar's financial market have unparalleled dynamic characteristics, which are influenced by many economic and financial factors, whether local or global.

Research Problematic and Hypotheses:

From this standpoint, the study's problem can be presented as follows:

How efficient is the single index model in building an optimal financial portfolio that fits the characteristics of the Qatari financial market during the period 2020-2024?

The study's problem branches into a set of sub-questions

- How appropriate are the parameters of the estimated single index model in interpreting the logarithmic monthly returns of listed enterprises in the Qatari market during the period 2020-2024?
- Which institutions achieve the highest risk-weighted performance according to the Treynor Index?
- What is the mechanism for determining the cut-off rate and the basis for including financial assets by their weights in the optimal financial portfolio?
- What is the performance of the financial portfolio built according to the single index model compared to the performance of the market portfolio?

In order to cope with the problems in the research, the following assumptions are put forward:

- There is a strong correlation between the logarithmic rate of return of financial assets and the market rate of return in the national financial market.
- The single index model is helpful to classify financial assets according to risk-weighted performance standards.
- The best financial portfolio based on the single index model performs better than the market portfolio.

Importance of the study:

The importance of the study lies in the scientific and practical importance, as the first importance relates to the results of academic scientific research in the field of forming a financial portfolio of financial assets for institutions active in the banking and financial services, services and consumer goods, industry, insurance, real estate, communications, transportation

Evaluating the Efficiency of the Single Indicator Model in Building the Optimal Financial Portfolio - Application study on institutions listed in the Qatari financial market

and listed in the Qatari financial market for the period 2020-2024, while the practical importance is reflected in the role played by financial investment in emerging financial markets, which is characterized by the low number of listed companies regardless of the sector to which they belong, not to mention the focus of the trading process on financial assets of some institutions, which allows the growth and development of the financial market.

Research Aims:

This study aims to:

- Testing the efficiency of the single index model in interpreting the returns of financial assets listed in the country's financial market.
- Measuring the performance of financial assets by the Treynor Index.
- Determine the relative weights of financial assets included in the optimal financial portfolio.
- Evaluate and compare the optimal portfolio performance according to the single index model with the market portfolio performance.

Previous studies:

The review of previous studies is the basis for preparing academic scientific research, so it depends on extracting research gaps and determining the location of current research, as well as helping to determine the main parameters of the application framework, thus determining the specificity of the testing and learning environment. The following are the most important studies dealing with this topic or related to it:

Study (Al-Dabbagh and Al-Obaidi, 2021): This study aimed to test the importance of growth stocks and value stocks in building an investment portfolio on a sample of 20 companies listed on the Iraq Stock Exchange, distributed across various sectors for the period 2019, using the price-earnings multiplier measure, which contributes to identifying growth stocks and value stocks to form growth and value portfolios. One of the most important results reached is the superiority of the value portfolio over the growth portfolio according to the return-to-risk criterion.

Study (Madlul Al-Ardi and Abdul Zahra Jaafar, 2016): This study aimed to determine the optimal investment portfolio for private industrial sector companies listed in the Iraq Stock Exchange, which numbered 21 companies during the period 2008-2012, using financial and statistical indicators to analyze the study sample data. One of the most important results reached is that the formation of the investment portfolio is based on efficient companies with the greatest return in the case of equal risk, considering that the decisive criterion in the selection process is the correlation coefficient between the achieved returns.

Study (Zenil Jabbar, Shwesh Abdul Hamid, and Danouk, 2022): This study aimed to build an optimal investment portfolio of shares of companies listed on the Iraqi and Amman Stock Exchanges, which amounted to 15 companies during the period 2015-2021, relying on the quadratic programming method. One of the most important results reached in this study is the reliance of investors in evaluating the return and risk criteria when forming the investment portfolio, in addition to relying on accounting and actual expected information of utmost importance in explaining stock changes.

Study (Bouchami and Ben Omar, 2021): This study aimed to build an investment portfolio on eleven (11) financial institutions active in the banking sector and listed in the Saudi financial market during the period 2014-2018, using the quadratic programming method, and one of the most important results reached is the possibility of reducing the risks of the investment portfolio

consisting of securities of Alinma and Aljazira Banks in light of financial crises and through the quadratic programming method.

1- Theoretical framework for optimal portfolio and single index model:

The topic of financial portfolio is one of the most important modern financial topics in the field of investment, as the financial portfolio derives its importance from the optimal exploitation of financial resources as a result of its employment in areas and investment projects aimed at maximizing returns against minimizing risks.

1-1 Optimal portfolio concept

An optimal financial portfolio is defined as a combination of relative weights of financial assets, meaning the relative sum of financial assets owned by an investor (Chaoufi 203).

The optimal financial portfolio is also defined as the investor's financial asset portfolio, and its purpose is to trade, invest and maximize its market value.

Through the above definition, we can draw a comprehensive conclusion that financial portfolio is a financial asset portfolio that is grouped according to the highest return and lowest risk of each asset listed in the portfolio.

1-2 Optimal portfolio objectives

The ideal portfolio objectives are:

- Maximize investment capital;
- Diversify financial assets and reduce investment risks;
- Maintain the liquidity level and increase its turnover rate;
- Maximize the market value of financial assets, so as to maximize the value of institutions;
- Stabilize cash flow by ensuring the stability of Jordan or capital gains.

1-3 Controls and Determinants of Optimal Portfolio Building

The process of building an optimal portfolio is based on a set of conditions and determinants that an investor must take into account to achieve a balance between return and risk, which are (Bouzid 14):

- In the process of portfolio financing, it depends on the private capital of investors;
- Diversification of financial assets in the portfolio, including high-risk financial assets as high returns and financial assets with risks after determining the minimum risks;
- Determine the duration of long-term, medium-term or short-term investment;
- The ability of investors to adjust their investment portfolio according to their financial and economic conditions;
- Follow an optimal diversification strategy instead of naïve diversification to reduce risk.

The determinants of portfolio construction can be limited to the following aspects:

- Identify the financial markets to be invested in;
- Identification of preferred investment sectors;
- Preference between securities to be included in the portfolio on the basis of specific criteria;
- Determine the relative weight of selected securities within the portfolio.

1-4 Optimal Portfolio Building Mechanisms

Evaluating the Efficiency of the Single Indicator Model in Building the Optimal Financial Portfolio - Application study on institutions listed in the Qatari financial market

The optimal financial portfolio is built in the following ways)Al-shameri 49(:

Cut-off method: In 1980 ELTON introduced a method for selecting the optimal portfolio composition by identifying the financial assets of interest in the investment process.

The bird algorithm method: financial markets are characterized by uncertainty and volatility in the returns of financial assets, which makes investors work not to risk their investments, from this point of view, the bird algorithm model was invented, which is one of the most important techniques developed in the mid-1990s by researchers EBERHARD and KENNEDY, relying on the idea of the kinetic and social behavior of bird nests when searching for food in the model construction. The bird algorithm method is a global optimization method similar to the neural network and genetic algorithms, aimed at finding optimal solutions and building an optimal portfolio based on the exchange of return and risk.

1-5 Optimal The stages of building the optimal financial portfolio according to the cut-off method

The cut-off method is a method used by ALTON&GRUBER to arrange financial assets to be included in the optimal financial portfolio, so that the process of building an optimal financial portfolio requires the following stages:

Finding the Treynor Index: This index was developed in 1965 by Jack Treynor, and the aim of this index is to rank financial portfolios on a risk-based basis by measuring the additional return of a financial asset “the difference between the return of a financial asset and the risk-free return” relative to systemic risk measured by a beta factor, with them ranked in descending order, this indicator is expressed mathematically as follows (Assou , Chouich and Madhar 1970):

$$T = \frac{R_i - R_f}{\beta_i}$$

Cut Rate Determination: An Indicator that determines the characteristics of a financial asset to be included in an optimal financial portfolio, and these characteristics are reflected in the additional return of the financial asset, systemic risk, and informal risk of any level of market risk (Muhammad and Rafiaa Ibrahim 318), in addition to determining the optimal cutting rate c^* , the cutting rate is also expressed by the following mathematical relationship:

$$C = \frac{\sigma_M^2 \sum_{i=1}^N \frac{(R_i - R_f)\beta_i}{\sigma_{ei}^2}}{1 + \sigma_M^2 \sum_{j=1}^i \frac{\beta_j^2}{\sigma_{ej}^2}}$$

Determination of the selected financial assets within the optimal financial portfolio:

After determining the optimal cut-off rate comes the stage of comparing the latter with the Treynor rate for each financial asset, so that the selection process is carried out according to the condition that the Trenor index for each financial asset is greater than or equal to the optimal cut-off rate $T_i \geq C^*$, and excluding financial assets that do not

meet the condition.

Determining the weight of financial assets and building the optimal financial portfolio: After determining the financial assets to be included in the financial portfolio, the phase of determining the weight of each included financial asset comes by applying the following mathematical relationship:

$$Z_i = \frac{\beta_i}{\sigma_{ei}^2} \left(\frac{R_i - R_f}{\beta_i} - C^* \right)$$

$$W_i = \frac{Z_i}{\sum_{i=1}^j Z_i}$$

The first equation measures the relative investment of each financial asset, in which the difference of residual rate of return σ_{ei}^2 plays a role in determining the proportion of investment, while the second equation measures the weight of each financial asset to be invested, so that the sum of these weights is equal to a correct weight, thus ensuring the whole investment (Elhasnaoui and Al-sayyidi Ali 15).

2- Single Index Model (SIM):

2-1 The principle of the single index model

The single index model is based on the ranking of financial assets in the financial portfolio, as William Sharp is the first economic researcher to study and develop the degree of complexity-based Markowitz model, where William Sharp simplified the procedures for building the financial portfolio in terms of reducing the time period for calculating the correlation matrix in addition to studying the factors affecting financial assets, this by means of the cut-off rate that measures the extent to which a financial asset is included within the financial portfolio (Shakir Al- Mayaahi and Makee mahmood Albannaa 471).

The purpose of Sharp's introduction of single index model is to study and determine the relationship between the two financial assets in an indirect way by linking the return of each financial asset in the portfolio with the return of an influential annual economic factor. Usually, the S&P 500 index is used as the sum of all circulating financial assets (M. Elhasnaoui 94).

The reason why William Sharpe model is called single index model is because it depends on market performance indicators. This is the so-called market model, which means that the rise of the latter will lead to the rise of financial asset prices, and vice versa (Dioub 94). The single index model is based on the continuous monitoring of the market index of financial asset prices and its changes relative to the market index over a period of time, and on the other hand, the value of financial assets, which divides the overall changes of financial asset prices into two parts (Hamdi 44).

The part generated by market impact: this change is called systemic risk;

The part generated by the characteristics of financial assets: this change is called the unsystematic risk generated by the risk of financial assets, and the structural risk of departments or industries related to financial assets.

2-2 The Estimation of single index model parameters:

The regression equation of single index model is derived by least square method, and the regression line equation is expressed by the following relationship:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_i$$

where:

Evaluating the Efficiency of the Single Indicator Model in Building the Optimal Financial Portfolio - Application study on institutions listed in the Qatari financial market

R_{it} : the rate of return of the asset i over the period t ;

α_i : the initial value of the return of origin i when R_m and ε_i are absent;

β_i : The sensitivity factor of the return of the financial asset to the change in market return (beta factor);

R_{mt} : the rate of market return measured by the market index during the period t ;

ε_i : Random variable.

2-3 Single index model and diversification

The financial portfolio P is defined as an investment portfolio consisting of financial assets listed in the financial market in the same proportion, so the regression equation of financial portfolio can be expressed by the following relationship:

$$R_P = \alpha_P + \beta_P R_m + \varepsilon_P$$

where:

R_P : portfolio return rate

α_P : Alpha coefficient represents the average weight of the alpha transaction of financial assets that make up the portfolio and the relative weight of each financial asset in the portfolio, so α_P represents the following relationship:

$$\alpha_P = \sum_{i=1}^N W_i \alpha_i$$

β_P : Beta coefficient refers to the average weight of Beta transactions of financial assets that make up a portfolio, which is related to the relative weight of each financial asset contained in the portfolio, so β_P represents the following relationship:

$$\beta_P = \sum_{i=1}^N W_i \beta_i$$

Because the securities portfolio is a market portfolio, the return of the securities portfolio is only the return of the market portfolio. Therefore, the value of each trader who equates the return of the securities portfolio to the securities portfolio and the market portfolio must be non $\alpha_P = 0$ and a $\beta_P = 1$, so it can be inferred that a market Beta is equal to $\beta_M = 1$.

For financial assets, the beta coefficient β_i may be less or greater than the market beta β_M , which leads to a reduction in risk in the event of a high number of financial assets. Therefore, the risk of the financial portfolio can be expressed within the framework of the single-index model by the following relationship:

$$\sigma_P^2 = \beta_P^2 \sigma_M^2 + \sigma_{eP}^2$$

Based on the above equation, the first limit $\beta_P^2 \sigma_M^2$ represents the systemic risk of the financial portfolio or the market risk that cannot be mitigated by diversification regardless of the diversity and number of financial assets in the portfolio, while the second limit σ_{eP}^2 represents the non-systemic risk that can be mitigated by diversification expressed:

$$\sigma_{eP}^2 = \sum_{i=1}^N W_i \sigma_{ei}^2$$

3. Applied Study:

3-1 Methods and tools

In this study, we will construct an optimal financial portfolio based on a single index model and apply it to the organizational samples of seven industries: banking, financial services, services and consumer goods, industry, insurance, real estate, telecommunications, transportation and listing in the national financial market from 2020 to 2024.

Study variables: Study variables lie in the logarithmic return of financial assets and related to listed institutions in the country market.

Research groups: The research groups include the financial assets of all 52 institutions listed in Qatar's financial market during 2020-2024. The research sample estimates that 42 institutions are active in several sectors, as mentioned above, and the distribution is as follows:

Table (1): Study Sample

Sector	Company	Symbol	Sector	Company	Symbol
Bank	Qatar National Bank	QNBK	Insurance	Qatar Insurance	QATI
	Qatar Islamic Bank	QIBK		Doha Insurance	DOHI
	Commercial Bank	CBQK		Qatar General Insurance & Reinsurance	QGRI
	Doha Bank	DHBK		Gulf Takaful Insurance	AKHI
	Ahli Bank	ABQK		Qatar Islamic Insurance	QISI
	Qatar International Islamic Bank	QIIK	Real Estate	United Development	UDCD
	Masraf Al Rayan	MARK		Barwa Real Estate	BRES
	Qatar First Investment Bank	QFBQ		Ezdan Real Estate Group	ERES
	/	/		Mazaya Real Estate Development	MRDS
Industry	Qatar Industrial Manufacturing	QIMD	Services & Consumer Goods	Zad Holding Company	ZHCD
	Qatar National Ciment	QNCD		Qatari German Medical Devices	QGMD
	Industries Qatar Company	IQCD		Salam International	SIIS
	Qatari Investors Group	QIGD		Medicare Group	MCGS
	Qatar Electricity & Water	QEWS		Qatar Cinema	QCFS
	Aamal Company	AHCS		Qatar Fuel	QFLS
	Gulf International Services	GISS		Widam Food	WDAM
	Mesaieed Petrochemical holding	MPHC		Mannai Corporation	MCCS
	Estithmar Holding	IGRD		Al Merra Consumer Goods	MERS
	Qatar Aluminium Manufacturing	QAMC		Baladna	BLDN
Telecommunication	Ooredoo	QRDS	Transport	Milaha	QNNS
	Vodafone Qatar	VFQS		Gulf Warehousing Company	GWCS
	/	/		Qatar Gas Transport Company	QGTS

Source: prepared by the researcher and based on trading reports

3-2 Constructing financial portfolio according to single index model

According to the stage of constructing the financial portfolio by the segmentation and restriction method mentioned above, we will try to determine the financial assets of the institution in order to form the best financial portfolio in the national financial market. The methods are as follows:

3-2-1 Estimating the parameters of a single index model:

The single indicator model takes the monthly logarithmic rate of return of financial assets

Evaluating the Efficiency of the Single Indicator Model in Building the Optimal Financial Portfolio - Application study on institutions listed in the Qatari financial market

of each institution as an independent variable and the monthly logarithmic rate of return of the market as an independent variable. The following table shows the estimated results:

Table (2): Single Index Model Parameters

Sector	Company	Alpha α	Beta β	Unsystematic risk σ_{ei}^2	R-squared R^2
Bank	QNBK	-0,003954	-0.001212	0,000015634116	0.001016
	QIBK	0,004902	0.000768	0,000024029604	0.000183
	CBQK	-0,004161	-0.005004	0,000017313921	0.007348
	DHBK	-0,005733	-0.005001	0,000032867289	0.007256
	ABQK	-0,000736	0.006136	0,000001170724	0.034391
	QIIK	0,001082	-0.003185	0,000082700836	0.005130
	MARK	-0,009094	-0.005780	0,000001432809	0.007061
	QFBQ	0,001197	-0.006391	0,000000497025	0.001197
Services & Consumer Goods	ZHCD	-0,000705	-0.002000	0,000174319209	0.002281
	QGMD	0,013203	-0.011824	0,000003463321	0.004642
	SIIS	0,001861	-0.019384	0,000222487056	0.003012
	MCGS	-0,014916	0.009876	0,000002758921	0.033553
	QCFS	0,001661	0.000277	0,000076772644	0.000035
	QFLS	-0,008762	-0.001444	0,000326019136	0.001172
	WDAM	-0,018056	-0.006476	0,000004393216	0.001515
	MCCS	0,002096	0.001383	0,000002859481	0.000135
	MERS	-0,001691	-0.003176	0,000009375844	0.006386
	BLDN	0,003062	-0.003184	0,000037295449	0.000043
Industry	QIMD	-0,006107	-0.000809	0,000045387169	0.000004
	QNCD	-0,006737	0.002735	0,0000308025	0.002265
	IQCD	0,005550	-0.012237	0,000018818244	0.029647
	QIGD	-0,004338	0.003731	0,000002852721	0.002368
	QEWS	-0,001689	-0.001629	0,000001399489	0.001938
	AHCS	0,001183	-0.001163	0,000088661056	0.000427
	GISS	0,009416	-0.005477	0,000053553124	0.000530
	MPHC	-0,007318	0.003223	0,000449609616	0.002581
	IGRD	0,021204	-0.011549	0,000039614436	0.014978
	QAMC	0,006294	0.007546	0,000103205281	0.000527
Insurance	QATI	-0,010159	-0.005995	0,000125686521	0.012333
	DOHI	0,011211	-0.008786	0,000260790201	0.009060
	QGRI	-0,016149	0.013638	0,000000811801	0.010424
	AKHI	0,000901	-0.010495	0,000013344409	0.013533
	QISI	0,003653	8.77E-05	0,0000844561	0.000007
Real Estate	UDCD	-0,009190	-0.003049	0,0000844561	0.000023
	BRES	-0,005472	0.008424	0,000029942784	0.003291
	ERES	0,006005	0.010901	0,000036060025	0.014181
	MRDS	-0,005942	-0.000395	0,000035307364	0.000001
Telecom	QRDS	0,007053	0.002217	0,000049744809	0.002073
	VFQS	0,004795	0.006086	0,000022992025	0.011250
Tr	QNNS	0,008770	-0.004647	0,0000769129	0.007843

	GWCS	-0,009449	0.004151	0,000089283601	0.009377
	QGTS	0,007605	0.003966	0,000057836025	0.005875

Source: from researcher, based on EVIEWS 12.

Comment: Based on the results of the table above, it is clear that QISI is the only institution that has a greater sensitivity to market movements, given that its beta is greater than 1. This explains that the financial assets of this institution are aggressive financial assets, which makes it more vulnerable to positive and negative shocks. Meanwhile, 16 institutions recorded a positive beta value, which explains the existence of a relationship between the return of the financial assets of these institutions and the market return. As for the remaining 25 institutions, they recorded a negative beta value, meaning that the return of the financial assets of these institutions moves in the opposite direction to the market return. Therefore, it can be said that the financial assets of these institutions have a negative alpha value that can be used to hedge against market risks. As for the alpha values, they indicate performance that is not explained by the market, as 21 institutions recorded a positive alpha value, which indicates the good performance resulting from the efficiency of these institutions and their ability to generate additional returns after weighting them with market risks, and the opposite is true for the rest of the institutions.

3-2-2 Determining the Treynor index and cut-off rate for the study sample:

Table (3): Treynor index and cut-off rate

Company	$E(R_i)$	R_f	Beta β	Treynor Index	Cut Rate C
MRDS	-0,005942187	0,029138333	-0,001212	88,81144478	0,494936669
QIMD	-0,006106884	0,029138333	0,000768	43,56640003	1,42749551
QNBK	-0,003953344	0,029138333	-0,005004	27,3033638	4,115544781
QFLS	-0,008761992	0,029138333	-0,005001	26,24676263	4,760744558
AHCS	0,001183044	0,029138333	0,006136	24,03722244	14,57596221
QEWS	-0,001688309	0,029138333	-0,003185	18,9236599	16,00589467
ZHCD	-0,000704872	0,029138333	-0,005780	14,9216028	15,20356831
UDCD	-0,009189737	0,029138333	-0,006391	12,57070203	15,17718906
MERS	-0,001691005	0,029138333	-0,002000	9,706970554	13,84766355
QIIK	0,001082598	0,029138333	-0,011824	8,808708025	11,96394895
BLDN	0,003062007	0,029138333	-0,019384	8,189801042	11,79573436
WDAM	-0,018055058	0,029138333	0,009876	7,287429109	11,77195522
DHBK	-0,005732344	0,029138333	0,000277	6,972740821	11,62674771
CBQK	-0,004160589	0,029138333	-0,001444	6,654460958	11,35636315
MARK	-0,009093134	0,029138333	-0,006476	6,614440717	11,28541521
QATI	-0,010158315	0,029138333	0,001383	6,554903801	11,22517888
QNNS	0,008770854	0,029138333	-0,003176	4,382930803	11,15564716
QFBQ	0,001197514	0,029138333	-0,003184	4,371901065	7,710719272
GISS	0,009416825	0,029138333	-0,000809	3,600786687	7,686096395
AKHI	0,000902891	0,029138333	0,002735	2,690370914	4,158614197
DOHI	0,011211897	0,029138333	-0,012237	2,040341044	4,151865177
IQCD	0,005551708	0,029138333	0,003731	1,927484329	4,097148278
SIIS	0,00186372	0,029138333	-0,001629	1,40706836	3,14376661
QGMD	0,013204519	0,029138333	-0,001163	1,347582413	3,139073014
IGRD	0,021205349	0,029138333	-0,005477	0,686897981	3,136705152

Evaluating the Efficiency of the Single Indicator Model in Building the Optimal Financial Portfolio - Application study on institutions listed in the Qatari financial market

ERES	0,0060034	0.029138333	0,003223	-2,122276264	3,080893318
QAMC	0,006292601	0.029138333	-0,011549	-3,027528855	3,052747012
QGRI	-0,016150809	0.029138333	0,007546	-3,320805288	3,038208762
VFQS	0,004793603	0.029138333	-0,005995	-4,000119992	3,002130568
BRES	-0,005473778	0.029138333	-0,008786	-4,108750195	2,948908255
MCGS	-0,014917086	0.029138333	0,013638	-4,460856584	2,938663849
ABQK	-0,000737054	0.029138333	-0,010495	-4,868870159	1,534948476
QGTS	0,007604754	0.029138333	8,77E-05	-5,429545995	1,530052478
QIGD	-0,004338372	0.029138333	-0,003049	-8,972582416	1,510008463
GWCS	-0,009449766	0.029138333	0,008424	-9,296097106	1,504630698
QRDS	0,007053026	0.029138333	0,010901	-9,961798578	1,501709909
MPHC	-0,007318914	0.029138333	-0,000395	-11,31158787	1,495305666
QNCD	-0,00673727	0.029138333	0,002217	-13,11722237	1,489102782
MCCS	0,002096152	0.029138333	0,006086	-19,5532767	1,465532942
QIBK	0,004902137	0.029138333	-0,004647	-31,55754694	1,463447655
QCFS	0,001661455	0.029138333	0,004151	-99,19450683	1,456246372
QISI	0,003653362	0.029138333	0,003966	-290,5926037	1,455813364

Source: from researcher, based on Excel.

Comment: The table above shows the Treynor index results for the study sample, arranged in descending order. A high Treynor index indicates the financial asset's efficiency in generating additional returns for each unit of systematic risk. This qualifies financial institutions to be included in the optimal financial portfolio, given the Treynor index's higher than the optimal cutoff rate of 16.00589467. The latter is one of the criteria for separating attractive and unattractive financial assets. Based on the aforementioned condition, the financial assets selected to form the optimal financial portfolio belong to the following institutions: MRDS, QIMD, QNBK, QFLS, AHCS, and QEWS.

3-2-3 Weighing financial assets included in the optimal portfolio

Table (4): Weights of financial assets included in the optimal portfolio

Sector	Company	Value Z_i	Weight
Real Estate	MRDS	-814,509751945097	7,527058756 %
Industry	QIMD	-597,832964402094	5,524702238 %
Bank	QNBK	-875,811116486525	8,093557772 %
Services & Consumer Goods	QFLS	-192,618262949349	1,780026549 %
Industry	AHCS	-6674,17478367687	61,67747608 %
Industry	QEWS	-1666,14245080969	15,3971786 %
	Sum	10821,0893302696	100 %

Source: from researchers, based on Excel.

Comments: As can be seen from the results in the above table, AHCS has the highest proportion in the optimal financial portfolio, accounting for 61.68%, followed by QEWS, accounting for 15.40%, and QFLS, accounting for 1.78%.

3-2-4 Evaluating the optimal portfolio efficiency:

We will evaluate the efficiency of the financial portfolio according to the Sharp Index, which takes into account the overall risk, whether it is conventional risk or irregular risk relative to the extra return, as shown in the following table:

Table (5): Portfolio Input by Single Index Model and market portfolio

	Average Return $E(R_p)$	Standard Deviation σ_p^2	Beta β	Treynor Index	Coefficient of Variation CV
Optimal Portfolio	-0,0007906	0,000865	-0,001166	-21809,53	-0.019544
Market Portfolio	-0,000152	1.268174	01	-0,029290	-8343.25

Source: from researchers, based on Excel.

Comment: Through the results of the table above, we can see that both the optimal financial portfolio and the market portfolio achieved a negative performance and what justifies this performance is the realized return on the optimal financial portfolio and the market portfolio and estimated at: respectively: -0.07906% and -0.0152%, so that the optimal financial portfolio yield is lower than the market portfolio yield, the reason for the negative performance may be due to the repercussions of the COVID-19 epidemic that coincided with a partial period of the study period, as for the risk has reached in both the optimal financial portfolio and the market portfolio a score of 0.000010378, respectively, 1.268174, and to demonstrate which two portfolios have the lowest risk was relied on the difference factor for the trade-off between The portfolio and the market portfolio, as the latter is shown to have a risk of -8343.25 higher than the optimal portfolio of -0.019544.

As for the Sharp Index, which measures performance, the above results show that the performance of the market portfolio is better than the optimal financial portfolio.

Conclusion:

This study discusses the theme of constructing the optimal financial portfolio, and expounds the relationship between the return rate of financial portfolio and the return rate of market portfolio based on the single-index model. In order to reflect this relationship, we use a method of single-index model to construct the optimal financial portfolio, which is represented by truncation method, which includes six financial assets that are mainly active in the industry. The hypothesis test results are as follows:

Hypothesis 1: According to the results of applied research, there is no indirect relationship between the logarithmic rate of return of financial assets and the logarithmic rate of return of the market, so the hypothesis is rejected;

Hypothesis 2: Based on the results of applied research, the single index model is helpful to determine the assets classified by the lowest risk standard, so this hypothesis is acceptable;

Hypothesis 3: According to the results of application research, compared with the market portfolio, the problem portfolio in the single index model performs poorly, so the hypothesis is rejected.

The study has drawn a series of conclusions, the most important of which is:

- Most institutions listed on the Qatari financial market have a beta coefficient of less than one (01), which is explained by defensive versus offensive financial assets;
- Balancing between institutions with respect to the alpha coefficient, so that half of the study sample recorded positive alpha values, which explains additional returns and

Evaluating the Efficiency of the Single Indicator Model in Building the Optimal Financial Portfolio - Application study on institutions listed in the Qatari financial market

vice versa for institutions that achieved negative alpha values;

- The volatility of the returns of financial assets is due to internal factors related to the institution or sector and not to a market factor;
- The financial assets of the optimal financial portfolio are focused on a single sector that is industry, which makes the risk of the portfolio greater;
- The limitation of the single index model in achieving better performance for the optimal financial portfolio compared to the market portfolio.

Based on the above findings, a single **recommendation** was made:

- The need to include factors other than the foreign market factor on which the single index model is based in the construction of the optimal financial portfolio and mention, for example, but not limited to the downward indicators: liquidity, size of the institution, in the sense of building a financial portfolio according to the FAMA model.

Bibliography List:

1. Muhammad , A. Muhammad and AL-Hamdani Rafiaa Ibrahim . "The role of international diversification in building the optimal investment portfolio using the cut-off model Analytical Study in a number of international markets,." *Tikrit Journal of Administrative And Economics Sciences* 30 December 2022: 309-326.
2. Assou , Baha elddin kader, Abdelaziz Abdelhamid Chouich and Khaled Abdelhamid Madhar. "Comparative application research of portfolio constructef by extrem model and portfolio constructef by linear programing among some companies in DAX 30 Index." *Elghari journal* 2022: 1961-1984.
3. Bouzid, Sarah. "Portfolio management of commercial bank-level securities: a case study of BNP paribas." *Business and management science; university of mentouri*. Costantine, 2007.
4. Chaoufi, Fatimazohra. "The impact of the policy investment diversification on the characterstics of the portfolio, an empirical study of some Arabic Stock Exchange." *Albachair economic journal* December 2020: 201-217.
5. Dalal Saleh Mahdi Al-shameri".Using operation research to build an efficient investment portfolio according to the return and risk dimension: applied study in the Iraq stock exchange ".*Faculty of management and economics; Takrit university* . Takrit.2018 ,
6. Dioub, Manel. *Building investment portfolio using stock performance evaluation models: An applied study on the share companies listed in Damascus stock market* 2023: 137-170.
7. Elhasnaoui, Maithem Rabia Hadi and Hebat Allah Mustafa Al-sayyidi Ali. *The performance of international optimal risky portfolio under the financial crisis Analytical study of a sample of international stock markets*. Karbalaa, September 2018.
<https://www.researchgate.net/publication/334001768_The_performance_of_international_optimal_risky_portfolio_under_the_financial_crisis_Analytical_study_of_a_sample_of_international_stock_markets?enrichId=rgreq-44d3ab0038c4532c87db505d6bfb068d-XXX&enrichSo>.
8. Elhasnaoui, Maithem Rabia Hadi. "Simplifying inputs and procedures for building the Markowitz's optimal risky portfolio in the framework of single index model,." June 2012: 87-121.

9. Hamdi, Faycel. *Management of international financial portfolios of exchange listed shares with refernce to the case of Algeria and Morocco*. Ed. Kasdi Merbah university. Ourgla: Faculty of economic, commercial and management science, 2006.
10. Shakir Al- Mayaahi, Sheimaa and Zainab Makee mahmood Albannaa. ", Evaluation of the optimal investment portfolio insurance strategy , (OBPI)." *Tikrit Journal of Administrative And Economics Sciences* 31 March 2023: 468-497.