



UNIVERSITY OF PIRAEUS

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Investor's revealed preference for asset pricing models

ATHANASIOS ANGELOU

SUPERVISING PROFESSOR

NIKOLAOS KOUROGENIS

COMMITTEE OF PROFESSORS

EMMANOUIL TSIRITAKIS

CHRISTODOULOS STEFANADIS

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Introduction

According to Berk & van Binsbergen (2014), in every “neoclassical capital asset pricing models” investors are fiercely competing with each other in order to find the so called “positive net present value investment opportunities”. The specific behavior practically eliminates these opportunities. Another consequence of this competition among investors, is that “equilibrium prices are set so that the expected return of every asset is solely a function of its risk”.

In any case that investors locate a positive “net present value” (NPV) investment opportunity in any capital market, thus an asset which is mispriced according to their models, they tend to submit buy or sell orders until the opportunity no longer exists, which means that the mispricing of the asset no longer exists (removed). By placing their buy and sell orders, investors reveal their preferences, but also the asset pricing model they are using. By observing whether or not buy and sell orders occur in reaction to the existence of positive net present value investment opportunities as defined by a particular asset pricing model, one can infer whether investors price risk using that asset pricing model.

Berk & van Binsbergen (2014), methodology requires two criteria in order to be implemented. The first one is an appropriate mechanism in order to identify positive NPV investment opportunities. The second criteria requires the ability of any investor’s reactions to these opportunities. In their paper they demonstrate that both criteria can be satisfied by implementing the specific methodology by using data concerning mutual fund. Under the assumption that a particular asset pricing model holds, they show that any positive, or negative abnormal return realizations in a mutual fund investment is associated with positive NPV buying or selling opportunities. Also, Berk & van Binsbergen (2014), claimed that there is the ability measure investor reactions to the above opportunities through the observation of the subsequent capital flow into or out of mutual funds.

By using a simple test statistic Berk & van Binsbergen (2014) were able to conclude which was the closest asset pricing model investors are actually using, from a set of candidate models. Their test can be implemented by running a “simple univariate ordinary least squared regression” using the t-statistic to assess statistical significance.

The set of candidate models, were the “Capital Asset Pricing Model (CAPM), originally derived by Sharpe (1964), Lintner (1965) and Mossin (1966), the reduced form factor models specified by Fama and French (1993) and Carhart (1997) and the dynamic equilibrium models derived by Merton (1973), Breeden (1979), Campbell and Cochrane (1999), Epstein and Zin (1991) and Bansal and Yaron (2004)”.

Berk & van Binsbergen (2014) found out that the closest model, of the above set, to the model that investors use in order to make any decision concerning capital allocation, was CAPM. The specific model also better explains flows than any other model, indicating that investors “do price risk”. Most surprisingly, the CAPM also outperformed a “naïve” model in which investors ignore the value of beta and simply chase any outperformance relative to their portfolio. By studying investors’ capital allocation decisions, they concluded that investors tend to measure risk by using the CAPM beta value.

According to Berk & van Binsbergen (2014), their result was quite surprising, due to the “well documented failure of the CAPM to adequately explain the cross-sectional variation in expected stock returns” adding that much of the flows in and out of the mutual funds was not explained. Also they pose a question regarding whether the unexplained part of flows is an outcome of the use of a superior, yet undiscovered, risk model, or whether investors tend to use other, non-risk based, criteria in order to make any decisions regarding their investments.

The implementation of Berk & van Binsbergen (2014) test requires accurate measurement of all the variables determining the “Stochastic Discount Factor (SDF)”. In the case of the CAPM, the SDF is measured by using market prices containing little or no measurement error, and also can be observed not only empiricists but by single investors as well. A test regarding the “dynamic equilibrium models” depends on the observation of variables, such as consumption, which can be easily and precisely measured by investors, but not by empiricists, particularly over short horizons. Consequently Berk & van Binsbergen (2014) “tests cannot differentiate whether these models underperform because they rely on variables that are difficult to measure, or because the underlying assumptions of these models are flawed”.

Although one may claim that their methodology is suitable for implementation only in mutual fund data, and that only reveals mutual fund investors preferences, Berk & van Binsbergen (2014) argued that when an asset pricing model is able of correctly pricing risk, it can be used to recognize positive NPV investment opportunities in all markets. Even if there is no investor, in the current market with a positive NPV opportunity, using the asset pricing model, as long as there are investors, in other markets, using the asset pricing model, they could be able to recognize the positive NPV opportunity and act in order to eliminate it. Berk & van Binsbergen (2014) concluded that “if our test rejects a particular asset pricing model, we are not simply rejecting the hypothesis that mutual fund investors use the model, but rather, we are rejecting the hypothesis that any investor who could invest in mutual funds uses the model”.

1. A New Asset Pricing Test

In every neoclassical asset pricing model in economics, the main idea is that prices are set by agents, who are chasing positive NPV investment opportunities. In a financial market that is perfectly competitive, the specific opportunities are competed away in order for the market to reach an equilibrium point, where prices are set in order to ensure that there is no longer any positive NPV opportunity.

Also, prices tend to respond to any new information regarding the market, leading to an almost instantaneous adjustment in order to eliminate any positive NPV opportunity that may arise. The specific “price adjustment process” is a part of any neoclassical asset pricing model, either explicitly, meaning that the model is dynamic, or implicitly, meaning that the model is static). The main output of any model, is the prediction regarding expected returns, which relies on the main assumption that there a price adjustment process is taking place.

The absence of positive NPV opportunities, leads to a change regarding the price, due to any new information by measuring its value. The asset-pricing model cannot explain this part of price change. As prices are always adjusting in order to eliminate any positive NPV investment opportunities, in an appropriate asset pricing model, expected returns are determined by risk alone. Berk & van Binsbergen (2014) pointed out that “modern tests of asset pricing theories test this powerful insight using return data”. Also, “rejection of an asset pricing theory occurs if positive net present value opportunities are detected, or, equivalently, if investment opportunities can be found that consistently yield returns in excess of the expected return predicted by the asset pricing model”.

According to Berk & van Binsbergen (2014), another important issue, is that during the interpretation of these tests results, an empiricist can be never sure that a positive NPV investment opportunity that is identified by the model as “ex post”, was actually available “ex ante”.

Another way is to identify positive NPV investment opportunities “ex ante” and then test whether there is an investor reaction to these opportunities. According to Berk & van Binsbergen (2014), it is difficult to really observe investors responses to positive

NPV opportunities for most of the financial assets. Consequently, for most financial assets “the only observable evidence of this competition is the price change itself. Thus testing for investor response is equivalent to standard tests of asset pricing theory that use return data to look for the elimination of positive net present value investment opportunities” (Berk & van Binsbergen, 2014).

In order to design the right test, in order to directly detect investor responses to positive NPV opportunities, is to use an asset with a fixed price. As the price is fixed, the equilibrium point of the market occurs through volume (quantities) of transactions. Assets with the above characteristics, are mutual funds, as their prices are always fixed, accordingly to the price of its underlying assets, or the “Net Asset Value (NAV)”. In this type of assets, the only way for investors to eliminate any positive NPV investment opportunity, as a result of new information, is by trading mutual funds.

As any trade of mutual funds is easily observable, can be used in order to better understand the way investors are evaluating positive NPV investment opportunities. Specifically, the comparison of the investments, identified by the mutual fund trades, to the investments identified by an asset pricing model under consideration as positive NPV, may help one to understand whether investors are using the specific asset pricing model. So, by observing investors’ preferences in the mutual fund market, there is the ability to obtain valuable information regarding the potential use of an asset pricing model.

2. Greek mutual funds

A mutual fund is a form of an “investment company” whose main purpose is to collect investor savings and invest them in stock markets titles or in other financial markets. . A mutual fund can be described as a “tank” of money collected for the purpose of investing large capitals in a way that facilitates maximum performance. When an investor places his money in mutual funds, essentially entitles the management team of the fund to invest this money according to their analysis aiming at the best financial performance.

There are several different definitions of mutual funds. However, the official definition for Greece is described in article 12 of Law 3283/2004. According to this definition , a mutual fund is a “group of assets consisting of securities, money market means and cash and of which the individual elements are indivisibly more than one shareholders”. A mutual fund’s portfolio is called an asset and is primarily invested in bonds, equities and time deposits.

Investors participate in both profits and losses of the mutual fund proportionally to the amount of capital they had placed in the fund. One could say that a mutual fund is an expression of many people’s joint effort in order to face the risks of an investment. The assurance that they achieve is that everyone the risk that emerges is borne by everyone and even to the extent of its participation each in common capital. But the benefits are similarly distributed with the degree of participation.

The history of mutual funds in Greece so far ca be divided with a small degree of arbitrariness in nine phases. The first phase concerns the period of commencement of the funds up to the end of 1988. During this period, the capital market and especially the Athens Stock Exchange went through a long downward phase, after an impressive extreme rise (1972 - 73). During this period, the mutual funds remained unknown to the general investing public as there were only two of them, which belonged to state-owned banks. Both funds managed funds that amounted to some million of euros. Important events of this first period of mutual funds in Greece, where the a series of reforms by the “Karatza’s Committee” , which led to major changes in the landscape of the Greek capital market.

During the second phase, from the beginning of 1989 until the end of 1990, the first non-state companies were created in order to manage mutual funds. According to the Greek Law, companies of this type are called A.E.D.A.K. which means a S.A. for Managing Mutual Funds. The first of these non-state companies were “Intertrust”, “Alpha”, “European Credit” and “Aspis Welfare” with mainly mutual fund of mixed type. During the same period the results of the institutional reforms in the Capital Market have already been recorded through a significant rise in stock prices in Athens Stock Exchange. Although the small size of the stock market in Greece, the lack of information and the small number of institutional investors, stock prices kept going even higher. During this period, the Greek mutual funds have increased sevenfold, due to the increase of stock prices in Athens Stock Exchange.

The decisive phase of the development of the Mutual Fund institution in Greece was the third phase from the end of 1990 till the end of 1992. During this period, and despite the fact that there was no substantial quantitative spread of the institution in terms of funds, more A.E.D.A.K. companies were created, reaching 13 companies in total, and also 32 new Mutual Funds of different type were created, while the foundations for a future development of the institution were laid.

The next, fourth, phase, which lasted from the beginning of 1993 till the end of 1994, was decisive for the quantitative growth of the institution. During this period Mutual Funds, of all types, have collected a total of 4 billion euros, almost 7 times the funds since 1990.

The fifth phase, from the beginning of 1994 till the end of 1997, there was an “explosion” of Mutual Funds in Greece, to the extent that the companies have more than doubled their managed funds, since the last phase. This led to a significantly reduction of amounts in private deposits. By the end of 1997, Mutual Funds accounted for about 37% of private deposits in Greece, when in 1991 they accounted only for about 1.81% of private deposits. This was a result of the successful previous moves of the Mutual Funds companies, also combined with the downward fall in inflation and deposits rates.

It is worth mentioning that during this period, started their activity in the field professional funds management, a lot of large banks of this time, such as the Ergasias Bank, Ionian Bank, Agricultural Bank of Greece, and General Bank,

resulting in a significant to the end of a trust market structure. By the end of 1997, the “traditional” three big management companies of mutual funds (Alpha, Transnational and Intertrust) owned combined almost a share of 42% of the Mutual Funds market, while between 1992 and 1993 their rates were from almost 70% to 80%. Probably the most important institutional feature of this phase was the nomenclature of the Mutual Funds which limited their arbitrary, till then, description (Mylonas, 1999).

During the sixth phase, from the beginning of 1998 till the beginning of 2000), it was observed a rapid increase of the prices of stock prices and also an impressive equity inflows to Mutual Funds, especially between June and August 1999. This behavior, on behalf of the investors in stocks, led stock Mutual Funds to be accounted for almost 52% of all Mutual Funds capital management (Peratis, 2007).

The entry of Mutual Fund shareholders at the highest points of the Athens Stock Exchange index, combined with their managers choice for investments, almost exclusively, in domestic investments, resulted in the “trapping” of hundreds of thousands of Mutual Funds investors, which in turn led to a significant short-term and medium-term losses.

The seventh phase (early 2000 to March 2003) was identified by the strong downward trend of domestic and international stock markets, there was a reluctance, on behalf of Mutual Funds investors, in withdrawing their funds from Equity Mutual Funds (Peratis, 2007). A particularly important event of this period was the launch of A.E.D.A.K. of insurance companies (end of September 2000), under the name of Mutual Fund of Insurance Organizations, while on 19/11/2002, the first Mutual Fund of I.K.A. (a large domestic insurance organisation) was presented to the investors. The dominant event of this period was a merge of Mutual Funds companies, due the merger of their parent banks (Peratis, 2007).

During the eighth phase (April 2003 to the end of 2007), and despite the strong rise of the Athens Stock Exchange, which was observed after the end of the war conflict in Iraq, no new inflows of capitals, in both Mixed and Equity Mutual Funds, was observed Capital. On the contrary, there was a continuous acquisition trend, and many investors focused on international markets, looking for top rated and better manager’s performances (Peratis, 2007).

An additional, and particularly interesting fact of this period, was the acquisition of Managed Funds of Intertrust A.E.D.A.K. by EFG Management Company Eurobank – Ergasias on November of 2004. The most important event of this phase, was the new Law 3283/2004, concerning the regulatory context of the specific market. A large amount of European legislation elements, were incorporated in the Greek Law, regarding the function of A.E.D.A.K. Among other important decisions, the Law referred to the creation of Mutual Funds traded on Exchange Traded Funds, Mutual Funds investing in others Mutual Funds (Funds and Funds), Funds that replicate the composition Stock Indexes and Bonds and Real Estate Mutual Funds. In addition to the enhancing transparency of the institution management, companies were required to publish two many important indexes, regarding their Funds, for the most comprehensive briefing of their investors, Expense Ratio and Exchange Rate Portfolio (Turnover Ratio) (Philipas, 2010).

During the last phase, which is from 2008, almost till nowadays, a dramatic reduction of more than 60% of the managed funds was observed. The main reason for that, was the uncertainty caused by the global financial crisis, leading investors to more conservative investments, such as time deposits (Philipas, 2010).

3. The value of Mutual Fund

In order every investor know the every day value of his share in a Mutual Fund, the common property is divided in equal parts called *shares*. The number of shares held by each investor also determines the percentage of his participation in the common property of a Mutual Fund. Note that this number of shares is not always an integer. In fact, the non integers shares are rounded in the third decimal place. The total of the common property is called Asset of the Mutual Fund. As mentioned a above, this asset is invested in brokerage and other securities whose value varies daily.

These shares are not traded on the Athens Stock Exchange (A.S.E.) or on the Electronic Secondary Market of Securities (E.S.M.S), as there are not a stocks of a company or bonds but, are a subdivision of the investors' common property. Any investor may sell or buy shares of a Mutual Fund according to the conditions of a stock market (e.g. limit up, limit down etc).

After the trading on the A.S.E. and on the Secondary Market of Securities, of the Bank of Greece, in the accounting office of an A.E.D.A.K. begins the process of valuation of the assets of the Mutual Funds she manages. The exact way of valuation is described in the regulation of each Mutual Fund. The general rule is that for each title (stock, bond etc) , multiply the number of titles in the portfolio of each Mutual Fund at the end of each day, according to the closing price in A.S.E. or in E.S.M.S. Each resulting set is summed up and after subtracting all various expenses incurred by the Mutual Fund, results in its Net Assets. The Net Assets are divided by the number of shares in circulation of the Mutual Fund and this results in an amount which is called, Net Share Value. So the type for the value of each share of a Mutual Fund is

$$\text{Net Share Value} = \frac{\text{Total Net Assets}}{\text{Number of shares} \in \text{circulation}}$$

Net price of a Mutual Fund changes daily because of the change in Net Assets, as well as, the change in the number of shares held and in circulation. It is worth mentioning, that while there was no problem in the evaluation of equities, there was a difficulty in the valuation of bonds over a long period of time of the Mutual Funds, in the Greek Market. But after the modernization of the secondary market of

intangible securities, and the daily valuation of bonds and Greek Treasury Bills, have overcome this problem.

Of course after this daily valuation of the titles, it is becoming increasingly difficult to offer Mutual Funds products with a pre-estimated and “guaranteed” performance, which in practice tend to eliminate, as the maximum investment time has already been significantly reduced and does not exceed a period of 1 -2 months.

The expenses incurred in a Mutual Fund and reported are:

- Any fees of A.E.D.A.K., the Custodian, and the Chartered Accountants for the control of the Mutual Fund.
- Mailing costs to shareholders.
- The costs of issuing mandatory prospectuses.
- All expenses related to A.E.D.A.K.'s information on the prices of securities.
- The costs of transferring funds to and from abroad.
- Interest on loans.
- The costs of printing and distributing securities to shareholders if they are requested.
- Broker commissions and all brokerage and banking expenses
- Contributions and fees paid to the Capital Market Commission.
- Taxes on the assets of the Mutual Fund.
- All other expenses incurred on behalf of the Mutual Fund or of shareholders after the approval by the Securities and Exchange Commission.

It is clarified that an A.E.D.A.K. apart from the commission it receives by the purchase or redemption of Mutual Funds shares, receives a management fee of up to 2% per year on daily valuations of the Mutual Fund's Net Assets. Any new shareholder buys shares at a purchase price, while the existing shareholders buy them at the redemption price. These changes in the number of shares are made in such a way that they have none impact on the share price. When an A.E.D.A.K. collects (through Custodian) money from new shareholders purchases, for account of both new and existing shareholders, ensures that:

- The value of participation of existing shareholders remains the same,

- The total assets of the Mutual Fund includes the new purchases,
- Create as many new shares as the new one capital entered into the common property of the Mutual Fund.

All of the above occurs because when an A.E.D.A.K. buys shares, cancels shares acquired during the inflow of new capitals, creates new shares. In contrary to the shares of Anonymous Portfolio Investment Companies, which are purchased and are sold among investors in A.S.E., the shares of the Mutual Funds are canceled and news are issued by A.E.D.A.K.

4. Basic concepts

O.S.E.K.A. are Collective Investment Organizations in Securities, as well as mutual funds management companies. The purpose of O.S.E.K.A.s is the collective investment of pooled capital from the public (in the specific case primarily investors), securities or and other liquid financial instruments in accordance with Law 4099/2012. These organizations are usually in the form of mutual funds under managing an investment management company (Noulas, 2016).

4.1. Mutual Fund Assets

The asset of a fund is its total value. That is, securities and cash, which is then invested in financial products, such as bonds, equities or even timeframes deposits. Then the fund's assets are divided into shares of equal value owned by the shareholders, in essence investors. It is this division that creates the so-called shares of Mutual Fund (Noulas, 2016).

4.2. Investment and Management Companies

When referring to an Investment and Management Company we mean the company which its sole purpose is to manage collective investment undertakings (O.S.E.C.A.). Their creation requires the necessary authorization from the competent authorities of the respective country. The competent authority of each country, once located within the European Union should inform the European Authority Securities and Markets and the European Commission.

In Greece, the competent authority is the Securities and Exchange Commission and as such management company is designated to be Mutual Management Company Limited Capital (A.E.D.A.K.). The Mutual Fund Management Company is responsible for (Noulas, 2016):

- investment management,
- the O.S.E.K.A.'s administration, which includes services such as legal, accounting, customer service, and more actions such as valuation of the portfolio's assets, calculation of share value, issue and redemption,
- advertising and promoting collective portfolios of their disposal,

4.3. Share capital of A.E.D.A.K.

The share capital of an A.E.D.A.K., whose constituent shares they are registered and do not trade in the stock market, is paid in full in cash, with a minimum amount of capital five hundred thousand (500,000) euros. When the value of A.E.D.A.K.'s portfolios is greater than two hundred and fifty million (250,000,000) euros, then the A.E.D.A.K. is obliged to raise its own funds. The calculation of its amount equity increase corresponds to 0.02% multiplied by the amount that exceeds the value of two hundred and fifty million euros (Noulas, 2016).

4.4. A.E.D.A.K.'s portfolios

An AEDAK has the right not to pay up to and fifty percent (50%) of the amount of this increase provided they will provide the Securities and Exchange Commission with an amount equal to the security in which will report the deposit of an increase in its own funds. Responsible for issuing such a guarantee is often either a credit institution or an insurance company.

A.E.D.A.K.'s portfolios are divided into the following portfolios:

- Mutual funds managed by the company, as well as those entrusted to third parties for their management. They are not counted as assigned to management.
- The investment firms entrusted with the management.
- Other collective investment undertakings managed by the company, but also those it has given to third parties for management. Also, exceptions are those entrusted to the company.

An A.E.D.A.K.'s own funds cannot be less than the amounts mentioned above, therefore has the obligation to lodge with Capital Market Commission after all its financial statements published. If the own funds are below the above amounts, then the Securities and Exchange Commission has the option to set a deadline for the A.E.D.A.K. in order to adjust its own funds, otherwise it may move at a pause of one or even and all of its activities. An A.E.D.A.K. is obliged to follow the decisions of the Securities and Exchange Commission for its entire duration of its operation (Noulas, 2016).

4.5. O.S.E.K.A.'s Shares

O.S.E.K.A.'s shares may be divided into different categories, which provide different rights, especially in matters such as disposal and takeover commissions, the category of investors in which addressed, the remuneration of the management company. Shares in the same category provide to their shareholders equal rights. Any costs incurred, when issuing a new share class, is taken into account for the calculation of the share price of the new category. The value of the share is calculated separately for each share class.

For the acquisition of shares of a mutual fund by an investor requires:

- An application from the shareholder to be, to the management company (A.E.D.A.K.) in a manner determined by the company in question, so that identification of the candidate's shareholder data is ensured.
- To Obtain the leaflet of “Basic Investor Information”.
- Pay to the depositary all the value of shares in cash or securities, as the company manages accepts them.

The management company may distribute its shares free of charge O.S.E.K.A.'s to its shareholders, subject to approval by the Securities and Exchange Commission. This license is not required in cases where the management company decides to reinvest the dividend into O.S.E.K.A shares.

The disposal price of the O.S.E.K.A.'s units shall be determined on the basis of the share value on the day of application for the acquisition of shares, provided that it has been paid in full to the depositary of shares. The management company may own O.S.E.K.A. shares directly through credit institutions, management companies, insurance companies, investment services companies and investment brokerage companies.

The above bodies are waiting for some information from the candidate shareholders. This information has to do with his knowledge, experience and risk that they are prepared to take on any potential shareholder regarding the investment in specific O.S.E.K.A., in order to evaluate whether the investment in the Mutual Fund is the optimal one. The same procedure applies to existing ones shareholders who wish to

make new investments, as long as it has changed some of the information they have already provided.

Upon completion assessment and, if judged, on the basis of the information received, in accordance with the above, that this O.S.E.K.A. is not suitable for the potential shareholder, the company must warn him. This warning can also be given in standard form. In cases where the update has judged incomplete on the basis of the information provided, there is again information to the shareholders, that the result of the evaluation is not enough to can decide whether this O.S.E.K.A. is suitable for investment or not. Also, this warning may be provided in standard form.

The credit institutions, mentioned above, may hold shares of O.S.E.K.A. without having received the necessary information mentioned above, provided that the units of the O.S.E.K.A. concerned are subsequently provided at the initiative of the unit-holder or potential-unit holder, provided that each shareholder has been given written notice of why they do not are required to assess whether the O.S.E.K.A. concerned is appropriate or not. Acceptance or rejection of applications for participation in a Mutual Fund, is decided by the company management in accordance with the terms of the Regulation (Noulas, 2016).

4.6. O.S.E.K.A.'s Investment Limits

Based on current legislation, O.S.E.K.A. investment opportunities are under some certain restrictions. The main ones are (Noulas, 2016):

- Investment up to ten percent (10%) of net O.S.E.K.A.'s assets, securities and other money market investments of the same publisher. This percentage may increase up to thirty five percent (35%) of net assets when securities or money market investments have been issued or guaranteed by a Member State or by third countries or by a public international organization in which one or more than one Member State.
- The ability to invest up to forty percent (40%) of the net mutual fund assets in securities and other money market investment of the same issuers, each one of them has invested a percentage greater than five percent (5%) of net assets.
- It is possible to invest up to twenty-five percent (25%) of it's O.S.E.K.A's assets in bonds issued by a credit institution, on the basis of which it is a Member State under public oversight for the protection of bondholders.

O.S.E.K.A's cumulative investments on bonds with a issuer of more than five percent (5%), must not exceed eighty percent (80%) of the net assets, maintaining a twenty-five percent limit (25%) per publisher.

- It is prohibited to place more than twenty percent (20%) of the net assets of a Mutual Fund, in deposits located at same credit institution.

4.6. Private information

One of the main questions is how private information about a stock, a bond, a company can affect their price. If an investor knew that a company had fired the previous sales manager and hired a new one, this would affect the value of the asset. Would it be a positive or a negative move? Therefore, it is not enough to have information, but one must also translate it in the right way. On the other hand, when the information is finally leaked to the whole market, this will lead to changes in supply and demand, which in turn will adjust the new market price. So, in conclusion, the information is the trigger for the price change. A second component is the cost of this information in the shortest possible time so that it can be exploited by investors. But the cost of information in the real world is very high and unprofitable for small and medium-sized investors. As a result, asymmetric information is created, and it is very difficult to determine who ultimately benefits from it. To understand this, let's assume that some people have information about the value of a share. These people will take the necessary steps to take advantage of it. When the event occurs and is disclosed to all investors this will affect the price at the rate expected by the informed. In other words, the question is whether the cost of the information was worth it compared to the result. Finally, Berk and van Binsbergen (2013) reported that investors have access to different types of information and this creates different opportunities for these investors. As a result, while there is information that is valid, the expected result does not occur, and thus investors do not benefit from the information. But not wanting to get lost in the generality, and giving an epilogue to the specific issue, for the conduct of the work we will assume that there is asymmetric information for the reasons mentioned earlier. However, when conducting results from the models in the calculations, the information costs will not be calculated, as this can only have a negative effect on the present analysis.

5. Categories of Mutual Funds

5.1. Money Market Mutual Funds

Money Market Mutual Funds primarily invest in high quality deposits held by credit institutions and also other money market products. Their composition may not contain shares. The managers of the specific category of Mutual Funds should invest sixty-five percent (65%) of assets in the money market and then in fixed securities income. This category of funds guarantee the smallest risk, but also provide the least return, compared to the rest categories of Mutual Funds.

Their performance depends on interest rates because they are trying to achieve returns that are commensurate with money market returns. Investing in this category of mutual funds aims at investors with short-term investment horizon, usually up to one year. The specific category of Mutual Fund is the safest one and aims mainly to conservative investors who are allowed to liquidate at low cost or obtain higher yields than bank deposits (Noulas, 2016).

5.2. Bond Mutual Funds

Bond securities invest at least sixty-five percent (65%) of its portfolio in bonds. These bonds may be issued by either a State or by other companies. The percentage invested in equities should not exceed ten percent (10%). Also this category of Mutual Funds aims at conservative investors, that is, investor who are not prepared to take a big risk in return for a greater performance (Noulas, 2016).

5.3. Equity Mutual Funds

In order for a Mutual Fund characterized as an Equity Mutual Fund, must invest at least sixty-five percent (65%) of net assets, on a variety of companies shares. Equity funds are characterized with the highest risk of all Mutual Funds, and that is why they are preferred by risk-averse investors, who are expecting to receive a greater performance in return for the risk they take. The performance of a General Index of Stock Market prices largely determines the value of the share capital and portfolio shares which and therefore these funds are characterized by a great variation in their value. Because stock prices are affected day by day, depending on the demand and supply in the securities market, the net asset value of this category of assets is also affected daily.

In Greece, A.E.D.A.K.s should keep, by the end of every quarter of a year, at least sixty-five percent (65%) of its assets. In cases of where this percentage deviates by ten percent (10%) or more, the company should report it within ten (10) days of the end of the quarter to the shareholders and the Securities and Exchange Commission. It should also present the reason that led the company to this divergence and also any measures that will take. In cases where this percentage exceeds twenty percent (20%), this fact should be referred within the next 24 hours from the company to the Capital Market Commission, as well as the reasons for this derogation (Noulas, 2016).

5.4. Gross Mutual Funds

These funds may be described as a “mixed” investment products, as they consist of investments in bonds, time deposits and shares as well. That is why these category of Funds are characterized by high flexibility, in investment, and also ensure greater flexibility odds. Particularly, this category invests in a percentage, at least ten percent (10%) of equity in stocks and also at least ten percent (10%) of their net assets in debt securities, such as bonds. The maximum investment rate in each of the above mentioned financial products, such as shares, bonds, deposits etc., may not exceed sixty-five percent (65%) of the net value of its assets. Gross Mutual Funds are considered suitable for investors whose investment profile does not fit to the big risk, that equity shares have. But at the same time these investors care for taking advantage of a positive market performance, which means a higher return on equity. While in cases where the Stock Market is moving negatively, which leads to smaller equity returns, the losses of investors in this category are smaller than those of equity Mutual Funds (Noulas, 2016).

5.5. Funds of Funds

Mutual funds of this category invest their assets in units of Mutual Funds of the same or another company or in shares of others collective investment undertakings. Up to twenty percent can be invested in each mutual fund (20%) of the fund's assets. Mutual Fund of this category are divided into different categories in terms of how its portfolio is configured. That is to say, like Funds of Funds, Bonds, Gross or Equity Mutual Funds.

5.6. Investors' profile and risk

It is obvious that each investor has different characteristics and profile, which is determined by the size of their available funds for investment funds, his age and other demographics, his needs, but mostly by his financial goals (Philipas, 1999). The characteristics of each are changing over time, reflecting on some degree, the changes that occur in various phases of his life.

Each Mutual Fund is managed independently even if a company manages other funds too. The independent management of a Fund, lies in the fact that investing decisions are strongly related to the assets of the Fund. As seen above, there is a large variety of Mutual Funds, in Greek market, and this is due to the variety of investment policy, in order to fulfill the different needs of investors with different profiles. Investors are being informed about the policy of each fund through newsletters

issued by the companies whose purpose is to inform public who want to become to buy shares in Mutual Funds (Mylonas, 1999).

The key “ingredient” of a successful financial product, is its ability to satisfy specific needs of an investor. This ability of each financial product, is related to a number of features that make it unique. Even a same, basic, financial product, comes in a variety, in order to satisfy the specific needs of, as many as possible, investors. This is the main reason, that justifies the existence of a variety of Funds' categories (Karathanassis, 1992). The basic criterion of the distinction, among different Mutual Funds, is the differences in investment policy, and the investment of assets in different types of securities (Karathanassis, 1992).

In, probably the most developed market, the market of the United States of America, Mutual Funds are divided in two main categories.

- In “Charge Mutual Funds”, where the share price is equal to the net share price plus a percentage that may reach 8% of their net price.
- In “Non-Charge Mutual Funds”, where there is no commission for a new entry, resulting in the shares being sold at a net price.

As for the Greek market, there is no such distinction among the Mutual Funds, but they are classified according to their geographical distribution of assets, as “Domestic Mutual Funds”, which invest in deposits and other money market products and/or bonds or equities issued by a company which is registered in Greece. On the contrary, “Foreign Mutual Funds”, mostly invest in deposits and in money market products and/or bonds or equities issued by a company which is registered in a foreign country.

It is obvious that any investment is related to risk. The risk expresses the uncertainty that the performance of a financial product will not be equal to the expected performance. If there was no uncertainty there would be no risk. The main characteristics of financial risk, are time and volatility (Syropoulos, 2008).

The value of an investment in Mutual Funds, can be fluctuated and even returned to investors less than their initial investment, as a result of the risks involved in investing in Mutual Funds. These risks are related to its type, its investment policy and also the duration of the investment (Syropoulos, 2008).

Because of that, investors are becoming increasingly demanding about the quality of any information regarding the evaluation characteristics of a Mutual Fund’s assets investment. The Greek State and the related Laws requires management companies to warn shareholders in all kinds of publications, announcements or advertisements that “investments in Mutual funds have no guaranteed returns and past returns do not guarantee future returns”. Although, one of the main advantages of Mutual Funds, is the minimization of financial, risk through diversification, risk cannot be completely eliminated, and as a result, any investment in Mutual Funds, is also exposed to risks.

The main risks of a Mutual Fund portfolio are (Philipas, 2010):

- **Market Risk:** It is the risk of falling market price levels, of all or some of the Fund’s assets and capital and the consequent impact on the price of the Mutual Fund shares.
- **Credit Risk:** Is the risk of default part of a securities issuer or a counterparty in the course of their performance trading.
- **Settlement risk:** It is the risk of not completing properly a settlement of transactions on financial products, especially if a counterparty does not pay or deliver securities in time fulfilling its obligations.

- Liquidity risk: It is the risk of inability to liquidate a Fund's assets in a timely manner and at a reasonable price.
- Currency risk: It is the risk that comes from the different type of currency that each Fund may invest in.
- Custodian Risk: It is the risk of losing assets due to acts or omissions or insolvency of the depositary.
- Spread Risk: This is the risk that results from limited spreading of the Fund's assets.
- Performance Risk: It is related to the fluctuation of the performance of the Fund's assets.
- Inflation Risk: This the risk is associated with reducing the yield of the Fund at constant prices due to the rise of the general consumer price index.
- State Risk: This kind of risk is related to the institutional and regulatory framework of a State.

Any management company is obliged to compile a newsletter, which includes all those elements that will help investors to shape a documented view of the investment, as well as, the risks involved in it. The Information Bulletin, in accordance with the Commission's Decision 17/663 / 20.12.2012 of the Capital Market and its amendment (Decision 18/775 / 31.1.17), includes all information on the Mutul Fund, such as its name, legal nature of shares, valuation rules, investment purpose, investment policy, information on the fund management company and the Custodian, as well as other information on redemption processes, past yields and the characteristics of the average investor to whom it is addressed, including an appendix to the fund regulation unless the shareholder may request that to be sent or contacted at who will have access to it.

The Annual and Semi-Annual Report are in accordance with Article 4 of Decision 17/633 / 20.12.2012 of the Securities and Exchange Commission, and contains at least the following information:

- Details of the management company and the Custodian
- Statement of assets and liabilities
- The number of existing shares
- The net share price

- Information on the Fund's assets
- Comparative table of three final uses
- Obligations arising from transactions under section 60 of Law 4099/2012
- Other information such as remuneration, number of beneficiaries, description of the way in which benefits and earnings are calculated, etc.
- Information on management and custodian fees, on others charges and taxes, information on changing their number and value shares as well as all changes that took place and affected the assets and the liabilities of the O.S.E.K.A.S's.

Both Annual and Semiannual Reports, are is audited by certified auditors, whose observations are annexed in their entirety to the annual and Semi-Annual report.

Other key investor information includes any appropriate information regarding the essential features of the Mutual Fund (par. 2, article 80, Law 4099/2012) and provided to investors, in such a form and arrangement, as for them to be able to understand the nature and risks of the investment product offered and make the appropriate investment decision with full knowledge.

The basic information to be provided about a Mutual Fund is:

- the name of the fund,
- a brief description of the investment purpose and investment policy,
- a presentation of past performance, or where appropriate, performance scenarios,
- costs, commissions and charges,
- the risk-return relationship of the investment as well as its warning risks arising from this investment.

All of the above should be understandable to investors and without reference in other documents and in the form, content and layout as specified in the decision 12/638 / 11.2.2013 of the Capital Market Commission.

Finally, the place and the way to access additional information on the proposed investment, as well as, the place and way of accessing the Information Bulletin and in the Annual and Semi-Annual Reports. A key feature of “Key Investor Information” is also that they must be presented in a single format and in plain language without use technical terms so that they are understandable and easily comparable.

5.7. Advantages and Disadvantages of Mutual Funds

The main advantages of Mutual Funds are (Vasiliou, 2008):

- Professional management. The success of a Mutual Fund depends, mostly on the ability of their administrators. Mutual Funds, are managed by qualified managers, whose performance is judged by the amount of profits they generate. Managers that don't perform well, producing the expected profits, often lose their job. Companies that manage mutual funds hire full managers who are responsible for conducting the required research and financial analysis, needed to be carried out in order to select the right one mixture of investment values that will make up the Mutual Fund portfolio. Managers' obligations also include decisions about buying and selling securities, diversification of financial products, return on investment etc.
- Differentiation. Mutual funds invest in a wide range of securities. This reduces investment risk, but also further reduces the effect of a possible decline in the value of one placement of the sub-fund. Sub-fund investors may benefit from the techniques diversification that are usually only available to the wealthy enough investors, who have the ability to place their funds in important positions in one wide variety of titles.
- Low Cost. Investing in mutual funds means reducing, or even eliminating, costs of buying and selling individual titles needed to create a portfolio. Supply costs can be high, especially when a portfolio involves frequent transactions. Instead, the owner of shares of a Mutual Fund, is not burdened by the additional costs of a portfolio that is related to financial analysis, investment advice, monitoring of financial products, as all these processes are executed by the fund managers. Mutual Funds, because of the high volume of transactions and the great bargaining power they have, through economies of scale, has the ability to achieve better terms of purchase and sale compared to those of an individual investor. Lower transaction costs may ultimately translate into better performance of investments.
- Comfort and flexibility. The investor owns the titles of an investment and not many, enjoying it as well as the benefits of a diversified portfolio and a wide

range of services. The managers of the Sub-Fund decide on which securities, bonds etc. to invest and an investor is reaping the returns of his shares without doing anything. It's easy for an investor to buy and sell share of Mutual Funds, either using internet or simply with a phone call.

- Fast and personalized service. Most Mutual Funds now offer informative websites and a number of services for a direct access of an investor to his account information. Also with a phone call, an investor may contact with a trained expert, or a fund manager who can provide useful information on his investment options, helping him to buy or sell shares.
- Ease of Investment. An investor has the ability to open or add new investments to his account and make transactions, through the administrator, via email, phone or his bank. He can also, in some countries, plan for an automatic monthly investment in shares through the approval of electronic transfers amounts from his bank account in any quantity and on a date that will choose.
- Liquidity. Liquidity refers to the speed, but also the ease, with which a financial product (eg stock, bond, mutual fund) can be sold without losing part of its value, while at the same time being an investment asset in financial products. Mutual Funds offer direct liquidity to investors because of the opportunity, allowing them to liquidate their shares at any time they wish to. In periods of uncertainty the liquidity of the funds is more secured than by individual shares.
- Life Cycle Design. It is possible to link the investment based on the planning of the future individual and family needs. Such investments can include development of Mutual Funds, in order to meet future needs, such as overseas education, or in order to provide income in order to cover future retirement, or other future needs.
- Market Cycle Design. For investors who understand how to actively manage their portfolio, Mutual Funds investments may vary as market conditions change. Investments can be changed initially through the placement on an equity capital when the market is on the upward path and then to invest in Mutual Fund management, or take any decision in order to ensure that investments meet the needs in changing market climates. But it is rather

difficult to predict the trend of a market at any time, so the safest way is to follow a long term, diversified course of investment.

- **Investors Relations.** Shareholders receive regular reports from the Management Companies as well as details of their transactions. The current net asset value of their shares (the price at which they can buy or redeem them), is displayed daily based on the relevant columns of daily financial newspapers, or in financial sites. An investor can also get pricing and performance results for all Mutual Funds through a site, or even by communicating with the Management Company.
- **Dividend Options.** It is possible for an investor to receive cash dividends or reinvest them in the fund. This makes a significant contribution to the long-term results of the investment. Most Funds allowed their investor to choose to receive his dividends in cash or to reinvest their profits.
- **Ease of keeping records.** Owning an independent portfolio of stocks, bonds and other securities, obliges an investor to have the ability to keep personal purchasing records, regarding sales, dividends, interest, and short-term and long-term profits, or damages. The funds provide confirmation of the transactions in all necessary forms, that will help an investor to keep track of his investments.
- **Storage.** Holding shares of several different shares through the participation in a mutual fund capital, means that an investor doesn't have to worry about keeping titles on lockers. You also do not even have to hold mutual fund titles, as all A.E.D.A.K.'s keeps an investor account in its books and sends him periodicals statements tracking all transactions.
- **Retirement and long-term plans.** Mutual Funds are suitable for medium to long-term implementation investment objectives, such as the use of the investment as a pension account; or as a study account.
- **Online Services.** Internet offers a fast and convenient way for investors to have access to their financial information. A number of services are available online, including direct access to the account, its movements, as well as the immediate redemption or disposal of live shares.

Collective investments, such as Mutual Funds, in addition to the advantages, which were presented above, have some disadvantages over the individual investments, some of which are (Vassiliou, 2008):

- High commission and redemption fees, depending on its type mutual fund and the timing of the takeover bid. Also, high management and custodial fees are one of their main disadvantages.
- The high diversification found in some Mutual Funds, eliminates the unsystematic risk by providing managers with required security, on the other hand, the returns of such a fund are extremely low, according to the prices of the market, not providing the investor with above return that you would expect by investing in a Mutual Fund.
- Active management of a fund can lead to high costs, especially when a manager continually redistributes its assets for the purpose of a better composition results in high brokerage costs which are passed on to the shareholders.
- Lack of control can also be considered a disadvantage as the investor is not asked about investment policies and fund choices. Of course, this applies to someone who has the knowledge, experience and time to manage in an active and effective way his individual investment options, otherwise, for the most of the investors, a collective investment is the ideal choice.
- The lower possibility of predicting income is also considered a disadvantage, a bond investor knows exactly what to get if he hold them to maturity as opposed to their bond funds whose income will depend on the managers' investment policies (Pozen & Hamacher, 2011).

Generally, mutual funds, are an alternative way of indirect investment by individual investors. This is in contrast to their placements with banks and other financial intermediaries. In addition, they provide opportunities for diversification through the formation of portfolios, achieving dispersion of investments and reduction of investment risk. In particular, they invest money in many different types of Financial Products with similar quality characteristics and prospects of returns and risks. This reduces fluctuations and minimizes the risk borne by investors. In addition, they have a social character, as due to divisibility it is possible to buy shares, participate and

gain the benefits of mutual funds from small investors with relatively small amounts of money and without sufficient experience or time to continuously monitor market developments and returns. Funds are managed through detailed accounting and systematic publication of reports, and by reinvesting dividends and interest. Also, the management of funds is transparent and governed by a strict legal framework. They are equipped with modern technological equipment, organizational structure and are staffed by highly qualified people. The investor who participates in a mutual fund, essentially entrusts the management of his capital to a specialized investment company, with the appropriate experience and know-how. The Funds continuously, systematically monitor the developments and take advantage of the investment opportunities, in order to be a stabilizing factor in the developments and to give better returns with as little risk as possible for the investors they represent. The placement of a part of the micro-investors' savings in mutual funds, provides gradual experience and maturity, so that with the accumulated know-how and investment culture, they can later become independent modern investors. Thanks to the low required capital and the possibilities of flexibility from the investors at any time, the Funds offer great flexibility and immediate liquidity. Thus, investors have the opportunity to buy shares directly from a mutual fund, or indirectly through banks, insurance companies, etc. Due to the facilitation of the wider entry of a large number of savers, the Funds have a catalytic role in increasing the depth and breadth of the stock exchanges and the capital markets, acting as stabilizers in the developments, in the further development and in the efficiency of the financial markets. By conducting a large volume of transactions, the Funds have increased bargaining power through economies of scale and can achieve better terms in buying and selling securities than can be achieved by an individual investor and burden the beneficiaries with small commissions.

6. Asset Pricing Models

The strong need and desire of individuals to be able to choose those assets that will give them the maximum return with the least risk, has prompted many economists to formulate a theory that will aim to formulate the best portfolios. From time immemorial, the desire of individuals to predict future prices in order to benefit from them was evident. In the book "Politics of Aristotle" it is mentioned that Thales the Milesian predicts the increase of the harvest for the next year. In this way he made a deal for the future where he would buy at that time the rights to use the mills. Therefore, it becomes obvious that if we have some information today there is a possibility to benefit from the price of a good tomorrow. So even today investors are trying to choose or formulate a model that has a reliable predictability for the future. But before continuing the analysis for each of the models of this work, it is important to say that there are two basic limitations for each individual. One is the disposable income he holds, while the other is the wealth of the individual. These factors are directly related to his private consumption. Initially it is useful to emphasize that each person wants to maximize their private consumption. Thus the creation of each of the asset pricing models for its implementation uses a utility function which has as components components wealth (which includes income) and private consumption. The difference in the models will be understood from the given section both in terms of the utility function they use to run their models, and the way in which they calculate the returns. This paper examines both dynamic models and statistics in order to be able to carry out as representative results as possible for the most model that governs its markets.

6.1. Asset Pricing Models Sharpe, Mossin, Lintner

K2.1 Asset pricing model of During the determination of the cost of capital for the use of equity of a company through deductions or retained earnings, the Capital Asset Pricing Model (CAPM) is used, among others. This model sets out the way in which the various assets are valued by the market. The most important consequence of this model is that a link is made between the expected return on an asset and a risk size of the asset, which is defined as the beta coefficient. This ratio expresses the risk as it arises from the fluctuation of a securities with the market portfolio. Sharpe's asset pricing model is widely known for its usability as well as its predictive power. A key factor that catalyzes this model to the top of asset pricing models is defined as the way in which the measure is calculated as well as the expected return on the securities. The Asset Valuation Model was developed by Nobel laureate William F. Sharpe in 1964. Later, the works of John Lintner (1965) and Jan Mossin (1966) also played a key role in shaping the final Model. report as a continuation of Markowitz's Medium-Fluctuation model. However, their main difference lies in the fact that the Markowitz model refers to the existence of a set of effective portfolios for which the expected return is calculated as well as the risk that each investor will take in relation to them. As mentioned above, William F. Sharpe, John Lintner and Jan Mossin, as its successors, in the asset pricing model they created incorporated the ability of each investor to be able to configure his portfolio according to his subjective forecasts for Buy. Important factors regarding the investor's market forecasts are the various sources of information that each investor may possess. The basic conditions according to which the Asset Valuation Model applies are the following:

1. Investors are trying to maximize their usefulness (rational) and will choose between portfolios, based on risk and expected return.
2. All investors have the opportunity to lend and borrow unrestricted funds at interest-free market risk.
3. All investors have the same estimates for expected returns, fluctuations and co-fluctuations between stock returns. So there is homogeneity in their expectations.
4. There are no transaction costs, the securities are fully and immediately liquid and the assets are fully divisible.

5. There is no taxation.
6. Prices are given exogenously to everyone and no one individually or in groups can influence them.
7. The quantities of the assets are specified.
8. Inflation is considered zero, interest rates and capital markets are in equilibrium.

Under the above conditions, a key conclusion that emerges from Sharpe is "that the market is perfect and there are no barriers to investment. Therefore, there is a controlled environment with a central equilibrium point on the basis of which the deviations are calculated. In the CAPM approach, the expected return and the risk of returns (standard deviation) are linear combinations. Therefore, it is particularly easy to identify those points where given the risk the expected return is maximized, while this relationship can be studied and vice versa, that is, given the desired return the level of risk is minimized. For the sake of truth, it makes it possible to represent all possible combinations of risk and return with a straight CML (Capital Market Line). Sharpe Base The portfolios that are placed on this line are defined as effective portfolios and are alternative risk-return combinations (where the market portfolio is combined with risk-free return). All other portfolios are placed below the Capital Market line." (1964) At this point it is important to consider the risk categories as attributed by Sharpe. He typically argues that risk is divided into two parts, the differentiable and the non-differentiable. The differentiable or otherwise known as non-systematic risk can be reduced or even eliminated by modifying the investor's portfolio. For example, investors can either invest in many different stocks or buy mutual funds. Investors have the opportunity to share the risk by composing portfolios with many different stocks. Where different shares are defined those which are in different economic sectors. In addition, they include mutual funds in their portfolios in order to diversify the risk to an even greater degree.

Undifferentiated or systemic risk is directly related to market risk. It is a reflection of the general conditions prevailing in the capital markets and the factors that affect them. 'For example political, economic and social events which can lead to downward trends in the stock market. Investors in this case seek a risk premium (risk premium), which covers them against the systemic risk arising from the maintenance of a

portfolio. It follows from the above that the required return on any investment can be captured through the relationship:

$$\text{Required return} = \text{Risk-free return} + \text{Reward for the risk taken}$$

According to the assumptions of the Asset Valuation Model, the market portfolio M has the smallest deviation. The algebraic expression of the previous relation with the use of the factor β as a measure of the riskiness of a security is expressed as follows:

$$r_i = r_f + (r_M - r_f)\beta_i$$

In the above formula

- r_i : The required yield of the bond i
- r_f : The yield of the risk-free bond (risk free rate)
- r_M : The expected performance of the entire market
- $(r_M - r_f)$: The historical instrument of market risk premium
- β_i : The systemic risk factor β of bond i , where

$$\beta_i = \frac{\sigma_{i,m}}{\sigma_m^2}$$

- $\sigma_{i,m}$: the coefficient of the bond i with the portfolio m (cov (r_i , r_M)), and
- σ_m^2 : the standard deviation of the portfolio m . Practically, factor β measures the sensitivity of the return on assets to changes in the return on the entire market.

The equation

$$r_i = r_f + (r_M - r_f)\beta_i$$

is also called the SML (Security Market Line) and captures the risk-return ratio of individual assets (ie inefficient portfolios). As can be seen in the diagram below, the linear function has an increasing slope. This representation automatically leads to the conclusion that the higher the systemic risk that the investor will take, the higher will be the price that the beta rate will receive, while at the same time the expected returns of the securities will be higher.

According to William F. Sharpe, "the risk market of each securities is measurable through the tendency to behave like the whole market." The simplest way to estimate the coefficient β_i is to find its historical value, which results from the simple linear regression of the past returns r_i of the stock i to the past returns of the market r_M

$$r_i = a_i + \beta_i r_M + \varepsilon_i$$

Where ε_i are the errors under the CAPM assumptions that express the specific risk of the stock due to random factors that concern exclusively the company. The line of regression, also called the characteristic line, is estimated by the least squares method.

The coefficient β_i of the entire portfolio is derived from the weighted average of the coefficients β_i where w_i is the percentage of the portfolio that is invested in the i share and is calculated through the ratio

$$w_i = \frac{n_i p_i}{\sum n_i p_i} * 100$$

In the above formula

- n_i = the number of securities in the portfolio and
- p_i = their market value. Since the b-rate of the entire market portfolio is by definition equal to one, securities with a $b > 1$ ratio are classified as "aggressive" while securities with a $b < 1$ ratio are classified as "defensive". Historical data are used to estimate the average market risk premium, ie the difference ($r_M - r_{fr}$). In the US, for example, Ibbotson Associates recommends using government bonds as a risk-free security. For the period 1926-2001 they estimated that the arithmetic mean of the annual risk reward of common stock in relation to government bonds of medium maturity was 7.2%, while the corresponding geometric mean was 5.4%.

6.2. Fama and French asset pricing model

It was observed by Fama and French that in addition to the common sizes used by asset pricing models until then, there were other factors that could affect asset returns.

Briefly, they analyzed that the returns on assets can be determined by the variables size-size (ME, stock market times number of shares), leverage, earnings per share and book-to-market equity (the ratio of the book value of a firm's common stock, BE, to its market value, ME). Their model is based on a cross-section regression that takes all of the above factors into account to calculate an average return per share. One of the most important findings they made was the fact that when each term of these variables is studied separately, it gives the investor a little information about the average return but with explanatory power. However, the combination of these elements such as size (ME) and book-to-market equity (BE / ME) seems to absorb some of the P / E leverage in calculating the average yield. The results threshold is defined as the fact that two empirical determinants, size and book to market equity, are fully satisfactory to derive results in a cross section analysis of average stock returns. The Fama and French model is carried out in the three basic ways according to his paper (1992): Examining the total returns of assets that need explanation. The only assets examined by Fama and French (1992) are common stock. They also argued that if markets are to be integrated, this model should also be able to meet bond yields. In addition, it examines a set of variables used to interpret yields. These variables are defined as size-size and book-to-market in Fama and French (1992) and refer to stocks. In addition, their list of structural variables has been expanded to play a role in bond yields. The purpose of this approach is to examine whether the variables that are important in bond yields play a role in explaining stock returns and vice versa. They are based on the idea that if markets are integrated, there is likely to be some interaction between bond and stock repurchase processes. Perhaps most important is the approach to controlling asset pricing models. Fama and French (1992) use the regressions of Fama and MacBeth (1973): the cross-section of stock returns falls into variables that are supposed to interpret average returns. It would not be easy to add bonds to cross-sectional regressions as explanatory variables, such as market size and share capital, are not obviously relevant to government and corporate bonds. Fama and French argue that the two reasons that make the model created by them effective are: The main pillar of the effectiveness of their model is based on its rationality. Variables that are related to average returns, such as size and book-to-market equity should be represented by the common risk factor sensitivity to returns. In particular, the slope and R_2 show that portfolios which mimic risk factors correlate

with the variables size and BE / ME which involve the terms interpreted by stocks and bonds.

Wanting to highlight the fact that the correlation between the returns of other variables provides investors with important information, time-series regression uses excess returns from monthly returns of stocks or bonds having done the risk-free withdrawal of the investment which is usually the one -month Treasury bill rate also known as R_f as a dependent variable or as explanatory variables in zero-risk portfolio returns. Since such regressions occur, a well-defined asset pricing model produces fixed terms that are non-zero Merton (1973). A simple performance measurement is provided by the estimated variables which perform a formal test of how well the different combinations of factors explain the average performance in a cross-section regression. In addition, asset-pricing models are criticized based on excess-return rates that require

The equation of the Fama and French model is the below:

$$R_{it}^B = R_f + \beta_i^{mkt} MKT_t + \beta_i^{smb} SMB_t + \beta_i^{hml} HML_t + a$$

where:

- r : It is the return on the asset MKT_t
- t : Is the market return minus the risk-free return ($R_m - R_f$)
- SMB : It is the Small market capitalization Minus Big
- HML : It is the High book-to-market ratio Minus Low

7. Methodology

In order to perform the method, as presented by Berk & Binsbergen, (2014), we initially present the below definitions

q_{it} : the capital contained in fund i at time t .

θ_i : the parameter that interprets the ability of the fund manager i .

We also define as I_t the set of information that appears at time t . We assume that this information is available to investors. Therefore, this new information automatically updates the values of parameter θ_i through a function which will have the below form (Berk & Binsbergen, 2014):

$$g_t(\theta_i)$$

Having received the new information, investors will seek to evaluate the new value of θ_i which will now include this new parameter. This provides us with the expected value θ_i at time t from the below relation (Berk & Binsbergen, 2014):

$$\overline{\theta_{i,t}} \equiv E[\theta_i | I_t] = \int \theta_i g_t(\theta_i) d\theta_i \quad (1)$$

In the above relation $g_t(\theta_i)$ is not an anomalous distribution function.

Additionally, the parameters that will calculate the performance need to be defined. This becomes necessary as investors choose whether or not to invest in an asset based on this size. With regard to performance measures, it is stipulated that:

R_{it}^n : is the excess return that investors earn between the time period $t-1$ and t .

R_{it}^B : is the parameter that indicates the hedging of the risk but which is determined based on the asset pricing model used by the investor during the period $t-1$ and t .

Another assumption to be taken into account is that for the term R_{it}^n must have a larger value than the return on the risk-free asset, as if it were smaller all rational investors would automatically invest in it. Therefore, for modeling, the null hypothesis is made that one model will prevail over the others:

H_0 : An asset pricing model prevails over others.

The above terms, R_{it}^n , R_{it}^B and $g_i(\theta_i)$ are all contained in the term I_t as investors have knowledge regarding the previous values and automatically include them in the model in order to decide where to invest. On the other hand, every investor expects different results based on the information he holds, therefore we can define as (Berk & Binsbergen, 2014):

$a_{it}(q)$: the subjective expectation of investors.

When investors decide to invest in mutual fund i which has q assets, between the time periods t and $t+1$, the term $a_{it}(q)$, also known as net alpha, is calculated by the below type (Berk & Binsbergen, 2014):

$$a_{it}(q) = \bar{\theta}_{it} - h_i(q) \quad (2)$$

In the above relation $h_i(\cdot)$ is a strictly increasing function of q , which reflects the fact that, under the assumptions underlying every asset pricing model, all mutual funds must face decreasing returns to scale in equilibrium point.

So we have the below null hypotheses regarding the price model under consideration.

H_0 : An asset pricing model holds in equilibrium

Therefore, if there is no positive net present value, then holds

$$\alpha_{it} = 0,$$

which lead us to the conclusion that:

$$\bar{\theta}_{it} = h_i(q_{it}) \quad (3)$$

Also, at time $t+1$, an investor may observe the manager's return outperformance, which is given by the below type:

$$\varepsilon_{it+1} \equiv R_{it+1}^n - R_{it+1}^B \quad (4)$$

which is a signal that is informative about the value of θ_i .

Also, the conditional distribution function of ε_{it+1} at time t , $f(\varepsilon_{it+1} | \alpha_{it}(q_{it}))$, satisfies the following condition in state of equilibrium.

$$E[\varepsilon_{it+1} | I_t] = \int \varepsilon_{it+1} f(\varepsilon_{it+1} | \alpha_{it}(q_{it})) d\varepsilon_{it+1} = \alpha_{it}(q_{it}) = 0 \quad (5)$$

Testing methodology of Berk & Binsbergen, (2014), relies on the insight that, under the Null hypothesis, when news are good, meaning that ε_{it} has positive value, implies also good news about θ_i and, on the other hand bad news, meaning that ε_{it} has negative value, implies also bad news about the values of θ_i .

They also present the following proposition which shows that, in expectation, this condition holds generally. That is, on average, a positive (negative) realization of ε_{it} leads to a positive (negative) update on θ_i implying that before the capital response, the fund's alpha will be positive (negative).

Proposition 1.

(Berk & van Binsbergen, 2014). *On average, a positive (negative) realization of ε_{it} leads to a positive (negative) update for θ_i which means that*

$$E[\alpha_{it+1}(q_{it}) \varepsilon_{it+1} | I_t] > 0$$

The two main factors that determine the magnitude of the change in capital in mutual funds are:

- The form of declining mutual fund returns in scale technology
- The distribution of profits to investors.

The key issue here is that none of the factors are perceived, but it does arise from the flow of capital. At this point it is necessary to emphasize that the size of the mutual fund held by the investor is crucial. It is argued that small investors have different preferences than large investors and therefore different reactions to the same information. Therefore, it turns out that their returns will be different.

Finally, in terms of linearity between flows and funds, it does not have to be linear, as Berk and Green (2014), but it may be quadratic. Avoiding further generalizations and assumptions, we focus on the flow of funds into mutual funds. In order to carry out the results, it is necessary to define a function that represents the reaction of the capital, thus giving the research the results of a real number, which will symbolize the percentage capital outflow with the negative number -1, the percentage capital inflow

in the mutual capital with the positive number +1 and the non-movement of capital with the number zero.

The mathematical relation that is defined is as follows:

$$\varphi(x) \equiv \begin{cases} \frac{x}{|x|}, \wedge x \neq 0 \\ 0, \wedge x = 0 \end{cases}.$$

The calculation of the flow of funds from the mutual funds is the subtraction between the assets in fund i at time t + 1 from the assets held by fund i at time t. This relation will be given by the term F_{it+1} whose mathematical interpretation is as follows:

$$F_{it+1} \equiv q_{it+1} - q_{it}$$

However, taking into consideration that investors have all the necessary information, it becomes necessary to show a relationship between the flow of funds and the available information in the same direction. That is, when there is negative information about a mutual fund, an outflow of investment funds will be expected from it, conversely, when there is a positive information, an inflow of funds will be expected in it.

The following lemma presents the inflow of capital and the subjective expectation of investors in combination with the available information of the same direction.

Lemma 1. (Berk & van Binsbergen, 2014).

The sign of the capital inflow and the alpha inferred from the information in ε_{it+1} must be the same:

$$\text{sign}(F_{it+1}) = \text{sign}(\alpha_{it+1}(q_{it}))$$

Having this relationship, proposition 1 will be redefined by incorporating the capital flows and the return that the investor will receive.

Proposition 2. (Berk & van Binsbergen, 2014).

The regression coefficient of the point of capital inflows at the sign of realized return is positive, that is,

$$\beta_{F\varepsilon} \equiv \frac{\text{cov}(\mathcal{O}(F_{it+1}), \mathcal{O}(\varepsilon_{it+1}))}{\text{var}(\mathcal{O}(\varepsilon_{it+1}))} > 0$$

If the $\beta_{F\varepsilon}$ regression rate is positive, it is automatically accepted that investors use this asset pricing model in order to make their investment decisions.

Based on the above, it appears that the model is functional. Functional is defined as the model that investors use to make their decisions. Therefore, since capital flows reveal investors' preferences, a factor that will determine whether an investor uses the current asset pricing model is the decision fraction. Where when the fraction of decisions shows overperformance, then there is an inflow of capital, while on the contrary when the fraction of decisions shows low performance, it means outflow of capital.

In order to study this, however, it must be proved that $\beta_{F\varepsilon}$ is a linear transformation of this measure.

Lemma 2. (Berk & van Binsbergen, 2014).

The rate of return of the point of capital inflows to the point of return overperformed can be expressed as follows:

$$\beta_{F\varepsilon} = \text{Pr}[\mathcal{O}(F_{it})=1 \vee \mathcal{O}(\varepsilon_{it})=1] + \text{Pr}[\mathcal{O}(F_{it})=1 \vee \mathcal{O}(\varepsilon_{it})=-1] - \text{Pr}[\mathcal{O}(\varepsilon_{it})=1 \vee \mathcal{O}(\varepsilon_{it})=-1]$$

Thus the average probability is recovered, ie that the dependent on the excess is positive, which indicates that the flow in the mutual fund is positive. If the calculated outperformance perfectly interprets the flow of capital, then both probabilities are equal to 1 and the coefficient $\beta_{F\varepsilon}$ is equal to 1.9. Conversely, if there is no relationship between overperformance and capital flows, both probabilities will be equal to $\frac{1}{2}$ and the coefficient $\beta_{F\varepsilon}$ is equal to zero.

It is important to emphasize at this point that the null hypothesis for the model that will be created will not reject any model, as all the underlying asset pricing models

exist and are used by various investors. Most of the asset pricing models are the most used by investors. Another question that is asked and answered in this paper is which model approaches the pricing risk in the most correct way. The expected return on each asset is a function that has only one component, μ , which is the risk that each asset has. Thus, a set of candidate models from risk models belonging to $c \in C$ is defined, so that the adjustment of risk to each asset pricing model is given by the term R^c , which is a part of the relation:

$$\varepsilon_{it}^c = R_{it}^n - R_{it}^c$$

This relationship interprets that the investor's return at time t is the subtraction between the excess return at time t (R_{it}^n) and the asset risk at time t (R_{it}^c). A key part of the research is to separate the real from the fake models. A model is defined as a false one that defies the risk of its main variable. To separate the false from the real or true models, only one model will be defined as real and everything else will be compared to it. If a model is better it will get this name of the real one until the best one is found. The distinction will be made on the basis that each false risk model cannot have additional explanatory power for capital allocation decisions.

Acceptance or rejection will therefore be based on the relationship:

$$Pr [\emptyset(F_{it}) \vee \emptyset(\varepsilon_{it}), \emptyset(\varepsilon_{it}^c)] = Pr [\emptyset(F_{it}) \vee \emptyset(\varepsilon_{it})]$$

That is, that the probability determined based on the capital flow at time t given the return the investor has and the return on capital at the same time is equal to the probability determined based on the flow

That is, that the probability determined by the flow of capital at time t given the return on the investor and the return on capital at the same time is equal to the probability determined by the flow of capital at time t given only of the return deducted by the investor at this time. Therefore, the return on equity should not change the effect of capital flow at time t . However, this assumption is not true as it automatically excludes the possibility that the term ε_{it}^c contains information about the investor's expectations which, however, is not included in the term ε_{it} . Thus for a false risk model $c \in C$, β_{Fc} is defined as a regression coefficient of the performance of that model. That is:

$$\beta_{Fc} \equiv \text{cov} \frac{\varnothing(F_{it}), \varnothing(\varepsilon_{it}^c)}{\text{var}(\varnothing(\varepsilon_{it}^c))}$$

The next proposition proves that the regression coefficient of the true model (if it exists) must exceed the regression coefficient of a false model.

Proposition 3. (Berk & van Binsbergen, 2014).

The regression coefficient of the sign of the capital inflows on the sign of the realized return outperformance is maximized under the true model, that is, for any false model,

$$\beta_{F\varepsilon} > \beta_{Fc}$$

The following definition defines the best model as the model that maximizes the fraction of times outperformance by the candidate model implies outperformance by the true model and the fraction of times underperformance by the candidate model implies underperformance by the true model.

Definition 1. (Berk & van Binsbergen, 2014).

Model c is a better approximation of the true asset pricing model than model d if and only if:

$$\beta_{Fc} > \beta_{Fd}$$

Proposition 4. (Berk & van Binsbergen, 2014).

Consider an OLS regression of $\varnothing(F_{it})$ over $\frac{\varnothing(\varepsilon_{it}^c)}{\text{var}(\varnothing(\varepsilon_{it}^c))} - \frac{\varnothing(\varepsilon_{it}^d)}{\text{var}(\varnothing(\varepsilon_{it}^d))}$

$$\varnothing(F_{it}) = \gamma_0 + \gamma_1 \left(\frac{\varnothing(\varepsilon_{it}^c)}{\text{var}(\varnothing(\varepsilon_{it}^c))} - \frac{\varnothing(\varepsilon_{it}^d)}{\text{var}(\varnothing(\varepsilon_{it}^d))} \right) + \xi_{it}$$

8. Results

In previous chapters, the analysis of the models under consideration has been completed, as well as the way in which the model used by the majority of investors will emerge. Therefore, at this point there is a need to capture some key features of the sample and then to present the way in which they have been utilized in order to contribute to the results of this research.

Initially, the sample consisted of a total of 2,000 mutual funds. However, over the years, some of them have ceased to exist and their operation has been suspended. Then over the years new mutual funds appeared. Those assets included in this paper are defined as those that until 2019 were traded in the market. Therefore, the non-negotiable funds were deducted from the initial sample of 2,000 mutual funds, bringing their number to 1,109.

The Datastream database emerged as the most appropriate as different categories of data were extracted from it which contributed to the conduct of the present research. The categories of data include, mutual fund prices, dividends, the number of mutual funds, etc. Based on the daily values, the appropriate calculations were performed in order to obtain the monthly, quarterly, quarterly, semi-annual and annual databases. Based on the above, it is necessary to clarify that the net overperformance is defined as the difference between the estimated return of each mutual fund after deducting their realized value.

We implement our tests as follows. For each model, c , in each fund, i , we compute monthly outperformance, ε_{it}^c , as we explained in chapter 7. At the end of this process we have a fund flow and outperformance observation for each fund over each measurement horizon. We then implement the test in Proposition 2 by estimating $\beta_{F\varepsilon}$ for each model by running a single linear regression.

Model	Beta Values					
	Daily	Monthly	4Q	3Q	2Q	1Q
CRSP Value Weighted	0,018541	0,001713	0,36714	0,00413	0,190311	0,171211
S&P 500	0,528945	0,329303	1,69E-05	6,14E-07	3,57E-03	3,47E-03
FF	3,047918	0,574735	0,257591	0,000136	0,023182	0,013172
FFC	0,774704	0,128056	0,064177	0,000145	0,000642	0,000512
C-CAPM	0,664714	0,452345	0,012456	0,002345	0,0003467	0,000214

Table 1. beta values (proposition 2)

The table above shows the beta in the five categories as they arose as a result of the regressions. Based on these finding, there is an obvious need to say that the positive signs that characterize all models enable them to participate in the comparison process that will be performed in the present study.

Based on the above table, it becomes apparent that all models have a positive sign from the beginning and can therefore participate in the comparison process. However, it should be noted that the sign that each of the models in question holds as an absolute number does not parameterize their performance. In particular, it does not mean that the bigger or smaller a beta is, the better or worse the corresponding model is. On the contrary, the role of the mark lies solely in whether each asset pricing model meets the necessary criteria for its participation in the present proceedings.

Then for each of the asset pricing models c their net outperformance was calculated and divided by their variance. It was then subtracted from net outperformance divided by its variance from any other model d under consideration. With the new value that emerged, capital flows returned. This procedure was performed for each of the models under consideration. When the specific regression coefficient is positive then the pricing model c is defined as better than the pricing model d, as mentioned in proposition 4. The model that will have the most positive beta coefficients, compared to the other models, is defined as that which governs the markets. For each of the different samples relating to Proposition 4, the following tables are given.

Daily Data			
	Beta	T- stat	Prob.
CRSP Value Weighted	3,4354	2,9324	0,0014
S&P 500	1,3257	1,0105	0,0000
FF	1,5873	7,8258	0,0000
FFC	1,5873	7,8258	0,0000
C-CAPM	4,2664	6,3167	0,0000

Table 2. Daily data

Monthly Data			
	Beta	T- stat	Prob.
CRSP Value Weighted	0,2354	3,2454	0,0000
S&P 500	0,3148	3,0152	0,0000
FF	0,4553	6,4324	0,0000
FFC	0,4553	5,1258	0,0000
C-CAPM	0,4421	4,1116	0,0000

Table 3. Monthly data

4Q			
	Beta	T- stat	Prob.
CRSP Value Weighted	0,0031	-1,2454	0,0001
S&P 500	0,0048	2,0152	0,0000
FF	0,0023	-3,1424	0,0002
FFC	0,0053	5,1258	0,0000
C-CAPM	0,0041	-2,1116	0,0000

Table 4. Fourth Quarter

3Q			
	Beta	T- stat	Prob.
CRSP Value Weighted	-0,0054	1,3154	0,0000
S&P 500	0,0039	2,2352	0,0000
FF	0,0045	-2,3124	0,0000
FFC	-0,0039	-3,1258	0,0000
C-CAPM	0,0052	3,4256	0,0000

Table 5. Third Quarter

2Q			
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	Beta	T- stat	Prob.
CRSP Value Weighted	0,0056	1,0154	0,0000
S&P 500	0,0049	2,2534	0,0000
FF	-0,0053	-3,1324	0,0002
FFC	0,0042	2,3458	0,0000
C-CAPM	0,0049	3,9457	0,0002

Table 6. Second Quarter

1Q			
	Beta	T- stat	Prob.
CRSP Value Weighted	-0,0034	2,3454	0,0000
S&P 500	-0,0037	1,4552	0,0000
FF	0,0021	-3,1324	0,0000
FFC	0,0018	-4,1258	0,0000
C-CAPM	0,0045	4,1116	0,0000

Table 7. First Quarter

In order to better understand the above tables, the following table includes the rating received by each model in question in each of the samples.

Rating of Models					
Daily	Monthly	4Q Data	3Q Data	2Q Data	1Q Data
C-CAPM	FF	FFC	C-CAPM	CRSP Value Weighted	C-CAPM
CRSP Value Weighted	FFC	S&P 500	FF	C-CAPM	FF
FF	C-CAPM	C-CAPM	S&P 500	S&P 500	FFC
FFC	S&P 500	FF	FFC	FFC	CRSP Value Weighted
S&P 500	CRSP Value Weighted	CRSP Value Weighted	CRSP Value Weighted	FF	S&P 500

Table 8. Rating of models

Conclusion

Mutual Funds are an alternative way of investing. They provide an opportunity for indirect collective investment, rather than individual investment, with advantages listed below. It is an institution where funds are raised by a large number of individuals or legal entities, who have savings and want to invest and are placed in a company that takes over management. We can compare mutual funds as a pool in which many investors put money and each investor acquires participation shares (units) depending on the amount he contributes (invests). All funds raised are managed by the company on behalf of all shareholders (shareholder investors). There are different types of Mutual Funds. Such as Equity Funds that invest only in shares, bonds (Bond Funds) that invest in government or corporate bonds (government bonds or corporate bonds). Gross that invests part in shares and part in bonds, Real Estate (Property Funds), Money Market funds (Money Market funds) that invest in short-term financial instruments (eg repos deposits) and others.

The Management Company's effort is to generate revenue or increase capital or both so that there is a profit for investors. It has to be mentioned that none mutual fund has a guaranteed return, nor do they pay interest. It should also be noted that the recent returns do not guarantee the same return or similar returns in the future. Management Companies reinvest dividends they earn on stocks, or interest on bonds and cash management or any other income. From this income as well as from the sales of shares or other assets (investments) at a higher price than the price purchased, a capital gain is created. Therefore, dividend yield is derived from this income. An increase in the company's capital translates into an increase in the price of units. In essence, the profit for investors comes from the increase in the price of the unit (unit) which is a result of the increase in the value of the company's portfolio (ie the total investments made by the Management Company).

It should also be noted that not all types of mutual funds (investment products) are suitable for everyone. Based on the characteristics of each investor given their investment objectives and preferences in terms of return and risk. (its investment profile) the appropriate AK should be selected. The European MiFID II Directive, which aims to protect investors, stipulates that investors must be informed about the investments and risks. It also stipulates that the Management Companies have an obligation to record the investment profile of each client / investor and based on this

profile and the risks he is willing to accept, they can indicate appropriate investment products. In addition, it is an institutional obligation of these Companies to have a Code of Conduct, which delimits professional activity and protects against arbitrariness and non-discipline of investment laws and regulations.

There is a lot of protection for investors based on the relevant legislation, but it is relevant to say that the protection provided for deposits for amounts up to 100,000 euros does not apply to investments in mutual funds. The securities are held on behalf of investors by trusted custodians. There is also, under European Legislation, an obligation to establish a Complaints Complaint Mechanism as well as an obligation for the Companies to participate in the Investor Compensation Fund which provides compensation, under certain conditions, if the Company is unable to fulfill its obligations due to of its financial situation. The management is done by a specialized company with trained staff with knowledge and experience on the subject and aim to have a good performance. They also have technological equipment and constantly monitor and analyze developments in the financial markets, analyze companies and take advantage of suitable investment opportunities (there is professional management).

Although, the final decision, either for buy or sell a share, belongs to investors and no to the Management Companies. The purpose of this paper was to determine whether investors' decisions are based on a specific model. The results shown that the asset model that was proved after the above analysis that rules the markets, is the C-CAPM model. The ease of understanding of this model as well as its ease of use compared it to other models as the one used by the plethora of investors. The purpose of the comparison presented above, was not to determine whether one model is better than another in terms of its explanatory value. The target factor is the one that determines which model is used by most investors. More broadly, it is of the utmost importance to clarify so that it is fully understood that all the models considered in this paper are effective and their predictive capabilities are characterized as remarkable. In addition, the ongoing information regarding future prices provided to investors who choose to use them is valid and more functional.

However, in carrying out its effort to research and analyze the way in which the market moves, the law of supply and demand must be included in the analysis. This becomes important as this law is the most important factor that shapes the prices of assets. Therefore, if the way in which the majority of investors decide which assets to buy, which due to the law of supply and demand will raise the price of the asset, then it will be possible to promote a more rational way of investing. . In a deeper analysis, if it were assumed that all investors, without exception, used the specific pricing model, while at the same time all had access to common and identical information, then asset prices would be identical to the model's forecasts. However, in real terms this is not possible.

The main reason for this finding is probably that there not an even information, leading investors to use various mechanisms in order to make their investment decisions. As shown in the analysis of the previous section, the specific model was used by most investors in all the periods under consideration. It therefore becomes clear that if an investor uses this model he is more likely to make a profit compared to an investor who chooses to use any of the other models. It is assumed that these two investors will have the same information about the assets in which they intend to invest.

The great importance is the fact that the combination of investment expectations and the information provided to investors is the motivation that will push them to make their investment decisions. There are a large number of investors who, while already using an asset pricing model to make their investment decisions, once they have access to new information about an asset, immediately react and mobilize to that information, resulting in its purchase or respectively in its sale. However, the above situation is not a measurable variable and therefore cannot be included in the present work. In summary, it is appropriate to say that in an economy in which all investors will have the same information and use the Sharpe asset pricing model then it will be those who will contribute more to the formation of the asset price and ultimately will be the ones who will have better and more accurate performances than the rest.

References

- Berk, J.B. & van Binsbergen, J.H. (2014). Assessing asset pricing models using revealed preference. *Journal of Financial Economics*, vol 119(1), pages 1-23.
- Mylonas, N.Th. (1999). *Greek Mutual Funds, Theory and Practice*. Athens: Sakkoula Editions [In Greek].
- Noulas, A. (2016). *Money and Capital Markets*. Thessaloniki: Anikoula Publications [In Greek].
- Peratis, P. (2007). *Mutual Funds*. Athens: Papazisis Publications [In Greek].
- Philipas, N. (2010). *Mutual Funds - The Greek Reality and the Contemporary International Developments*. Athens: Babalos & Stylianidis Publications [In Greek].
- Pozen, R. & Hamacher, T. (2011). *The Fund Industry: How Your Money is Managed*. New Jersey: John Wiley and Sons Inc.
- Syriopoulos, C. (2008). *Banking Risk Management*. Volume A, Issue B. Patras: Hellenic Open University [In Greek].
- Vassiliou, D. (2008). *Business Strategy - Portfolio Management*. Patras: Hellenic Open University [In Greek].