

Mutual fund's performance.

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Abstract

The study has investigated the concept of the mutual funds and the different types of the investment's funds. It has listed the benefits of the mutual funds and their categories. It also has discussed the different measures that evaluate the performance of the mutual funds; Treynor Index, Sharpe Index, and Jensen Alpha.

The study has revealed that there are not critical answers concerning which one of these performance measures is more important for investors to judge the fund's performance, thus, each measure has its advantages and shortcomings.

Keywords: *Mutual funds, Treynor Index, Sharpe Index, and Jensen Alpha.*

الملخص

تهدف هذه الدراسة إلى تسليط الضوء على مفهوم الصناديق الإستثمارية و دورها في تنشيط الإستثمار ، وذلك من خلال تحديد مختلف أنواع الصناديق الإستثمارية و مزاياها. وتتطرق الدراسة أيضا إلى قياس أداء هذه الصناديق بإستخدام مؤشرات ترابينور، شارب و جونسن ألفا.

الدراسة توصلت إلى أنه لا يوجد إجابة حاسمة حول أفضل مؤشر يمكن للمستثمر أن يعتمد عليه لتقييم أداء هذه الصناديق، بحيث كل مؤشر له مزايا و عيوب ، وكل مؤشر يركز على جانب محدد في عملية التقييم . لذا يجب إستخدام هذه المؤشرات بصورة تكاملية للوصول إلى تقييم شامل.

الكلمات المفتاحية : الصناديق الإستثمارية ، مؤشر ترابينور، مؤشر شارب ، ألفا جونسون .

1. Introduction

The last decades have witnessed tremendous growth of the mutual funds industry regarding their basic investment's roles in pooling money from different investors and invest them in financial securities. After the Second World War, mutual funds become widely known among investors with respect to their role as financial intermediary. Hence, in 2002, the number of mutual funds in the United States exceeded the number of securities listed on the New York Stock Exchange (investment company institute, 2002).

At present, where the world passes through a choky financial crisis, the analysts rely on the investment funds to rationalize the investments and back up the market's stabilization (recent sounding in the Arab financial markets, 40.8% responded that mutual funds have a significant role to sustain the financial markets, while 30.8% responded that they have a less important role, (HTTP1).

With the growing popularity of mutual funds, numerous studies covering a variety of periods have been conducted using various techniques and focusing on different phenomena in different countries, from these phenomena; the performance evaluation of the funds' portfolios.

Do mutual funds mangers who actively trade stocks add value? Academics have debated this issue since the early papers of Sharpe, (1966) and Jensen, (1968). Although

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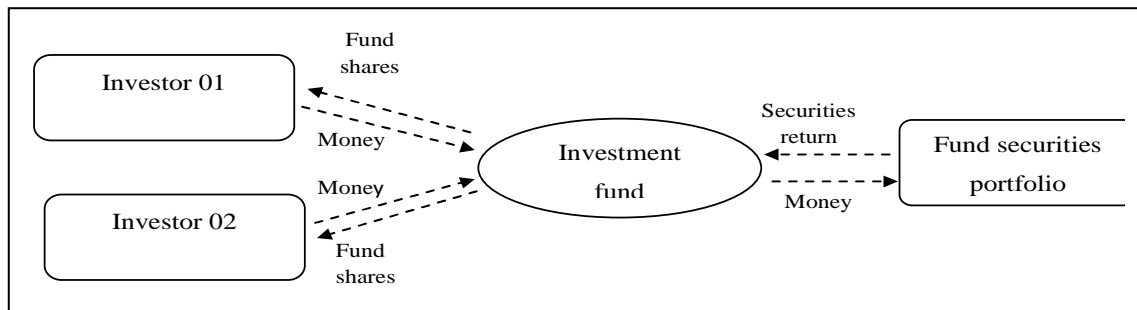
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the controversy is not yet resolved, the majority of studies for example: Cumby & Glen, (1990), Droms & Walker, (1994), and Gruber, (1996) concluded that actively managed funds underperform passive market indexes based on the risk-adjusted returns.

This study highlights the different types of the investment funds and the benefits of the mutual funds. The study also reviews the most popular measures of the funds' portfolio, and the characteristics of each of them.

2. Investment funds

Investment funds are a type of financial intermediary which obtain money from investors and use them to purchase financial assets such as stocks, bonds and money market securities. In exchange for this commitment of money, the investment funds issue to each investor new shares representing his proportional ownership of the mutually held securities portfolio, which is commonly known as “fund”, (Reilly & Brown, 2006). Figure (1) shows how the investment fund works:



Source: Reilly & Brown, (2006)

Figure (1): Investment Fund work

The investor’s share is valued based on the Net Asset Value (NAV) of the investment’s fund. The NAV equals the total market value of the fund’s assets minus its liabilities (if any) divided by the total number of fund’s shares outstanding, (Heart & Zaima, 2001):

$$NAV = \frac{(\text{Total market value of the fund's assets}) - (\text{liabilities})}{(\text{Total number of fund shares outstanding})} \dots\dots\dots(1)$$

The NAV of the investment fund is analogous to the share price of a corporation’s common stock. Thus, the NAV of the fund shares will increase as the value of the underlying assets increases. On the other hand, the fund’s investors can capitalize on the growth of the NAV (capital gain) and the dividends income that is distributed by fund in the periods that it realized a profit.

There are basically three types of investment funds: *Units Investment Trusts* (UITs), *Closed-end fund*, and *Open-end fund* (mutual fund).These types are divided according to the manner in which shares are distributed and redeemed. The focus will be on the third type because it is the only type that trades in the Jordanian market.

-Unit Investment Trust (UIT): is typically an unmanaged portfolio of fixed-income securities put together by a sponsor and run by an independent trustee. The sponsor sells a fixed number of shares called units, and uses the proceeds less a sales charge, to purchase a portfolio of securities. All income of the fund securities is distributed to the owners of unit investment trusts, along with any principal repayments (Heart & Zaima, 2001).

A UIT typically will make a one-time "public offering" of only a specific fixed number of units (like closed-end funds).The UIT does not actively manage its investment portfolio. That is, a UIT buys a relatively fixed portfolio of securities and holds them with little or no change for the life of the UIT.

-Closed-end Fund: is a fund that has a fixed number of shares. Purchasers and sellers of shares must trade with each other; they cannot buy the shares directly from the fund (except at the inception of the fund) because of the limitation of shares outstanding. Furthermore, the fund does not stand ready to buy the shares back. The shares of closed-end funds trade on security exchanges or over-the-counter just as any other stock, through a broker and with a commission (Hirt & Block, 2005).

One of the most important considerations in purchasing a closed-end fund share is whether it is trading at a discount or premium from the NAV, because the closed-end funds do not sell their shares at the NAV, but the price is determined by the market supply and demand. Indeed, the closed-end shares are often traded at a discount from their NAVs. Lee, Shleifer& Thaler, (1991) attributed this to the changing of individual investors' sentiments toward closed-end funds. When the investors are pessimistic about the fund future returns the discount becomes high; whereas, when the investors are optimistic the discount becomes low.

Changing investors' sentiments makes closed-end funds riskier than their portfolios' risk's level, because the unpredictability of investor sentiment impounds a risk to holding closed-end funds in addition to the risk inherent in the funds' portfolio, and so causes under-pricing of the funds' shares relative to their intrinsic values (The analysis of the discounts in the close-end funds' shares remains a major question of modern finance. For more details refer to Lee & Rahman, (1990), and Lee et al., (1991).

-Open-end Fund (Mutual Fund): is the more important type with regard to their popularity. The open-end funds stand ready at all times to sell new shares or buy back (redeem) old shares from investors after their initial public offering at NAV. Actually, the term mutual fund applies specifically to open-end investment funds, although closed-end funds are sometimes labeled as mutual funds as well.

There are two methods used by mutual funds to sell their shares to the public: *Direct Marketing* and the use of a *Sales Force*, (Hirt & Block, 2005). With the direct marketing the mutual fund sells shares directly to investors without using sales organizations (intermediary). These open-end funds are known as *no-load funds*, because they sell their shares at a price equals to their NAVs.

The other method of selling shares involves a sales force that receives a commission based on the number of shares it sold. This sales force often involves brokers, financial planners, insurance companies and banks. The open-end funds that use this method are known as *load funds* because the commission involves adding a percentage load charge to the NAV. The table (01) makes a brief comparison between the three types.

Table (1): The Primary distinctions between the Investment Funds

Fund Type	Method of Purchase	Number of Shares Outstanding	Shares Traded at
<i>Unit Investment Trust</i>	The sponsor buys and sells the units in the secondary market.	Fixed	Their approximate NAV.
<i>Closed-end fund</i>	Stock exchange or over the counter.	Fixed	Discount or premium from NAV.

<i>Open-end fund</i>	Direct from fund or fund sales person.	Fluctuates	Their NAV, but there may be a commission.
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Source: summarized by the researchers.

Furthermore, the mutual funds can be classified in terms of their stated objectives, in which there are four broad fund objective categories: *Equity Funds*, *Hybrid Funds*, *Bond Funds*, and *Money Market Funds*. The Investment Company Institute in United States classified the mutual funds into 33 objective categories, and the table (02) summarizes some of these categories.

Table (2) : Mutual Funds' Categorizes

Equity Funds	Invest primarily in stocks, and are characterized by high risk level because they seek high returns. They include:	<p>Aggressive Growth Funds: invest primarily in common stocks of small and growth companies.</p> <p>Growth Funds: invest primarily in common stocks of well-established companies.</p> <p>Growth & Income Funds: invest primarily in common stocks of companies with the potential for growth and those are consistently record dividend payments.</p> <p>Income Equity Funds: invest primarily in equities securities of companies with a consistent record of dividend payments; they seek income more than capital appreciation.</p>
Hybrid Funds	Mix between different types of securities. They are characterized by moderate risk because they balance between risk and return. They include:	<p>Asset Allocation Funds: invest in various asset classes including, but not limited to, equities, fixed-income securities and money market instruments, they seek high total return.</p> <p>Balanced Funds: invest in mix of equity securities and bonds. They seek: conserving principal, providing income, and achieving long-term growth of both principal and income.</p> <p>Flexible Portfolio Funds: invest in common stocks, bonds, other debt securities, and money market securities, to provide high total return. They may invest up to 100 percent in any one type of security and may easily change weightings depending upon market conditions.</p> <p>Income-Mixed Funds: invest in a variety of income-producing securities, including equities and fixed-income instruments. These funds seek a high level of current income without regard to capital appreciation.</p>
Bond Funds	Invest primarily in bonds or others debt securities. They are characterized by moderate risk. They	Corporate Bond Funds: seek current income by investing in high-quality debt securities issued by corporations.

include:

Government Bond Funds: invest in government bonds of varying maturities. They seek current income.

Money Market Funds

The investors invest in these funds when they are bearish about market movements because they have low risk level.

Money Market Funds: Continued..... to provide current income, safety of principal, and liquidity by investing in low-risk securities (money market securities); such as treasury bills, banker certificates of deposit, bank acceptances, and commercial paper.

Source: Investment Company Institute, (2003)

2.1 Benefits of the Mutual Funds

Mutual funds offer some clear advantages to investors that characterize them from other financial intermediaries. Wyss (2001) listed five benefits of the mutual funds:

Professional Management: The mutual funds are managed by skilled and professionally experienced managers with a back up of a Research team, which allow them to make the right investment decisions. These managers enable investors to achieve a much higher return than they could on their own, especially if they are inexperienced. In addition, professional management greatly increases the chance for long-term success by taking the emotions out of ordinary investing.

Diversification: The mutual fund allows the investors to hold a portfolio with different securities. With the diversification, the risk of volatility is much lower compared to owning a few individual securities where a drop in the value would mean a much greater loss of capital. In addition, the experience of the fund's manager allows the investors to diversify in terms of time, region, and currency, in view of the fact that the fund's manager can determine the appropriate time, region, and currency of investment.

Simplicity: The fund is committed to provide high quality service to its shareholder. Thus, they will keep records of all transactions that take place during the year, mail out monthly or quarterly statements, and reinvest any dividends or capital gains into new shares of the fund.

Flexibility: Investors who invest in many funds that are managed by the same company can transfer money from one fund to another. For example if a bonds fund's investor believes that stocks are cheap he can move all or part of his money from a bonds' fund to an equity fund managed by the same company. If this system is set up in advance, investors can perform these exchanges with a quick telephone call before the market closes on any business day.

Controlled Liquidity: Investors can deposit a large sum into a money-market fund and transfer various sums into and out of other funds to control the liquidity. They can also set up check-writing privileges (allow the fund's investor to get check writing) in a money market fund to pay for other personal expenses. This kind of liquidity makes it convenient to earn higher interest than is paid on checking or savings accounts, and yet control the source of funds for each individual situation.

In spite of these benefits, the crucial matter concerning the investors is how to evaluate these benefits and judge the performance of the mutual funds. The next part highlights some of the most popular fund's performance measures and the characteristics of each one.

2.2 .The risk-adjusted Portfolio Performance Measures

The primary objective of mutual fund's managers is to maximize the performance of their fund over time. One approach to perform the performance maximization is to

use traditional measures benchmarks to determine which fund has the greatest value. The first measure goes back to the basic portfolio theory of *Markowitz* in 1952. *Markowitz* clarified that the portfolio should be evaluated through both portfolio's expected return (mean of the portfolio's returns) and the portfolio's risk, in which the risk being the variance of the portfolio's returns.

Since then, many performance measures have developed based on the risk-adjusted performance concept. This study reviews some the most popular measures often used by financial experts.

2.2.1 Treynor Index

Treynor developed the first measure of risk-adjusted portfolio performance in 1965. *Treynor* was interested in finding a performance measure that would apply to all investors with different risk preferences.

Treynor first differentiated between two types of risks: the risk related to the price securities fluctuations within the portfolio, and risk generated by market movements. To determine the market risk, he introduced the characteristic regression line which defines the relationship between the rates of return for a portfolio over time and the rates of return for an appropriate market portfolio. He noted that the portfolio's beta coefficient that represents the slope of characteristic line measures the sensitivity of the portfolio returns to the market returns. The *Treynor index* was given as:

$$Treynor\ Index = \frac{ER_T - R_f}{\beta_p} \dots\dots\dots (2)$$

ER_T : portfolio expected return over time.

R_f : risk free rate of return.

β_p : portfolio's Beta coefficient.

The *Treynor Index* is known as reward-to-volatility ratio concerns only by systematic risk rather than total risk because, as *Markowitz* has shown that efficient diversification eliminates unsystematic risk and leaves only market's risk (systematic or undiversified risk).

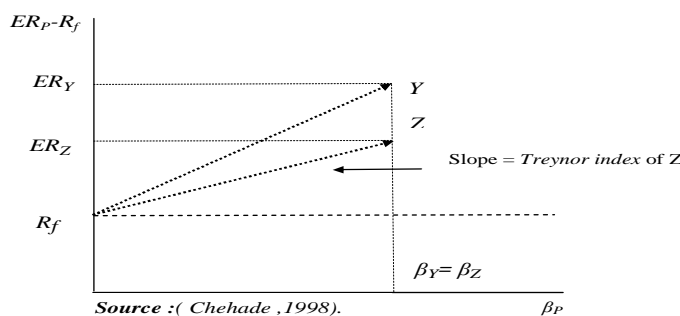


Figure (2): Treynor Index: A Comparison between two Portfolios.

Treynor indicated that the rational risk-aversion investors would always prefer portfolios with high slopes. Figure (2) shows that portfolio (Y) has a higher slope the portfolio (Z), which indicates portfolio (Y) is preferred over portfolio (Z), because (Y) provides higher expected return than (Z) with the same beta. In general, whenever the *Treynor Index* is large, the portfolio's performance is better.

2.2.2 Sharpe Index

William Sharpe has developed a performance measure based on *Markovitz's* mean-variance portfolio theory in (1966). He used the capital market line as a benchmark and defined the index as a ratio of portfolio's risk premium to the portfolio's total risk (systematic and unsystematic), measured by the standard deviation of the

portfolio's returns,(Li, 1998).The *Sharpe Index*, which is known as reward-to-variability ratio, was given as:

$$Sharpe\ Index = \frac{ER_t - R_f}{\sigma_p} \dots\dots\dots (3)$$

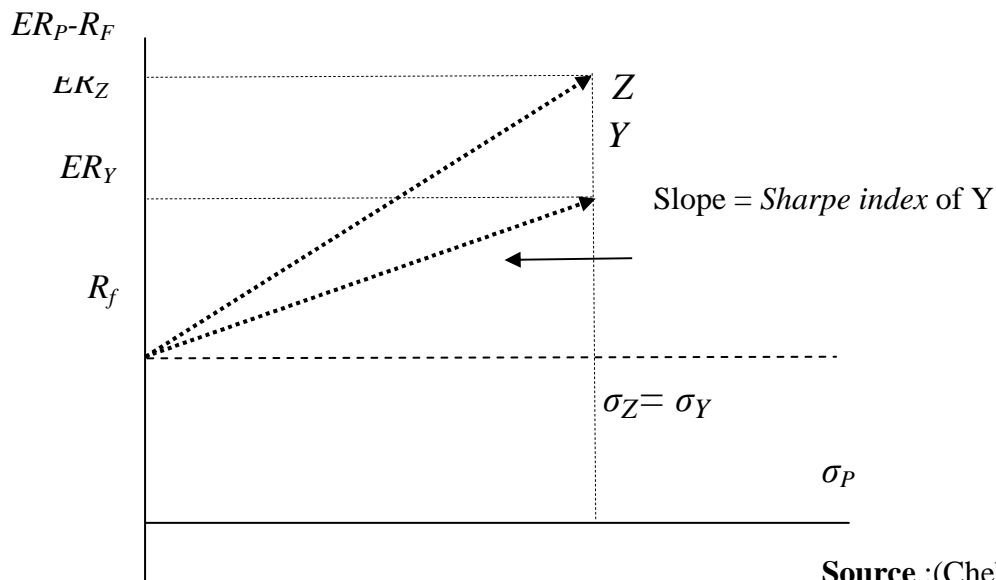
ER_t : portfolio expected return over time.

R_f : risk free rate of return .

σ_p : Standard deviation of portfolio's returns.

The *Sharpe Index* evaluates a manager's ability to maximize the portfolio's return and eliminate the unsystematic risk by diversification. Thus, a high index value means that the manager generated high risk premium or reduced the total risk by reducing the unsystematic risk. The *Sharpe Index* is usually calculated and published in the mutual fund's NAV reports as funds' performance indicator.

Investors prefer a portfolio with a steeper slope, since they can reach higher levels of expected return as the slope of the line connecting the risk-free rate and the point representing the risk-return of the portfolio becomes steeper, as it is shown in figure (3).



Source :(Chehade, 1998).

Figure (3): Sharpe Index: A Comparison between two Portfolios

2.2.3 Jensen Alpha

Jensen alpha, like the *Treynor index* and *Sharpe index*, is a measure of risk-adjusted performance. It was developed in 1968 by *Micheal Jensen*, based on the Capital Assets Pricing Model (CAPM), which uses the market return as benchmark (Chehade, 1998).

Assuming the CAPM is empirically valid, the realized return of a portfolio can be expressed as follow:

$$R_{pt} = R_{ft} + \beta [R_{mt} - R_{ft}] + e_t \dots\dots\dots (4)$$

R_{pt} : portfolio's return over time.

R_{ft} : risk free rate of return over time.

β : portfolio's Beta coefficient.

R_{mt} : market portfolio's return over time (Researchers usually use the market index as proxy for the market portfolio).

e_t : error term .

Subtracting the risk-free return from both sides:

$$R_{pt} - R_{ft} = \beta [R_{mt} - R_{ft}] + e_t \dots\dots\dots (5)$$

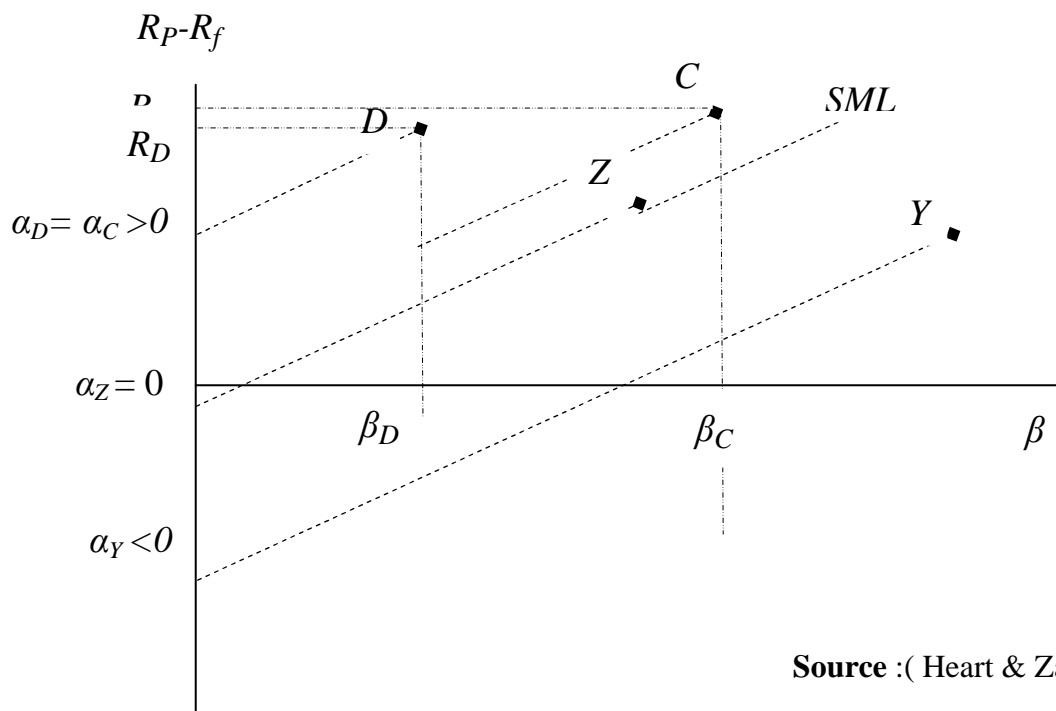
The portfolio's risk premium equals beta times a market risk premium plus a random error term. In this form, the intercept for the regression is equal to zero, considering that all portfolios were in equilibrium.

The fund's managers who have investments abilities consistently earn higher risk premiums and realize superior performance. Therefore, these managers have consistently positive random error terms because, the actual returns for their portfolios consistently exceeds the expected returns.

To detect and measure this superior performance, *Jensen* added the nonzero intercept (α) to the equation (6).

$$R_{pt} - R_{ft} = \alpha + \beta [R_{mt} - R_{ft}] + e_t \dots\dots\dots(6)$$

The equation (06) indicates that a superior manager has a significant positive (α) value because of the consistent positive residuals. In contrast, an inferior manager has a significant negative (α) value because portfolio's return fall short of the expectations based on the CAPM that gives consistently negative residuals (Reilly & Brown, 2006).



Source :(Heart & Zaima, 2001)

Figure (4): Jensen Alpha example of (Y, Z, C, D) Portfolios

Figure (4) shows that portfolio (Y) underperforms the market on risk-adjusted basis because it yields risk-premium that is inappropriately low for its level of systematic risk so its alpha is negative $\alpha_Y < 0$.

Portfolio (Z) is correctly priced because it yields no returns in excess or less than the appropriate risk-premium so that its alpha is equal to zero $\alpha_Z = 0$.

Portfolios (C) and (D) outperform the market on risk-adjusted basis, because they yield a risk-premium that is inappropriately high for its level of systematic risk so their alpha are positive $\alpha_C = \alpha_D > 0$. It cannot be concluded that the two portfolios (C) and (D) perform equally because the two portfolios have different systematic risk $\beta_C > \beta_D$ and different returns $R_C > R_D$. Therefore, Chehade, (1998) mentioned that *Jensen alpha* can be used to measure the portfolio performance but it cannot be used to rank the performance of different portfolios.

2.2.4 Comparison between the three Measures

The *Sharpe Index* uses the standard deviation as a measure of total risk, whereas the *Treynor Index* and *Jensen alpha* focus only on the systematic risk measured by the portfolio's beta. For the completely diversified portfolio without any unsystematic risk the three measures would give identical judgment because the total risk of the completely diversified portfolio equals its systematic risk.

The *Sharpe index* should be used in selecting a fund in cases where the fund represents a large fraction of the investor's overall portfolio, while the *Treynor index* should be used in selecting a fund in cases where the fund represents a small fraction of the investor's overall portfolio.

The *Treynor Index* provides additional information with respect to *Jensen's alpha*. Thus, two portfolios with different risk levels that provide the same excess returns over the same period will have the same *alpha* but will differ with respect to the *Treynor Index*. Thus, the riskier portfolio will be marked by a lower *Treynor Index* because the *Treynor Index* provides the performance of the portfolio per unit of systematic risk.

Researchers have shown that the single benchmark used by *Jensen's alpha* may provide unfair judgments over the performance of portfolios that invested in very different assets with different risk levels regarding a positive relationship between the excess returns and risk level, this arises to what is called *benchmark bias*.

Ross (1976) demonstrated that the use of only the market index as benchmark is not sufficient to keep track of the systematic sources of excess portfolio's return. As Grinblatt & Titman, (1994) proved, there is a problem in comparing the portfolio's return to a single benchmark because different types of assets held in managed portfolio may perform differently than this single benchmark.

Treynor & Mazuy, (1966) brought out the concept of market timing. They proved that the systematic risk of the portfolio isn't constant as *Jensen* assumed, because the fund's manager changes the target beta of the portfolio by moving the capital between risky and riskless assets according to the market movements. Hence, the usage of the *Jensen's* model may lead to biased performance estimation in the existence of market timing.

3. Conclusion:

The mutual funds have crucial role in stabilizing the financial markets and accompanying the small investors to maximize the return of their investment through their professional management, diversification, and Flexibility.

Concerning the funds' performance measures, there is no scientific answer regarding which one of these performance measures is more important for investors to judge the fund's performance. Thus, each measure has its advantages and shortcomings.

These measures provide complimentary results with different information. As a result, researchers used Investor-Specific Measure (ISM) as an investor decision-making tool, which combines these measures.

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