

Simple Techniques for Determining the Optimal Portfolio Case Study: Investment in Banks Sector in Amman Stock Market _ Jordan

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Abstract

The aim of this study is to gain knowledge of if the stock of commercial banks in Jordan eligible to be included in the optimal portfolio or not. In addition, the relation of the location of these banks in the optimal portfolio and its variables which are the share turnover ratio, the earning per share dividend, the payout ratio, and the price earning ratio by using simple regression analysis. Also, examinations were conducted on banks sector because of the high prices of stocks of this sector in Amman's stock market and the increase in trade of these stocks in the stock exchange compared to other sectors.

The result of this research was that the Arab bank was the only bank to be included in the optimal portfolio and is the largest bank in Jordan with respect to capital volume and number of branches inside and outside of Jordan. As for the rest of the banks, they were not eligible to be included in the optimal portfolio, but very close to be included. Also the result of the analysis was that a statistical indication did not exist between the location of the bank in the portfolio and the factors that were inspected in this study. Also, the correlation and correlation of coefficient were weak in all the previously mentioned variables which indicates the inefficiency of Amman's stock exchange in applying the model (EGP).

This is why the central bank must encourage these banks to merge with each other or to increase its capital, to make these banks strong and able to compete with international banks.

Preface

Investment in securities gains great interest for they are the life nerve of stock exchange markets, especially investment of common stocks which are the basic items traded in Amman Stock Exchange. Proper investment in these securities realizes good return to investors and keeps them away from incurring losses, resulting in increasing investors' trust in Amman Stock Exchange. It also increases the economic growth which is the main concern of every country and individual.

The ideal portfolio is the one that has various and balanced assets and different investment tools that realize high return with low risks. Therefore, the goals of the portfolio holder or manager can be fulfilled.

When preparing the portfolio, we should take into consideration, as best as possible, the number of factors that influence the returns as well as the risks facing the portfolio. There are some mathematical models by which we can determine the ideal portfolio in organized and methodical steps starting with determining the preferred stocks and arranging them in descending order depending on

the spread between the return per stock and the risk-free return divided by the organized risks. Through out this arrangement, the first stock will be the preferred one, which is the stock that will realize a highest return with lowest risks.

After arranging the stocks in descending order, good stocks should be separated from bad ones in accordance with an equation that can determine the cut- off point between good stocks and bad ones in order for the investor to be able to invest in good stocks only.

After determining the good stocks, portfolio capital should be distributed on these stocks, so that preferred stocks will have the greatest share in the capital to make the portfolio an ideal one.

These new mathematical models will be applied to bank sector to create its ideal portfolio. The results will be tested by finding the relationship between the bank and its investment portfolio and by finding some factors that determine the efficiency of this bank. The factors which have been chosen to examine the strength of the bank are: the stock turnover, stock return, cash dividends and the stock multiplier.

Study Significance

Stock exchange markets play a major role in the economic growth through out promoting and increasing the investment volume as well as distributing it on different sectors. Difficulties the investor faces in the stock exchange market may cause him great loss, which makes him refrain from such investments, resulting in affecting stock exchange markets and the economic growth as well. Prepared and studied analyses are therefore necessary for the investor, so that decision making would be easy. Thus, the study therefore is significant to solve many of these difficulties facing the investor and render his investments safe and correct. New mathematical models have been applied to determine the ideal portfolio which depends when chosen on returns, systematic and unsystematic risks and market index, which gives the investor a whole and complete portfolio of an important sector; the bank sector. Table (1) shows the circulation volume in Amman Stock Exchange and also the share of the bank sector in this volume.

Table 1: The development of circulation volume in the 1st & 2nd markets with the percentage of bank sector

Fiscal Year	Circulation Volume of Amman's Stock Exchange in JD Million	Circulation Volume of Bank Sector	Percentage of Bank Sector to the Total Circulation Volume
1996	248.6	83.1	33.34%
1997	355.2	165.4	46.56%
1998	464.4	192.7	41.50%
1999	389.5	128.1	32.89%
2000	334.7	128.6	38.42%
2001	662.5	300.28	45.33%
2002	946.7	349.8	36.95%
2003	1855.2	832.2	44.86%
2004	3793.2	2403.8	63.37%
2005	16871.1	13200.7	78.24%
2006	14209.9	11570.2	81.42%
2007	12348.1	8779.2	71.10%

Source: Central Bank of Jordan –Annual Report for Fiscal year 2003 and 2007

Study Objectives:

The objectives of the study are summarized as follows:

1. Recognizing the volume of systematic and unsystematic risks and the fluctuation of Amman Stock Exchange index for the bank sector in Jordan.
2. Recognizing the risk premium.

3. Recognizing the ratio of risk premium to systematic risks, which is the spread between bank return and risk-free return related to systematic risks.
4. Arranging stocks of bank sector in descending order according to their desirability, so that preferred stocks will head the other stocks and stocks of less desirability will be the last.
5. Recognizing good stocks by finding the cut-off point separating good stocks from bad ones, in order for the investor to exclude the latter stocks from the portfolio.
6. Recognizing how to distribute the capital on preferred stocks in accordance with their qualities, and the stocks with the best quality will have the highest portion of the capital.
7. Recognizing the ideal portfolio of stocks of bank sector in Jordan to be able to measure the efficiency of bank administration.
8. Examining new mathematical models and their suitability to Amman Stock Exchange.

Study Problems:

This study deals with a number of mathematical models to determine the ideal portfolio of bank sector in Amman Stock Exchange. It will also examine the possibility of applying such models on the financial market of Jordan by finding the impact of the factors determining the efficiency of banks and their financial capacity and the position of the bank in the ideal portfolio. The study will also measure the suitability of the new mathematical models to Amman Stock Exchange. In addition, it represents a number of questions that can be answered through out this study.

Question (1)

Does the bank stock turnover relate to its position in the ideal portfolio?

Question (2)

Does the bank stock return influence its position in the ideal portfolio?

Question (3)

Does cash distribution of the bank stock influence its position in the ideal portfolio?

Question (4)

Does the bank stock multiplier influence its position in the ideal portfolio?

Hypotheses

To meet the objectives of the study, a number of null hypotheses (H0) have been formulated.

Hypothesis (1)

H0: there is no relationship of statistical indication between the bank stock turnover and its position in the ideal portfolio.

Hypothesis (2)

H0: there is no relationship of statistical indication between the bank stock return and its position in the ideal portfolio.

Hypothesis (3)

H0: there is no relationship of statistical indication between cash distribution of the bank stock and its position in the ideal portfolio.

Hypothesis (4)

H0: there is no relationship of statistical indication between the market value to the return (stock multiplier) and its position in the ideal portfolio.

Former Studies:

Many studies dealing with different factors influencing stock price or dealing with the role of the stock exchange market in the domestic economy were conducted. Some of these studies proved that some of the factors have an impact, where they figured out that these factors have positive impact on stock price.

The study by Al-Sa'eed, 1979¹, applied the Capital Assets Pricing Model (CAPM) on the Saudi Stock Exchange and proved that the semi-strong efficiency hypothesis is applicable to this market from 1/1991 to 12/1965, knowing that CAPM were applied on other markets and the results were different, where Lizenberger & Ramaswany, 1979², conducted a study on Sharp & Black Model to determine the securities prices. The model was not suitable to determine the equilibrium price of securities.

In a study by Capuel, Rowley and Sharpe, 1993³, to compare between the performance of growth stocks and value stocks in the stock exchange markets of the US, Britain, France, Germany, Switzerland and Japan from 1981 1992, the collective parameters of growth stocks and value stocks were used. The study concluded that the performance of value stocks was better than the growth stocks' in all the aforementioned markets. It also concluded that correlation coefficient between the return of the value stocks and growth stocks in the aforementioned markets was weak, indicating that creating a portfolio in these markets reduces the risks on such portfolio.

In a study by Ibbotson and Rriepe, 1997⁴, on the price of growth companies and the price of value companies for both large and small companies in the US from 1979 to 1997, parameters of Wilshire, Russell, Barclays Global Investment and S&P/ Barku were applied. The conclusion was the returns of value stocks were higher than the returns of growth stocks, and the fluctuation of value stocks returns was less than the growth stocks returns'.

In a study by Wokian and Shmmary, 2002⁵, on the financial performance and the company value; a study on Kuwaiti industrial companies, it concluded that industrial companies prices were not related to their accounting statements that describe their annual performance. This conclusion shows that investors in the Kuwaiti Stock Exchange do not relate the company performance to its stock price in the market. Financial ratios, which are good parameters of the performance, were also used to measure the performance of such companies.

Studies related to the subject of this study are limited. A study by Dusooki and Hassan, 1996⁶, entitled "Programming objectives and best distribution of the stock portfolio of Saudi companies", used the method of objectives. The conclusion confirmed this method is appropriate to determine the ideal portfolio in the Saudi Market.

In another study by Al-logani and matter, 1996⁷, entitled" Deriving and designing the ideal portfolio to invest in Saudi stocks", EGP model was applied and related to the Quadratic Programming Model and then related to the Saudi Stock Exchange. The study concluded that such model is efficient to test the ideal portfolio.

In a study by Al-logani & Mattar, 2001⁸, on the investment performance of value and growth stocks in the Kuwaiti Stock Exchange, the conclusion pointed out that the portfolios were made of high stock multipliers (growth stocks). It also concluded that the Kuwaiti Stock Exchange is inefficient and that realizing extraordinary returns is possible

Study Methodology:

1. Study sample and complex:

Through out studying stock prices of the aforementioned sectors, we find out that the prices of bank sector are the highest. Circulation volume of bank sector will be studied in table (1), for bank sector has the highest share, compared to the other sectors. Therefore, bank sector has been chosen as a sample to be studied through out this study because it clearly reflects all the companies circulated in Amman Stock Exchange.

In addition to the aforementioned and after examining a number of former studies which dealt with many factors influencing stock price, we observed that this relationship takes the same direction in all sectors, regardless of their type of work. Hence, the study sample will focus on one of these sectors, which is the bank sector, because it is the most circulated sector in the market and the most influencing on Amman Stock Exchange index because bank stock price is high, knowing that the sectors in Amman Stock Exchange are the following:

1. Bank sector.
2. Industrial sector.
3. Service sector.
4. Insurance sector.

However, the study will be on how to create an ideal portfolio for bank sector in Amman Stock Exchange. Through out the conclusion, it is possible to recognize the other sectors. Thus, the study sample and complex will be the entire bank sector in Amman Stock Exchange, which includes the following seventeen companies:

Table 2:

Bank Name	Date of association	Number of branches	Number of offices
Arab Bank	1930	26	40
National Bank of Jordan	1956	33	3
Cairo Amman Bank	1960	20	12
Bank of Jordan	1960	26	23
Middle-East Bank for Investment	1993	18	0
Industrial Growth Bank	1965	3	0
Housing Bank for Finance and Commerce	1974	104	7
Jordan Kuwaiti Bank	1977	15	7
Jordan Gulf Bank	1978	27	2
Jordan Arab Bank for Investment	1978	8	7
Jordan Islamic Bank for Finance and Investment	1979	26	3
Union Bank for Savings and Investment	1991	10	3
Jordan Bank for Finance and Investment	1989	3	0
Money Bank for Savings and Housing Investment	1991	7	0
Arab Institution Bank, Jordan	1989	7	0
Philadelphia Bank for Investment	1993	2	1
Exports and Financing Bank	1994	1	0

Source: the researcher.

2. Mathematical method applied to test the ideal portfolio:

The method that will be applied is the Simple Index Model (Momani, 2002⁹), which is intended to follow the efficient frontier by new mathematical models instead of the graph. Efficient frontier is the line drawn by the vertical dependent variable (the return) and the horizontal independent variable (systematic risk) which separates between the visible portfolio and invisible portfolio. This line is what leads us to efficient securities that realize the highest return with lowest risks. It also realizes the supremacy bases that can be determined by the following:

1. if the returns are equal, we chose those of the lowest risks.
2. if the risks are equal, we chose those of the lowest return.

In the light of the aforementioned, by the efficient frontier, we can choose the best securities by a limited number of them. In case the number is large, it is difficult to determine good securities from bad ones. Hence, mathematical methods not restricted by the number of securities should be used.

By applying EGP model (Elton, Gabben and Padlberg), we will try to determine the best stocks through out arranging the stocks according to there desirability to grant the investor a choice with correct and scientific method (Elton 1991¹⁰).

To determine good and preferred stocks, stocks should be arranged in a descending order in accordance with their quality of desirability. This arrangement depends on the return and the systematic risk, since systematic risks are known as the kind of risks generally face securities with different degrees and which we cannot avoid. This is contrary to unsystematic risks that can be controlled by diversifying or avoiding them or by excluding them from the assets of the portfolio.

The two risk factors and the stock return both determine the desirability of the stock. Stock return, however, is insufficient. Thus, we can take the excess return. Excess return is the spread between the stock return and the risk-free return. It is also called risk premium, meaning that the investor does not accept any part of the risk, unless his expectations realize a return higher than the risk-free return because of his investments in stocks with risk, i.e. a return higher than the return of the treasury bills.

3-1 Mathematical model to compare between stocks

To determine the best stocks and then compare between them to arrange them in descending order, we should determine that part of the stock return representing the above return accrued from risk-free investments.

When dividing this spread by Beta (β) coefficient of the stock (systematic risks), stock desirability will be determined:

$$\frac{(R_i - R_f)}{\beta_i} \quad (1)$$

where R_i is the expected stock return or the rate of stock return for previous years. R_f is the risk-free investment return which is the return of treasury bills. β_i is the stock beta which is the sensitivity degree of the stock toward general risks influencing all securities.

It is possible to determine the elements of said ratio as follows:

1. stock return R_i can be determined by return on equity, which is after-tax earnings divided by the total assets:

$$ROE = \frac{EAT}{E} \quad (2)$$

where ROE is the return on equity. EAT is the after-tax earnings. E is the total equity.

2. R_f is the return of treasury bills issued by the Central Bank of Jordan for the period of the study, which is %4.
3. stock beta can be found in many ways such as:
 - a. by the differences.

$$\beta_i = \frac{\text{cov } R_i R_m}{\text{var } R_m} \quad (3)$$

where cov is the difference. R_i is the stock return. R_m is the market return. Var is the variation.

- b. by the standard deviation.

$$\beta_i = \frac{STD_i}{STD_m} r_{im} \quad (4)$$

where STD_i is the standard deviation of the stock returns. STD_m is the standard deviation of the market returns. R_{im} is the correlation coefficient between the stock return and the market return.

- c. by using the Capital Assets Pricing Model (CAPM), which is a model intended to determine the capital asset return. The stock is a capital asset, and this model was created by Sharpe to determine the return depending on the systematic risk, which is beta value, and also depending on the risk-free return and the risk premium, which is the spread between the market return and the risk-free return. The standard on which the researcher depended to determine beta value was the following equation:

$$R_i = R_f + \beta_i (R_m - R_f) \quad (5)$$

This ratio represents the earning above the risk-free return, which is called the risk premium related to the general risk that cannot be controlled (equation 1). If this ratio is found for a number of stocks, we can arrange these stocks in descending order according to their desirability. If a stock (certain stock considered as good) is chosen by a specific ratio, stocks accumulating on such stock will be within the portfolio, and will therefore be from the good stocks (Elton, 1991).

Meanwhile, if a stock is excluded from the portfolio, stocks whose ratio is less than this stock's will also be excluded from the portfolio and will become bad stocks.

To separate between the high ratio of preferred stocks in the portfolio and the low ratio of stocks that can be disposed or the stocks that can be considered as bad, especially if the choice is about great number of stocks, we should find a point through which we can judge such ratio to determine the cut-off point that separates good stocks from bad ones.

2-2 Cut-off point:

The cut-off point can be calculated per stock by the following equation:

$$C_i = \frac{\sigma_m^2 \sum_{i=1}^n \frac{(R_i - R_f) \beta_i}{\sigma_{e_i}^2}}{1 + \sigma_m^2 \sum_{i=1}^n \left(\frac{\beta_i^2}{\sigma_{e_i}^2} \right)} \quad (6)$$

where C_i is the cut-off point per stock meant to examine its quality. σ_m^2 is the fluctuation of the market index. R_i is the stock return. R_f is the risk-free return. β_i is the systematic risk per stock. $\sigma_{e_i}^2$ is the unsystematic risk per stock, which is the stock return.

From this equation, we can find the cut-off point per stock and distinguish good stocks from bad ones by comparing the cut-off point with the first ratio used to compare between stocks and then arrange them in descending order (equation 1). If this ratio is higher than the cut-off point, the stock is good. If it is less than the cut-off point, the stock is bad. The cut-off point can be found after arranging the stocks according to their desirability in descending order. The totals within equation (6) are accumulative until we reach a cut-off point of a value higher than the value of the aforementioned ratio to determine the good stock from the bad one. This can be summarized by the following three steps:

1. finding the ratio by using equation (1), and then arranging the stocks in descending order according to this ratio.
2. finding the cut-off point C_i by equation (6) in order to separate good stocks included to the portfolio from the bad stocks excluded from it.

The ideal portfolio is the one that realizes the highest return with lowest risk. It is also the portfolio invested in securities and its spread between the stock return and the risk-free return related to the stock beta distinguish good stock from bad ones.

3. after determining the good stocks intended to be held, the role of distributing the capital of the portfolio on these stocks starts. Such distribution is carried out in accordance with mathematical equations which take into account a number of factors influencing stock price and profitability. This will be explained in the following paragraphs.

3-2 Capital distribution on good stocks:

To fulfil the goal of an investment portfolio; the realization of highest return with lowest risk, there should be a good distribution, whereas the best stock enjoys the highest share, and so on. The following mathematical equations achieve this:

$$X_i = \frac{Z_i}{\sum_{i=1}^n Z_i} \quad (7)$$

where as Z_i is mathematically defined by the following equation:

$$Z_i = \frac{\beta_i}{\sigma_i^2} \left(\frac{(R_i - R_f)}{\beta_i} - C_i \right) \quad (8)$$

This equation depends on the systematic and unsystematic risks as well as the spread between the stock return and the risk-free return related to the systematic risks. All these elements are important to determine the stock efficiency and its capital amount. However, equation (7) is a percentage determining the capital for each asset of the portfolio's, where the total of the percentages, at the end of the day, is an integer number which is number one. Therefore, they are weighted averages per stock. They, however, are calculated in accordance with the importance of the stock.

First: Finding the ideal portfolio.

Table 3: Basic data by which we choose the ideal portfolio

	Bank name	R_i	B_i	oie
1	Arab Bank	8.38	1.3	2.425
2	Islamic Jordan Bank	5.38	482	1.7586
3	Kuwaiti Jordan Bank	20.31	4.853	9.417
4	Jordan Commercial Bank	3.22	0.00	344.189
5	Housing & Financing Bank	8.09	1.217	2.101
6	Arab Jordan Investment Bank	11.42	2.803	2.603
7	Industrial Growth Bank	6.56	0.762	200.234
8	Union Bank for Savings and Investments	-2.24	0.00	21.926
9	Arab Institution Bank	16.61	30753	19.396
10	Philadelphia Bank for investment	NA	0.00	NA
11	Jordan Investment & Finance Bank	0.11	**	8.929
12	Exports and Financing Bank	17.75	4.092	6.071
13	Cairo Amman Bank	9.28	1.571	40.433
14	Bank of Jordan	11.78	2.315	14.1
15	National Bank of Jordan	-0.01	**	5.0717
16	Societe Generale De Banque - Jordanie	8.66	1.387	176.874
17	Arab Islamic Bank of Jordan	4.08	0.0238	1.814

Source: Companies manual issued by Securities Commission/ Jordan.

Through out table (1), a number of banks will be excluded from the sample due to no realization of returns, and because these banks incurred losses. Thus, they cannot be included to the ideal portfolio. The following are the excluded banks:

1. Jordan Commercial bank (Bank of Jordan and Gulf formerly).
2. Union Bank for Savings and Investments.
3. Philadelphia Investment Bank.
4. National Bank of Jordan.
5. Jordan Bank for Finance and Investment.

The first step to create the ideal portfolio is to arrange the banks in descending order as mentioned in table (4).

Table 4:

Bank Name	R_i	β_i	R_f	$(R_i - R_f) / \beta_i$
Arab Bank	8.38	1.3	4	3.36923
Cairo Amman Bank	9.28	1.571	4	3.3609166
Jordan Kuwaiti Bank	20.31	4.853	4	3.36081
Housing Bank	8.09	1.217	4	3.36072
Bank of Jordan	11.78	2.315	4	3.360691
Exports and Financing Bank	17.75	4.092	4	3.36022
Arab Institution Bank	16.61	3.753	4	3.35998
Societe Generale De Banque - Jordanie	8.66	1.387	4	3.35977
Industrial Growth Bank	6.56	0.762	4	3.35958
Islamic Bank	8.38	0.482	4	2.8631
Arab Jordan Bank for Investment	11.42	2.803	4	2.64716

The next step to create the ideal portfolio is to find the cut-off point, which is the point separating good stocks from bad stocks by solving equation(6) through out the tables, since the available totals are accumulative. Good and bad stocks can be distinguished by comparing equation (1) with equation (6). If the value of equation (1) is greater than the value of equation (6), the stock is good. If smaller, the stock is bad and can be excluded from the portfolio.

Table 5: Finding the cut-off point

$(R_i - R_f) * \beta_i / (\sigma_i * \sigma_i)$	$\sigma_i * \sigma_i$	$(R_i - R_f) * \beta_i$	$(R_i - R_f) / \beta_i$
2.348041237	2.425	5.694	3.369230769
0.444012282	1.7586	0.78084	3.360995851
0.25151238	40.433	8.29488	3.360916614
8.405270256	9.417	79.15243	3.360807748
2.369124227	2.101	4.97753	3.36072309
1.27735461	14.1	18.0107	3.360691145
9.26783067	6.071	56.265	3.360215054
2.439953083	19.396	47.32533	3.359978684
0.03654251	176.874	6.46342	3.359769286
0.009737825	200.324	1.95072	3.359580052
7.99011141	2.603	20.79826	2.647163753

C	$\sigma_i * \sigma_i$	$\beta_i * \beta_i / \sigma_i * \sigma_i$	$\beta_i * \beta_i$
3.369116	1176.433	0.696907216	1.69
3.367913	1176.433	0.132107358	0.232
3.36169	1176.433	0.061040264	2.468
3.36256	1176.433	2.500967293	23.55
3.362233	1176.433	0.704944788	1.481
3.3621313	1176.433	0.380086879	5.359
3.361387	1176.433	2.758106408	16.74
3.3616	1176.433	0.72618112	14.09
3.3612579	1176.433	0.010876494	1.924
3.6121	1176.433	0.002898524	0.581
3.165199	1176.433	3.018366884	7.857

Second: Analyzing the hypotheses:

First hypothesis:

HO: there is no relationship of statistical indication between stock turnover and its position in the ideal portfolio.

Ha: there is a relationship of statistical indication between stock turnover and its position in the ideal portfolio.

Table 6: Results of testing the hypothesis

Calculated T	Tabular T	T SIG	Result of HO	R	R ²
0.532	2.447	0.05	accepted	0.174	0.03

The simple regression has been tested, and we find through out the computer results in the previous table that the value of calculated T (0.532) is smaller than the value of tabular T. Knowing that the rule of the decision is: "we accept the null hypothesis (Ho) if the calculated value is smaller than the tabular one, and we reject it if the calculated value is greater than the tabular one", HO is accepted and Ha is rejected, meaning that there is no relationship of statistical indication between the stock turnover and its position in the ideal portfolio. This relationship is considered weak because R = 0.174, and the stock turnover explains only %3 of the stock position in the ideal portfolio.

Second hypothesis:

HO: there is no relationship of statistical indication between stock return and its position in the ideal portfolio.

Ha: there is a relationship of statistical indication between stock return and its position in the ideal portfolio.

Table 7: Results of testing the hypothesis

Calculated T	Tabular T	T SIG	Result of HO	R	R ²
0.338	2.447	0.05	accepted	0.112	0.013

The simple regression has been tested, and we find through out the computer results in the previous table that the calculated T (0.338) is smaller than the tabular T. Knowing that the rule of the decision is: "we accept the null hypothesis (HO) if the calculated value is smaller than the tabular one, and we reject it if the calculated value is greater than the tabular one", HO is accepted and Ha is rejected, meaning that there is no relationship of statistical indication between stock return and its position in the ideal portfolio. This relationship is considered weak because R = 0.112, and stock profitability explains only %1.3 of the stock position in the ideal portfolio.

Third hypothesis:

HO: there is no relationship of statistical indication between cash distribution of bank stock and its position in the ideal portfolio.

Ha: there is a relationship of statistical indication between cash distribution of bank stock and its position in the ideal portfolio.

Table 8: Results of testing the hypothesis

Calculated T	Tabular T	T SIG	Result of HO	R	R ²
0.350	2.447	0.05	accepted	0.116	0.013

The simple regression has been tested, and we find through out the computer results in the previous table that the calculated T (0.350) is smaller than the tabular T. Knowing that the rule of the decision is: "we accept the null hypothesis (HO) if the calculated value is smaller than the tabular one, and we reject it if the calculated value is greater than the tabular one", HO is accepted and Ha is rejected, meaning that there is no relationship of statistical indication between cash distribution of bank stock and its position in the ideal portfolio. This relationship is considered weak because R = 0.116, and cash distribution of bank stock explains only %1.3 of the stock position in the ideal portfolio.

Fourth hypothesis:

HO: there is no relationship of statistical indication between the rate of "market value to the stock return" and its position in the ideal portfolio.

Ha: there is a relationship of statistical indication between the rate of "market value to the stock return" and its position in the ideal portfolio.

Table 9: Results of testing the hypothesis

Calculated T	Tabular T	T SIG	Result of HO	R	R ²
0.808	2.447	0.05	accepted	0.26	0.068

The simple regression has been tested, and we find through out the computer results in the previous table that the calculated T (0.808) is smaller than the tabular T. Knowing that the rule of the decision is: "we accept the null hypothesis (HO) if the calculated value is smaller than the tabular one, and we reject it if the calculated value is greater than the tabular one", HO is accepted and Ha is rejected, meaning that there is no relationship of statistical indication between "market value to the stock return" and its position in the ideal portfolio. This relationship is considered weak because $R = 0.26$, and "market value to the stock return" explains only %6.8 of the stock position in the ideal portfolio.

Discussion of results and recommendations:

The study dealt with the efficiency and capacity of investment in Jordan through out studying the investment of securities, especially the stock of the most important sector in terms of high stock price and circulation volume, which is the bank sector. This has been studied by using mathematical models applied worldwide to determine the ideal portfolio.

Will bank stock be included to the ideal portfolio in Jordan or not? It turned out through this study that there was only a single bank stock, the stock the Arab Bank, which was included to the ideal portfolio. The rest of the banks, however, were excluded from the ideal portfolio, knowing that a large number of the stocks of these banks were very close to being included to the ideal portfolio. Cairo Amman Bank, for example, had the desirability value $(R_i - R_f) / \beta_i = 3.36099$ and the cut-off point $C = 3.369119$, meaning that the spread is (0.008129), which is a small part. This applies to the following banks with simple differences in the spread. The banks are: Jordan Kuwaiti Bank, Societe Bank, Industrial Growth Bank, Islamic Bank, Arab Jordan Bank for Investment. The spread was distinctive to some extent, where the desirability value was $(R_i - R_f) / \beta_i = 2.64716$ and the cut-off point is $C = 3.165199$.

Regarding the hypotheses, stock turnover, stock return, cash distribution of stock and stock multiplier have been examined. It turned out that all these variables do not influence the position of the bank stock in the portfolio, indicating that EGP model is not suitable to Amman Stock Exchange. This means the investor in Amman Stock Exchange does not take into consideration all the factors influencing stock price when making the decision whether to buy or sell.

In the light of the aforementioned, we recommend the following:

1. Before making his decision about investment, the Jordanian investor should study the available information, especially the risk premium and the systematic risks which are the most important factors to be taken into consideration when choosing the ideal portfolio.
2. Securities Commission, the institution monitoring Amman Stock Exchange, furnishes the investor with all the information influencing the stock price to allow him able to make the safe and correct decision.
3. We notice in Amman Stock Exchange that risk premium is the spread between stock return of any company subtracted by the risk-free return, referring to systematic risks. This indicates the

inefficiency of the companies in Jordan market regarding the best utilization of the available resources.

4. Jordan banks administrations should reconsider there progress in the utilization of administrative and financial capabilities to realize the return.
5. Central Bank of Jordan should increase the capital of banks or promote banks merger to financially and administratively increase the efficiency of these banks, because the bank that entered the ideal portfolio was the biggest.
6. The administration of investment portfolios should take into consideration the systematic risks when choosing its portfolio in order to study the various economic indications pertaining to determining the economic conditions of recession and boom.

References

- [1] Hussah Bint Ibrahim, Analyzing Risk Degree and the Efficiency of Saudi Stock Exchange. Research of master's in economy, faculty of administrative science, King Saud University, Ryadh, p30 – 45, 1997.
- [2] Lizenberger, R. & Ramaswany,K., The effect of Personal Taxes and Dividends and Capital Asset Prices: Theory and Empirical Evidence, Journal of Financial Economics, 1979.
- [3] Capaul, Cario, Rowley. Lan and Sharpe, WF., Internationl Value and Growth Stock Returns, Financial Analysis Journal, 1993, pp. 27-36.
- [4] Ibbotson Roger G. and Rriepe, Mark W, Growth Vs. Value Investing and Winner is Journal of Financial Planning, pp. 64-71.
- [5] Wokian, Turky and Shmmmary, Financial performance and the company value; a study on Kuwaiti industrial companies, Arab Journal for Administrative Science, University of Kuwait. 9th volume, release 1, 2002.
- [6] Dusooki and Hassan, Programming objectives and best distribution of the stock portfolio of Saudi companies, King Saud University, 8th volume, 1996, pp 423-425.
- [7] Fadel Mahdi, Deriving and designing the ideal portfolio to invest in Saudi stocks, release of the Research Center, faculty of administrative science, King Saud University, 1989.
- [8] Nabeel Al-logani and Mohammad matter, Investment Performance of Value and growth stocks in Kuwaiti Stock Exchange, Arab Journal for Administrative Science, 8th volume, 2nd release, 2001, pp217-232.
- [9] Ghazi Almomani, The New Investment Portfolio, Dar Almanahige, Amman,2002, pp99-105.
- [10] Elton, J. Elton and Grubber M.J. "Modern Portfolio Theory and Investment Analysis", Fourth Edition John Wiley and sons, Inc. New York. 1991, pp158-170.
- [11] Elton, J. Elton and Grubber M.J. "Modern Portfolio Theory and Investment Analysis", Fourth Edition John Wiley and sons, Inc. New York. 1991, p.170.
- [12] Abi Saleh George, Baz Fareed, Stock Exchange Market and Portfolio Administration, Bank Union.
- [13] Jaber Mohammad, Investment in Securities, Introduction to Basic and Technical Analysis of Investment. Obtained from the researcher himself, P.O.Box. 322, 1989.
- [14] Hussah Bint Ibraheem, Analysing Risk Degree and the Efficiency of Saudi Stock Exchange, Hussah Bint Ibrahim, Analyzing Risk Degree and the Efficiency of Saudi Stock Exchange. Research of master's in economy, faculty of administrative science, King Saud University, Ryadh, 1997.
- [15] Hinnawi Mohammad, Al dar Al Jamiya, Beirut, Arab University of Beirut, 1994.
- [16] Dusooki and Hassan, Programming Objectives and Best Distribution of the Stock Portfolio of Saudi companies", journal of the faculty f administrative science, King Saud University, 8th volume, 1996, pp 423-425.

- [17] Allogani Nabeel, Mattar Mahmoud, Investment Performance of Value and Growth Stock in Kuwaiti Stock Exchange, Arab Journal for Administrative Science, 8th volume, 2nd edition, 2001, pp217-232.
- [18] Mattar Mohammad and Salem Abdullah, Principles of Investment, 1st edition, Arab Commercial Institute, Bank Division, Kuwait, 1983.
- [19] Mattar Mohammad, Administration of Investments, Jordan Journalism Printing Press, 1993, Al-Arabia, 1987.
- [20] Mahdi Fadil, Deriving and Designing the Ideal Portfolio to invest in Saudi stocks, release of the Research Center, faculty of administrative science, King Saud University, 1989.
- [21] Al- median Mohammad, Financial Administration of Companies, King Fahad University for Petroleum and Metals.
- [22] Ghazi Almomani, The New Investment Portfolio, Dar Almanahige, Amman,2002.
- [23] Hindi Muneer, Tools of Investment in Stock Exchange Markets, Securities and Investment Portfolios, Arab Institution for Financial and Bank Studies, 1993.
- [24] Hiekal Abdulaziz, Ways of Investment Evaluation, Introduction to Feasibility Studies by Using the Computer, 1985.
- [25] Alwokian Adel and Al-Shammary Turkey, Financial Performance and the Company Value; a study on Kuwaiti industrial companies, Arab Journal for Administrative Science, Kuwait University, 9th volume, 1st edition, 2002.
- [26] Bdoie Zui, Kaue Alex and Marcus J. "Investments" 2nd edition. Richard D. Irwin, Innc 1993.
- [27] Capaul, Cario, Rowley. Lan and Sharp, W.F., International Value and Growth Stock Returns, Financial Analysis Journal, 1993, pp27-36.
- [28] Dobbins D. Witt, S. and Fielding John. "Portfolio Theory and Investment Management", 2nd edition, Balckwell Investment Publishers Inc. Massachusetts 02L42USA, 1994.
- [29] Eales Brian A., Financial Risk Management, NcGraw- Hill Book Co, 1995.
- [30] Elton, J. Elton and Grubber M.J. "Modern Portfolio Theory and Investment Analysis", modern portfolio theory and investment and analysis, 4th edition, John Wiley and Sons, Inc. New York. 1991.
- [31] Fabozzi Frank .J. and Modigliani Franco, "Capital Markets Institution and Instruments"; Prentice-Hall, Inc. NJ 07632, 1992.
- [32] Francis Jack Clark, "Investment Analysis and Management" McGrow – Hill Series in Finance, New York, 1991.
- [33] Haugen, A. "Modern Investment Theory" 3ed edition, Prentice-Hall, Inc. 7632, 1993.
- [34] Hull, Hohn, "Options, Futures and Other Derivative Securities", Prentice-Hall, Inc. NJ 07632, 1989.
- [35] Ibbotson, Roger G. and Riepe, Mark W., Growth Vs Value Investing, And Winner is, Journal of Financial Planning, pp64-71.
- [36] Keith V. Smith, "Portfolio Management, Theoretical and Empirical Studies of Portfolio Decision ", Making Holt, Rinehart and Winston, Inc, 1971.
- [37] Litzenberger, R. and Ramaswamy, K., "The Effect of Personal Taxes and Dividends and Capital Asset Prices, Theory and Empirical Evidence, Journal of Financial Economics, 1979.
- [38] Mayo, Herbert 13, "Investment Analysis and Portfolio Management" 4th edition. The Dryden Press, 1994
- [39] Sharp, William F., "Investment" 3rd edition. Prentice-Hall International, Inc., 1985.