RES MILITARIS
REVUE EUROPEENNE D ETUDES EUROPEAN JOURNAL OF MILITARY STUDIES
Social Science Journal

The Possibility of Estimating the Returns and Systeamic Risks of a Sample of Industrial Companies Listed In The Iraqi Stock Exchange Using The Garch Model

By

Salim Sallal Rahi Al Hassnawi
Department of Business Administration, College of Administration and Economics, University of Al-Qadisiyah, Iraq
Email: salimsalim125@yahoo.com

Mohammad Ali Abd
Department of Business Administration, College of Administration and Economics, University of Al-Qadisiyah, Iraq
Email: mohamad.ali21@qu.edu.iq

Abstract

The study aims to estimate the relationship between investment returns and risks for a sample of companies listed in the Iraqi Stock Exchange and aims to study the systemic risks that accompany returns and how to reduce their effects. The study sample is the companies listed in the financial market. The sample of the study may reach (4) industrial companies for a period of five years from 1/1/2017 until 31/12/2021. The Garch statistical model was used to find out the returns and systemic risks depending on the closing prices of the same companies in the study. The importance of the study lies in dealing with an important sector in the Iraqi economy, and this sector is an important link in the Iraqi economy, and knowing the most important factors affecting the return, for the purpose of avoiding them in order to achieve more returns and the causes of systemic risks, and the study reached a set of conclusions, the most important of which is that there is a relationship A direct correlation between return and risk, that is, the greater the investor's ambition to achieve a higher return, the more he must bear the highest risk. The study also noted that some stock prices in the Iraqi stock market are similar for more than a month, due to the low demand for buying corporate shares, and the study recommended the need to ensure The financial reports published by the companies listed on the Iraqi Stock Exchange have information related to expectations of achieving returns in order to assist investors in making sound and rational investment decisions, as well as the continuous study of the published financial information to ensure its accuracy, as it is relied upon in making appropriate investment decisions, and in a manner that ensures achieving the highest returns. The required, and the need to take into account the impact of the relationship between return and risk in building an investment decision in companies It has a great role in achieving returns. Before making any investment decision, the investor should determine the goals he wishes to achieve through the investment process, as well as determine the level of risk that the investor can bear.

Keywords: Return, Risk, Garch model.

Introduction

The issue of investment is one of the important topics that occupy a major place, each investor has two sides, one of which is the return that he will achieve and the other represents the risks that the investor will bear. And that the investment decision is to choose the investment in which the returns are acceptable in return for low risks. That is, determining the size of the

desired return to be obtained in exchange for the risks that it accepts. The return is also one of the basic elements when investing in current assets, and to achieve this, the investor must find a balance between return and risks. Return The trade-off between return and risk is extremely important in financial and management thought, This is because it is directly related to all aspects of activities in business establishments and because of the paramount importance of both return and risk, as the financial markets are characterized by many ambiguities and a state of lack and a different level and degree of risk as the rational investor always seeks to maximize the benefit from the available resources through investing in the assets that achieve him The required returns, it works on the exchange between the return and the risk in the appropriate investment decision and the selection of the investment that achieves the highest return in return for the least risk if the returns and risks are different from one investment to another. As the study aims to estimate the return and investment risks using the Garch model, the topic of time series has entered wide areas in our lives, in particular the economic fields, especially the financial fields, including under the title of financial time series, as the late last decade of the last century witnessed a rapid development in the Or it is (called the stock exchange), And here the interest in studying financial time series began.

I.Research Methodology

First: Research Importance

A. The study of the relationship between return and risk in the Iraqi market and securities, and the identification of steps to be followed by investors to achieve the greatest return and the least risk. The importance of the study also stems from its handling of various important sectors in the Iraqi economy, and these sectors are an important link in the Iraqi economy.

B. The importance of the society and its sample emerges, as they are different areas and sectors that contribute to achieving economic development in society. The importance of the study is evident in knowing the fluctuations that occur in the returns of the selected sectors.

Second: The Study Problem

A. To what extent can the risks associated with each investment process be controlled?

B. Is there a statistical significance of the beta coefficient?

Third: Study hypotheses

A. The possibility of controlling the risks associated with each investment process with a good diversification in quality.

B. There is a statistically significant relationship between the conditional fluctuations of shares and their returns.

Fourth: Objectives of the study

A. Shedding light on a vital and important academic and knowledge aspect in business establishments in general in particular, except the return and risks that have an impact on the investor's choices for the type of investment.

B. Estimation of investment returns and risks for companies listed in the Iraqi Stock Exchange using time series models.

Fifth: The research sample

The study population represented in some of the companies in the industry sector listed on the Iraq Stock Exchange, which amounted to (4) and on a monthly basis, while the study sample was represented by (4) companies listed on the Iraq Stock Exchange, which provided the necessary data during the study period for the years from 2017/1/ 1 until 2021/12/31.

II.The theoretical side

A- Return: The return is defined as the real cash flow that the investor obtains during a certain period of time, as it is expressed in proportion to the investment cost at the beginning of the period, and it is called the return for the period of ownership, (Brigham & Ehrhardt, 2011:219). The yield is also defined as the total revenue gained from securities or bonds, through the payment of profits or interests in addition to the change in the price of the bond (Hubbard & O'brien، 2012: 72).

It was clarified (***Howells*** & Bain, 2007: 24) that there are forms of return, which are as follows:

1. Dividends if the security represents ownership in the company such as shares.
2. . Interests if the security represents a debt on the company, such as bonds.
3. Capital gains obtained through the sale of securities and represent the difference between the purchase price and the selling price (profit).

While other researchers mentioned that there are multiple forms of return that differ according to the divisions or studies described by the researchers, which are as follows:

1. The realized rate of return (actual): that is, it is the real rate of return that calculates the exchange between the present and the future in consumption, taking into account the change in prices (Welch, 2009: 99).
2. The expected rate of return: It is defined as the weighted average of the results of the potential return, as each outcome is related to the probability of its occurrence (Hall, 2012:56).
3. Required rate of return: It is defined as the minimum rate of return acceptable to investors before undertaking the investment process and at a certain degree of risk (Henar, 2003: 161).

B-Return indicators

1. The rate of return on assets: It is defined as the basic indicator of the efficiency of the facility that allocates and manages its resources, and it is different from the return on equity, in that the profit is calculated as a percentage of the money that it gives to the owner and creditors, similar only to the money that he gives to its owner (Hihg nsa, 2012:11).
2. The rate of return on equity: It is defined as the amount that is in the form of a percentage that the company earns from investing in ordinary shares in a specific period (Hitehter, 2003:16).
3. The rate of return on deposits: It is defined as one of the best measures of bank profitability performance, and this ratio reflects the ability of the bank's management to benefit from customers' deposits in order to achieve profits (Dufea, 2010:24).

C-Risks

Any event or action that has adverse effects on the bank's capital and profits, which could either lead to direct losses of profits and erode the capital, or may lead to the imposition of restrictions on the bank's ability to achieve its goals of survival and continuity or to benefit from opportunities that would To reinforce his works (Lukic, 2015: 269) as it is defined as the probability of an event or series of events occurring during a specified period of time in a way that negatively affects the achievement of a specific goal (Haneef *et al*, 2012:309).

D-Types Risk

Systemic risks: you define it as the risks that cannot be eliminated, and it is not possible to anticipate the time of its occurrence. Therefore, this type of risk cannot be eliminated or eliminated by the process of diversification (Hamzaee, 2011:90), as well as it is known as that risk that affects most assets and is called systemic risk, i.e., the presence of one systematic risk affecting a large number of assets. Assets, whether large or small in varying proportions. And systemic risk has a wide impact on the market, so it is often called market risk (Jordan & Miller, 2009: 383).

Types Systemic risks (Peterson& Fabozzi, 2003: 271)

A. Interest Rate Risk
B. Purchasing Power Risk
C. Market Risk
D. Currency Exchange Risk
E. Credit risk

The systemic risk is measured according to equation (1): (Al-Amiri, 2013: 286).

S R= B2xVRm ……. (1)
B2: square beta coefficient
VRm: market portfolio rate variance

E-The relationship between return and risk

The return on investment is closely related to the degree of risk, the greater the investor's ambition to obtain greater returns, the higher the degree of risk, the time dimension of the investment (the length of the investment period) and the degree of risk, which means that the longer the capital recovery period, the higher the investor's risk level for a particular project, The opposite is true and on this basis, it is noted that the private investor, especially the new ones, are trying to invest their money in quick-return investments in order to overcome or mitigate the degree of risk that the invested funds may be exposed to as a result of economic fluctuations (Al-Issawi, 2011: 25-26).

GARCH Model Conditioned Variance Heterogeneity

This additional characteristic would improve the prophecies resulting from these mixed models.

After that, this idea developed to include moments of the second degree, where Eagle pointed out in 1982 AD the importance of using the concept of conditional variance instead of unconditional variance in improving predictive values., as it was intended when the ARMA

models were suffering from a shortage, especially in time-related financial chains.

The GARCH model equation can be formulated as follows

$$\varepsilon\tau = V\tau\sqrt{h\tau}$$

$$h\tau = c + \sum_{i=1}^{q} ai\varepsilon^2\, t_{-1}$$

$$V_t \xrightarrow{iid} N(0,1)$$

$h\tau$: heterogeneous variance over time.
V_t: a random variable that follows a condensed center normal distribution.
$N(0,1)$:normal distribution function short center.

III.Results

We will try to study the sensitivity of the market on the one hand, and on the other hand, to estimate the relationship between return and risk in some stocks using GARCH model for the Iraq market.

1-Descriptive statistics and results

Through statistical analysis, we will be able to reach the results of knowing the fluctuations to which the markets (shares) are exposed to the sectors by determining the greatest and least value of these shares by extracting the average of those returns. As well as extracting the standard deviation (s.d.), as well as making sure that the study data follow a normal distribution through the (Jarque-Bera Kurtosis) test and the following table shows those results.

Table No (1). *Shows the statistical characteristics of the returns series of shares listed in the Iraqi market*

sectors	shares	R	Max.	Min.	Std. Dev.	Skewnes	Kurtosis	Jarque-Bera	p-value
Industries sector	Carpets and upholstery	-0.02845	0.30435	0.00621	0.05595	2.42054	9.97671	180.2760	0.0002
	Chemical and plastic industries	0.92567	7.01688	0.00383	0.25798	5.16799	27.82197	1807.407	0.70060
	Canadian veterinary vaccines	0.09257	0.35294	0.00588	0.07707	1.42811	4.78673	28.37601	0.0040
	Baghdad for soft drinks	0.93125	0.33898	0.00294	0.07680	1.12456	3.88229	14.59245	0.1860

Through the results of Table (1), we notice that the average returns ranged between positive and negative for the industries sector, as the highest average return was to Baghdad for soft drinks, its value amounted to 0.93125, while the lowest average return was to carpets and furnishings, which amounted to (-0.02845). Industries sector, so it had the highest risk ratio (chemical and plastic industries), with a value of (0.25798).

As for the nature of the data, the Jarque-Bera test was based on the following hypothesis:

H_O: The data does follow a normal distribution
H_1: The data does not follow a normal distribution

We note through the results obtained through statistical analysis that the data subject to the hypothesis of normal distribution and companies fulfill the condition (chemical and plastic industries), where the value was (14.59245). This value follows the normal distribution. Where it is greater than 5%. Thus, we reject the null hypothesis and accept the alternative hypothesis which states that the data for the study follow a normal distribution.

We also note that the values of the skew coefficient (1) are positive and this is evidence that the distribution is oriented to the right.

Table No (2). *shows the results of the ARCH. variance instability problem test results*

sectors	shares	F-statistics	Obs*R-squared	P-value	The decision
Industriessector	Carpets and upholstery	0.022	0.012	0.021	The variable is unstable in variance
	Chemical and plastic industries	0.000	0.000	0.029	The variable is unstable in variance
	Canadian veterinary vaccines	0.023	0.031	0.036	The variable is unstable in variance
	Baghdad for soft drinks	0.000	0.000	0.000	The variable is unstable in variance

Table (2) represents the ARCH instability problem test. The values of Obs*R-squared were extracted for the industries sector, which showed that the values are very small, ranging between (0.000 and 0.033). This is evidence that the variance is not stable for these data. Also, all calculated F values are significant, meaning they are less than 5%. Thus, we accept the null hypothesis, which states that the variance is unstable.

Table No (3). *shows the results of choosing the best model that represents the data*

Sectors	Standard	ARCH	GARCH	T-ARCH	M-ARCH	E-GARCH
Carpets and upholstery	Akaike info criterion	4.326	4.346	4.356	4.026	4.336
	Schwarz criterion	4.236	4.256	4.246	3.936	4.246
	Hannan-Quinn criter.	4.325	4.345	4.335	4.025	4.335
Chemical and plastic industries	Akaike info criterion	4.325	4.345	4.335	4.025	4.335
	Schwarz criterion	4.323	4.343	4.333	4.023	4.333
	Hannan-Quinn criter.	4.958	4.978	4.968	4.658	4.968
Canadian veterinary vaccines	Akaike info criterion	4.969	4.989	4.979	4.669	4.979
	Schwarz criterion	4.658	4.678	4.668	4.358	4.668
	Hannan-Quinn criter.	4.958	4.978	4.968	4.658	4.968
Baghdad for soft drinks	Akaike info criterion	4.385	4.405	4.395	4.085	4.395
	Schwarz criterion	4.985	5.005	4.995	4.685	4.995
	Hannan-Quinn criter.	4.326	4.346	4.336	4.026	4.336

For obtaining the best model that represents the data, a group of models has been estimated, namely (ARCH, GARCH, T-ARCH, M-ARCH, E-GARCH). Where the comparison was made between these models using several criteria (Akaike info criterion, Schwarz criterion, Hannan-Quinn criter.) so that the best model is the one that has the lowest value of those criteria.

The variables specific to the industrial sector were, the carpets and furnishings variable, the best model to represent is the (M-ARCH) model, because it has the lowest value for the three criteria, which was (4.026, 3.936, 4.025). As for the chemical and plastic industries variable, the other model was the best model to represent its data, which was the (M-ARCH) model, which obtained the best values for the comparison criteria (4.025, 4.023, 4.658). As for the Canadian variable for veterinary vaccines, it is the other model. The best model to represent its data is the (M-ARCH) model, where it obtained the best values for the comparison criteria, which are (4.669, 4.358, 4.658). As for the last variable, which is Baghdad Company for Soft Drinks, the best model to represent its data was the (M-ARCH) model, which obtained the best values for the comparison criteria (4.085, 4.685, 4.026).

Table No (4). *shows the results of estimating the β-factor using the GARCH. model*

Sectors	β	t-stat	p-vale	R^2	R^2 *Adj*	DW	BG	ARCH (1)-LM
Carpets and upholstery	0.367	0.325	0.025	0.0032	0.0065	2.928	0.957	0.956
Chemical and plastic industries	2.365	3.698	0.847	0.0365	0.0658	2.365	0.351	0.022
Canadian veterinary vaccines	3.256	5.235	0.658	0.0025	0.0074	2.125	0.362	0.327
Baghdad for soft drinks	6.355	5.368	0.821	0.0369	0.0098	2.321	0.333	0.021

Through the above table, which shows the estimated values of specific to the sector and industries, which are equal to (0.985, 0.367, 2.365, 3.256, 6.355), as we note the β coefficient where there is no statistical significance at the level of significance of 5%. That is, we accept the null hypothesis. Because all values of the t-test are not significant, as the probability ratios are greater than 5%.

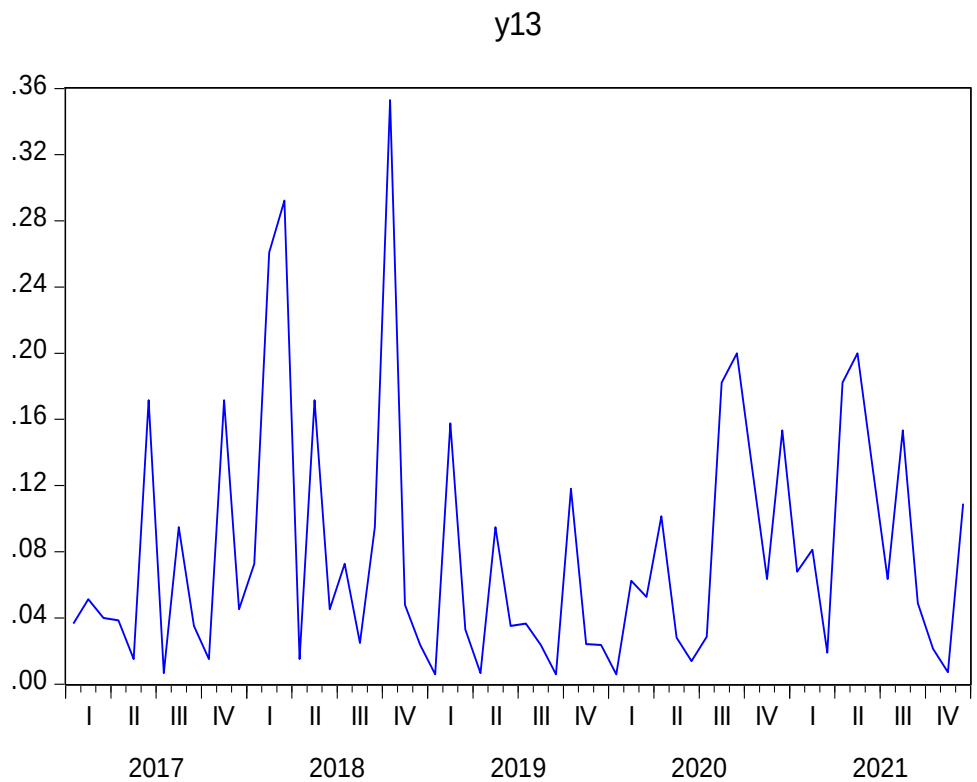


Figure No. (1) *shows the graph of the residuals of the MEDAF-GARCH-M residuals model for Al-Kindi Veterinary Vaccines Company*

Table No. (5) *shows the results of estimating the GARCH model to test the relationship between stock return and market return for Al-Kindi Company for Veterinary Vaccines.*

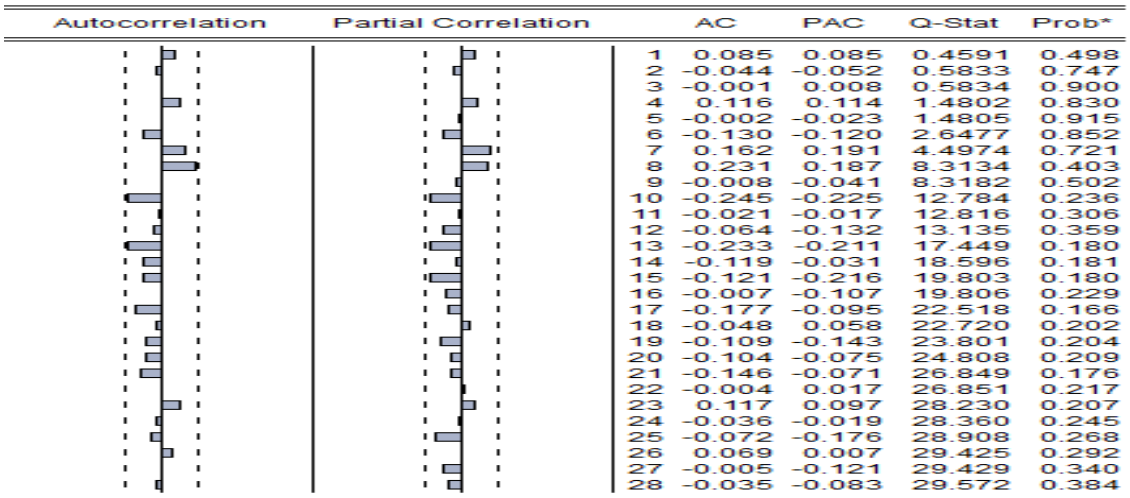
Dependent Variable: Y13
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
Date: 09/09/22 Time: 22:18
Sample: 2017M01 2021M12
Included observations: 60
Convergence achieved after 26 iterations
Coefficient covariance computed using outer product of gradients
Presample variance: backcast (parameter = 0.7)
GARCH = C (3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.079726	0.014988	5.319305	0.0000
R2	-11.72307	3.55E+11	-3.31E-11	1.0000
	Variance Equation			
C	0.001142	0.003055	0.373779	0.7086
RESID (-1)^2	-0.004776	0.079286	-0.060243	0.9520
GARCH (-1)	0.818234	0.520570	1.571803	0.1160
R-squared	0.004962	Mean dependent var		0.081155
Adjusted R-squared	-0.012194	S.D. dependent var		0.077067
S.E. of regression	0.077536	Akaike info criterion		-2.170869
Sum squared resid	0.348685	Schwarz criterion		-1.996341
Log likelihood	70.12608	Hannan-Quinn criter.		-2.102602
Durbin-Watson stat		1.811149		

Through the above table, we note that the coefficients of the estimated model are RESID (-1) ^2 and GARCH (-1), as their values are one of them negative and the other positive, and from the conditions of stability, their sum is less than one. There is a problem of linear correlation between the variables, meaning that there is independence between errors

From the above figure (1), we notice the series that represents the returns of the stock for Al-Kindi Company for Veterinary Vaccines, represented by the residual, which fluctuated around the fixed arithmetic mean. Where it can be said that it is characterized by stability.

Date: 09/09/22 Time: 22:21
Sample: 2015M01 2019M12
Included observations: 60



	AC	PAC	Q-Stat	Prob*
1	0.085	0.085	0.4591	0.498
2	-0.044	-0.052	0.5833	0.747
3	-0.001	0.008	0.5834	0.900
4	0.116	0.114	1.4802	0.830
5	-0.002	-0.023	1.4805	0.915
6	-0.130	-0.120	2.6477	0.852
7	0.162	0.191	4.4974	0.721
8	0.231	0.187	8.3134	0.403
9	-0.008	-0.041	8.3182	0.502
10	-0.245	-0.225	12.784	0.236
11	-0.021	-0.017	12.816	0.306
12	-0.064	-0.132	13.135	0.359
13	-0.233	-0.211	17.449	0.180
14	-0.119	-0.031	18.596	0.181
15	-0.121	-0.216	19.803	0.180
16	-0.007	-0.107	19.806	0.229
17	-0.177	-0.095	22.518	0.166
18	-0.048	0.058	22.720	0.202
19	-0.109	-0.143	23.801	0.204
20	-0.104	-0.075	24.808	0.209
21	-0.146	-0.071	26.849	0.176
22	-0.004	0.017	26.851	0.217
23	0.117	0.097	28.230	0.207
24	-0.036	-0.019	28.360	0.245
25	-0.072	-0.176	28.908	0.268
26	0.069	0.007	29.425	0.292
27	-0.005	-0.121	29.429	0.340
28	-0.035	-0.083	29.572	0.384

*Probabilities may not be valid for this equation specification.

Figure (2). *shows the graph of the simple and partial autocorrelation of residuals for Al-Kindi Company for Veterinary Vaccines*

Through the above table (2), which represents the results of the simple autocorrelation coefficient for the squares of the residuals for Al-Kindi Company for Veterinary Vaccines, which was significant as it falls within the confidence interval shown in the above figure. Also, the Q-Stat value was 29.572, and these values are significant

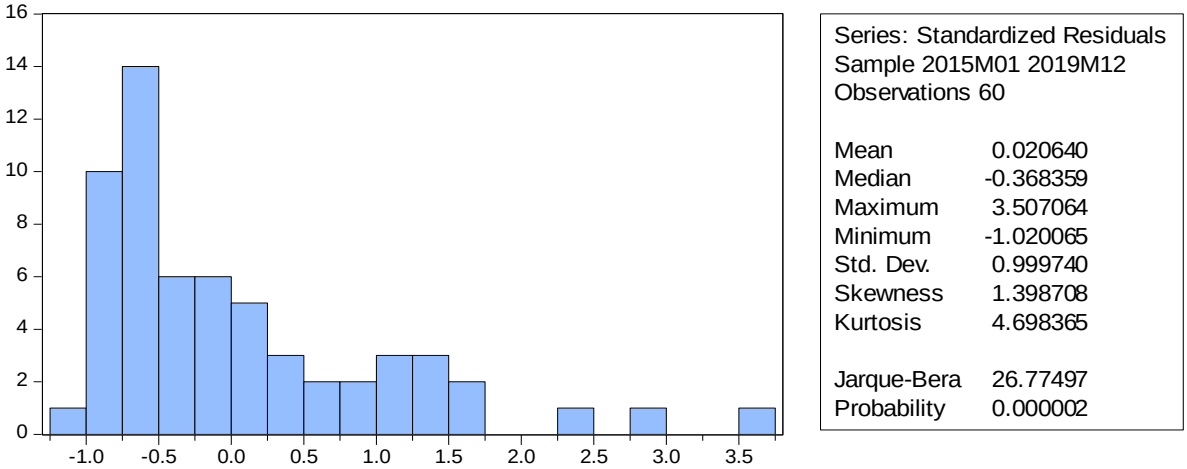


Figure No. (3) *shows the test for the normal distribution of residuals for Al-Kindi Company for Veterinary Vaccines.*

We note from the above table (3), which represents the shape of the normal distribution of the residuals for Al-Kindi Company for Veterinary Vaccines, where we note that the value of Jarque-Bera is 26.77497, which was significant, and this is clear through the probabilistic value, which is (0.00002). Where it is significant at the level of significance of 5%. Thus, the series of residuals is stable, meaning that the random errors are independent.

Date: 09/09/22 Time: 22:23
Sample: 2017M01 2021M12
Included observations: 60

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	0.074	0.074	0.3495	0.554
		2	-0.068	-0.074	0.6454	0.724
		3	-0.056	-0.046	0.8533	0.837
		4	-0.056	-0.054	1.0621	0.900
		5	-0.042	-0.041	1.1803	0.947
		6	-0.073	-0.078	1.5469	0.956
		7	0.281	0.287	7.1004	0.419
		8	0.250	0.209	11.578	0.171
		9	-0.050	-0.058	11.759	0.227
		10	-0.058	-0.014	12.012	0.284
		11	0.044	0.097	12.161	0.352
		12	-0.078	-0.075	12.631	0.396
		13	-0.104	-0.056	13.481	0.411
		14	-0.118	-0.181	14.599	0.406
		15	-0.020	-0.183	14.634	0.478
		16	-0.014	-0.081	14.650	0.550
		17	-0.038	-0.016	14.773	0.612
		18	-0.057	-0.149	15.064	0.658
		19	-0.041	-0.082	15.215	0.709
		20	-0.040	0.013	15.361	0.755
		21	-0.080	0.016	15.965	0.772
		22	0.049	0.185	16.203	0.806
		23	0.054	0.164	16.499	0.833
		24	-0.067	-0.044	16.960	0.850
		25	-0.076	0.011	17.582	0.860
		26	-0.014	0.090	17.605	0.890
		27	-0.040	-0.080	17.789	0.910
		28	-0.038	-0.111	17.953	0.927

*Probabilities may not be valid for this equation specification.

Figure No. (4): *Simple autocorrelation coefficient results for residual squares*

Through the above table (4), which represents the results of the simple autocorrelation coefficient for the residual squares, which were significant as they fall within the confidence interval shown in the above figure. Also, the value of (statistic) Q-Stat was equal to 17.953 and these values are significant.

Heteroskedasticity Test: ARCH			
F-statistic	0.319659	Prob. F (1,57)	0.5740
Obs*R-squared	0.329030	Prob. Chi-Square (1)	0.5662

The above table represents the test of homogeneity of conditional variance for the residual and specific variance of a variable for Al-Kindi Company for Veterinary Vaccines, where we note that the value of Obs*R-squared is 0.329030 is smaller than the tabular value with a degree of freedom of 1 at the level of significance of 5% where the probabilistic value is 0.5662 and this value is greater than 5% Through these results we accept the assumption of homogeneity of variance.

IV.Results Discuss

A-Conclusions

1. All parties in the financial market must be aware of the risks they face and take precautionary measures and measures to allow them to face any kind of financial risks.
2. There is a direct relationship between return and risk, that is, the greater the investor's ambition to achieve a higher return, the higher the risk he must bear.
3. There are several statistical tools to study the relationship between return and risk, but the best and most appropriate study in the Iraqi Stock Exchange is the GARCH model.
4. The purpose of using the GARCH model is to create a group of investments that bring the investor the largest returns at an acceptable level of risk.

B-Recommendations

1. That the financial reports published by the companies listed in the Iraqi Stock Exchange should contain information related to expectations of future profits in order to assist investors in making sound investment decisions.
2. Sectoral expansion in the Iraqi Stock Exchange, for the purpose of attracting foreign investments, which helps in market growth and diversification of investments.
3. Before making any investment decision, the investor should specify the goals and purposes that he wishes to achieve from the investment process, and also determine the level of risks that he can bear
4. It is mandatory to review the periodic bulletins of the shares to be invested in, in order to be good.

References

1. . Berk, Jonathan & DeMarzo, Peter & Harford, Jarrad, "Fundamentals of Corporate Finance", 2nd ed, Prentice Hall, USA, 2012.
2. Al-Esawy, Kazem Jassem, “Economic Feasibility Studies and Project Evaluation”, Dar Al-Manhaj for Publishing and Distribution, Jordan - Amman, 2011.

3. Ali Bin Al-Dhab, Studying the impact of the financial structure and the policy of dividend distribution on the value of the economic institution listed on the Stock Exchange, a case study of a sample of companies listed on the Kuwait Stock Exchange during the period 2006-2008, a memorandum for obtaining a master's degree in management sciences, unpublished, Institute of Economic and Commercial Sciences and Science Management, Kasdi Merbah University, Ouargla
4. Archer,H.Stephen and choate . G Marc and Racette George,"Financial management" 2 and,ed., N.Y. john Wiled and sons,1983
5. Brigham Eugene F. & Ehrhardt, Michael C. " Financial Management Theory and Practice". 13th ed. South-Western. 2011.
6. Dufera Abdi " Financial performance evaluation " A Case Study of Awash International Bank, Mekelle, Ethiopia Reg. No0014/01, 2010.
7. Fabozzi, Frank J. &Peterson, Pamela P.," Financial Management & Analysis",2nd Edition, John Wiley & Sons, Inc,2003.
8. Gitmen, L, Lawnence, "Principles of Managerial al Finance", 9th ed,USA, 2000.
9. Hall, J.C". Risk Management and Financial Institutions". 3rd ed. Hoboken: John Wiley & Sons, 2012.
10. Hamzaee, Reza G "Modern Banking and Strategic Portfolio Management." Journal of Business & Economics Research (JBER) 4.11, 2011.
11. Haneef, Shahbaz& Riaz, Tabassum & Ramzan, Muhammad & Runa, Mansoor & Ishaq , Hafiz," Impact of Risk Management on Non-Performing Loans and Profitability of Banking Sector of Pakistan", International Journal of Business and Social Science, Vol. 3 No. 7, 2012.
12. Hitchner James R. " Financial Valuation Applications and Models" John Wiley & Sons, Inc New Jersey 2003.
13. Howells Peter & Bain Keith " Financial market and institution" 5th ed, published, prentice hall, 2007.
14. Hubbard glenn R & O'brien Anthony Patrick " "Money, Banking, and the Financial System" International Edition Prentice Hall,2012.
15. Jordan, d.bradford & miller , w Thomas , "Fundamentals of investments" , kentacky and saint louis university , 5th ed , 2009.
16. Lukic, Aleksandar," Types of Risks and Risk Management in The Contemporary Banking Operations", International Journal of Advanced Research, Vol 3, No 3, 2015.
17. Welch, Ivo, " Corporate finance An Introduction", 1st ed, Prentice Hall, 2009. Al-Amri, Muhammad Ali Ibrahim, "Investment Portfolio Management", first edition, Ithraa Publishing and Distribution House, Amman - Jordan, 2013.