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Review of Capital Market Efficiency: Some Evidence from Jordanian Market

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Abstract

The objective of accounting numbers is to provide the financial data about the performance of certain enterprise in order to help the managers, investors, shareholders and government authorities in making their decisions. On the other hand, the purpose of accounting research is to evaluate the usefulness of accounting data to investors and other users. Furthermore, the purpose of capital market research is to examine the association between accounting numbers and security return and to test whether or not accounting data carry any information content to security market, and if so it should be impounded in the security price, the results show the security market reacted with mixed signal on releasing profitability, liquidly, and solvency information.

Key words: security returns, accounting numbers and Efficient Market Hypothesis (EMH)
JEL classification: M41, D92

I. Introduction

The basic objective of financial reporting is to provide investors and creditors with useful information that help them assess the amount, timing, and uncertainly of cash flows to help them make national investment and credit decisions (SFAC No 1). Over the past three decades, a significant amount of accounting research has emerged to evaluate the usefulness of accounting data to investors and others by explaining the association between the release of accounting numbers and security return (price). The underlying assumption of these studies is that the capital markets are efficient.

In an efficient capital market, security prices react instantaneously unbiasedly to impound new information in such a way that leave no opportunity to market participants to consistently earn abnormal return. Previous empirical research in accounting and finance literature provides evidence supporting efficient market hypothesis. The results of these studies imply that accounting data are value relevant to investors ' decision as they correlated with security returns. However, there have been several studies that have documented strong evidence of anomalies in the stock market that seems to contradict with the EMH.

The objective of this paper is to review certain aspects capital market efficiency and it implication on accounting numbers with some applications on security market in Jordon.

The rest of this paper is organized as follows. Section 1 presents definition of capital market efficiency hypothesis. Section 2 describes the forms of efficient market hypotheses. Section 3 discusses

expected return models. Section 4 describes the sample selection and data collection. Section 5 presents research methods. Section 6 presents the empirical results and section 7 concludes the paper.

II. Definition of Efficient Market Hypothesis (EMH)

The primary hypothesis for EMH is that stock prices accurately and quickly reflect all available information in such a way that no one can earn abnormal return. The time for the adjustment for any new information is considered a critical factor; if the market adjusts more rapidly and accurately, it is considered more efficient. Dyckman and Morse (1986) state " A security market is generally defined as efficient if (1) the price of the security traded in the market act as though they fully reflect all available information and (2) these prices react instantaneously, or nearly so, and in unbiased fashion to new information".

The alternative hypothesis is that security market is inefficient and that result of stock price is not accurately reflecting the new information. This might result from the following: the investor is unable to interpret the new information correctly; the investors have no access to the new information; the transaction cost in trading security is an obstruction for free trading; the restriction on short sale; and finally, the investors might be misled by the change in accounting principles.

Types of Efficient Market Hypothesis (EMH)

The phrase "efficient market" used to describe the market price that fully reflects all available information was coined by Fama (1970). Furthermore, he classifies the market efficiency into three levels on the basis of the information: Weak, Semi-strong and Strong forms.

Weak Form Market Efficiency

The weak-form occurs when the stock prices reflect information about the past share price series only. Another way to state this hypothesis is: Investors who depend solely on past series of stock prices in selecting their portfolio cannot consistently outperform the same investors who buy and hold random portfolio at the same risk.

Several studies address the issue of whether stock price behaviour is a random walk or not. Robert (1959) and Osborne (1959) found that stock price movement follows a random walk. " The random walk hypothesis simply states that at a given point in time, the size and direction of the next price change is random with respect to the knowledge available at that point in time. " (Dyckman and Morse, 1986)

The argument that stock price change is random does not mean that stock price changes without any reasons; there is a reason for such movement, which has been the subject of empirical research for over a decade.

There have been four major methods to test the dependence of return on time (Weak-Form of market efficiency): serial correlation tests, filter rule test, cyclical tests, and volatility test.

Serial Correlation Tests

Serial correlation measures the association between two elements of time series separated by a constant number of time periods. The order of the serial correlation is the number of time periods that separate the two elements. Therefore, we can call it first order serial correlation if the number of the separative periods is one.

The test for this approach was performed in daily return by Schwartz and Whitcomb (1977a, 1977b) and Rosenberg and Rudd (1982), who found that the first order serial correlation of daily return residual from the market model is small but significantly negative.

Filter Rule Tests

Filter Rule was employed for testing the EMH weak-form in different ways. The first approach is this: If the stock price advances in certain percentage higher than its previous low level, it is bought. If the stock price declines from previous high point and the reduction exceeds certain percentage it is sold. This approach was investigated by Alexander (1961), Fama (1965) and Fama and Blume (1966), who found no abnormal return was generated (For Alexander (1961) no abnormal return was found after taking transaction costs into consideration).

There is another approach for using filter rule, which was adopted by Levy (1967) and is based on the ratio of the current stock price to its average. He found no abnormal return on his portfolio. On the other hand, Jensen and Benninton (1970) used levy's procedure with a different set of data and did not find any significant abnormal return.

Cyclical Tests

This test is for the cyclical behaviour in time series, which are usually performed by using several statistical methods such as spectral analysis. Several studies addressed this issued by Grangor and Morgensterm (1963), Cross (1973), French (1980), Gibbons and Hess (1981) and Bonin and Moses (1974) and more. They investigate the effect of different day, Week and months of the year in stock behaviour, and in particular the effect of Monday, Friday and January and they found inclusive results.

Volatility Tests

The main assumption for the volatility test is this "expected returns are constant and the variation in stock prices is driven entirely by shocks to expected dividends (Fama, 1991)". Grossman and Shiller (1981) attempt to use volatility testing to examine whether the variation in expected return is rational. They found that the variation in expected return is irrational.

Semi-Strong-Form Market Efficiency

The market is efficient in semi strong form if the security prices reflect not only the information that contains the past time series of stock prices but also all publicly available information. This means that the stock price is adjusted rapidly and in an unbiased way to all public announcements in newspapers, journals, corporate forecasting and annual reports.

Semi-strong form market is relevant for accounting profession, because accounting is the primary source of public information, through the issue of financial reporting. If stock market is efficient in semi strong form, then investors cannot achieve a consistently above-normal returns. On the other hand, if the investors can consistently obtain above-normal return on trading at the time of the public announcement of specific information, then the stock market is inefficient with respect to this information.

The tests for semi-strong market efficiency were performed by examining the market reaction towards financial accounting reports and accounting announcements or non-accounting announcements. Non-accounting information is tested by previous empirical research: stock splits, block trading, dividend announcement, macroeconomic factors (interest rate, inflation, and money supply), tax effect, firm size and second hand-information. On the other hand, the accounting events are the following: earning announcement, other information in accounting report, changes in accounting principles.

The testing of market reaction to accounting information will be covered first. Next, I will explain some of selected non-accounting events: stock split, block trading, and dividend announcement.

Market reaction to accounting information

Harmon (1984) investigated the relative importance of earning versus fund flow, by examining the association between market reaction with earnings variables and fund variables. He found that earnings are more associated with market reaction than fund flows.

Judy Rayburn (1986) examined the ability of operation cash flow and accrual data in order to explain the relative change in equity value (return). She found that cash flow measures, aggregate accrual and current accrual are consistent with the information set used in value equity security (Abnormal Return).

Wilson (1987) reported a positive association between total accruals and cash flow from operation with stock return. He concluded from his research that total accruals and cash flow from operation taken together have incremental information content beyond earnings

Attar, Ali and Hussain (2004) examined the ability of current accounting data to explain future cash flows for UK firms as disclosed under FRS. 1. They found the disaggregation of earnings into cash and accruals, lead to higher power in explain future cash flow. Garrod and Hadi (1998) 's disaggregation of cash flows have incremental values than cash flows itself.

Stock splits

Fama, Fisher, Jensen and Roll (1969) performed the first test for semi-strong market efficiency. Using risk-adjusted return to test for market efficiency with respect to the announcement of stock split, they found a considerable high abnormal return prior to the announcement of stock split. On the other hand, after the stock split there is no extraordinary return, and the situation returns to exactly what EMH predicted. There is another study for stock split by Charest (1978a). Fama,*.et al.* (1969) and Charest (1978a) found that market is efficient with respect to stock split information.

Block trades

Market efficiency means the security price should reflect all the information. Block trading occurs when a large number of stocks are suddenly placed on the market for sale. This causes imbalance in the supply and demand in the market, as well as being perceived by the market as negative information. There are Several empirical studies by Scholes (1972), Kraus and Stoll (1972), Grier and Albin (1973) , Carey (1977) and Hess and Frost (1982), which investigate the effect of the sudden sale of a large number of stocks in the market. They found that there is a significant drop in price, but after a short period stock price rebounds to its prior level.

Dividend announcements

Testing of EMH with respect to dividends announcement was performed by Petit (1972), Charest (1978b) and Abeyratana,*..et al.* (1993), who found a significant abnormal return following cash dividends announcement. Foster and Vickrey (1978) found stock dividends have information content because the stock price rises at the time of stock dividends announcement. Hadi (2005) found evidences from Kuwait that market reactions of the release dividedness information . And that is consisted with efficient market hypothesis (EMH). Also, in Kuwait market we found Al-Deehani (2003) which investigated top management' s perception of value-relevant and value-irrelevant determinants of dividend policy

Therefore, the previous results are inconsistent with the semi-strong market efficiency.

Strong-Form Market Efficiency

The strong form of market efficiency occurs if the stock price reflects all public and private information. This form is the most comprehensive case and testing EMH in strong form is very difficult, because private information is difficult to observe. In the USA there is an official document

by the Security Exchange Commission (SEC) which contains an official summary of insider trading, giving a record of trading transactions by officers, directors and major stockholders using private information. If these trades result in abnormal return, then the market is not efficient in strong form.

Testing of EMH in the strong form is conducted in different ways: first, testing the return that is earned by the insider, as defined in SEC documents; second, using indirect test by examining the return and trading volume prior to public announcement.

Trading by insiders

Insiders are defined by the SEC as any manager, directors or owners who own at least 10 percent of a firm's shares. There are many restrictions on insider trading which prevent them from selling any stock before minimum holding period for at least six months and any profit made as a result of the violation of these restrictions must be returned to the company.

Testing EMH in the strong form is performed by examining the market reaction to insiders trading as reported by SEC. Penman (1982) examines the insider trading around earning forecasting announcement. He found that insiders buy shares before the announcement and sell their shares after the announcement, by which they can achieve high abnormal return. Therefore, insiders do indeed have private information that is not impounded in the stock price.

Examining the Return and Trading Volume Prior to Public Announcements

If there is a high abnormal return or volume reaction prior to the public announcement, this will be the evidence that there is a leak of information through another alternative source which often called private information. Morse (1980) found a grater trading than normal a day before public announcement. Keown and Pinkerton (1981) observe high abnormal return and trading volume prior to merger announcement. Abdel-Khalik and Ajinkya (1982) discover high return a week before analyst earning announcement.

New Classification for Market Efficiency

Fama (1991) developed new classification for market efficiency: first, test for return predictability instead of weak-form test; second, event studies instead of semi-strong form test; third, test for private information instead of strong-form test. For return predictability, he focuses on forecasting return with other variables like dividends yields and interest rate, test of assets pricing models and anomalies, and test for seasonal return and the volatility in security prices. On the other hand, event study is the clearest evidence of market efficiency because it gives a picture of the speed of price adjustment to new information. The test for market efficiency is conducted in event study with respect to the information about investment decisions, dividends changes, change in capital structure and corporate control transactions. Testing market efficiency with respect to private information can be performed by testing corporate insiders activities, change in value line's rankings, analysts survey and pension and mutual fund activities.

III. Expected Return Models

The EMH is stated mathematically by Fama (1970) in the following equations:

$$E(P_{j,t+1} \mid \Phi_t) = [1 + E(r_{j,t+1} \mid \Phi_t)] P_{jt} \quad (1)$$

Where,

E = Expected value operator.

P_{jt} = Price of Security j at time t.

$P_{j,t+1}$ = Price of Security j at time t+1 (including reinvestment of any intermediate cash income from securities (Fama, 1970).

$r_{j,t+1}$ = One period percentage return=$(P_{j,t+1}-P_{jt})/P_{jt}$.
Φ_t = Symbol of whatever set of information assumed to be "fully reflected" on share price at time t.

$$Z_{j,t+1} = r_{j,t+1} - E(r_{j,t+1} \mid \Phi_t) \quad (2)$$

$$E(Z_{j,t+1} \mid \Phi_t) = 0 \quad (3)$$

Where Zj,t+1 is the unexpected (or excess) return of security j at time t+1, the difference between the observed return, rj,t+1, and the expected return based on the information set Φt.

The expected return can be generated from various pricing models such as Capital Assets Pricing Model (CAPM), Market Model (MM), Mean Adjusted Return, Market Adjusted Return, Market and Risk Adjusted Return, Fama-MacBeth Residual, and Control Portfolio. The first four models will be explained in this section and for further information about the remaining models read Brown and Warner (1980).

Capital Assets Pricing Model (CAPM)

This model was developed by Sharp (1964), Lintner (Feb, 1965) and Mossin (1966) and it was used to generate expected return in order to use it in the expectation term in equations 2 and 3. The mathematical expression of the model is:

$$E(r_{jt}) = r_{ft} + [E(r_{mt}) - r_{ft}] \frac{cov(r_{jt}, r_{mt})}{\sigma^2(r_{mt})} \quad (4)$$

Where,
$E(r_{jt})$ = Expected rate of return of security j in period t.
r_{ft} = Riskless rate of return in period t.
$E(r_{mt})$ = Expected rate of return of the market portfolio in period t.
$cov(r_{jt}, r_{mt})$ = Covariance between r_{jt} and r_{mt}.
σ^2 = The variance of rate of return of market portfolio at period t.

CAPM asserts that the only variable that determines the difference in expected return is risk coefficient.

Risk premium is: $[E(r_{mt}) - r_{ft}] \frac{cov(r_{jt}, r_{mt})}{\sigma^2(r_{mt})}$

Which consists of two parts: level of risk = $cov(r_{jt}, r_{mt})/\sigma^2(r_{mt})$, which varies across securities and time; the price per unit of risk = $[E(r_{mt})-r_{ft}]$, which is the same for all securities. When the security return and the market move together, then $cov(r_{jt}, r_{mt})$ will be positive. The closer the covarability the higher the risks measure.

"Since the expected rate of return on the market portfolio (which is risky) is greater than the riskless rate, the larger the risk of assets j , $cov(r_{jt}, r_{mt})/\sigma^2(r_{mt})$, the larger the expected rate of return on the assets ."(Watts and Zimmerman, 1986:24)

CAPM is based on the following assumptions:

1 Investors are rational and risk-averse and maximize the expected utility of consumption. Also, they assume other investors act rationally.
2 Investors can borrow and lend from risk free assets in unlimited amounts.
3 Investors have homogeneous expectations, and they agree about the means, variance and covariance of returns among all securities.
4 All individuals in the market have the same costless access to information and all share the same expectation about expected rate of return.
5 Market is perfect, which means:

a Investors are price-takers and no one has influence on the share price.
b No tax or transaction costs.
c All securities are infinitely devisable.

Market Model

Market model is widely used in empirical accounting research and it was developed by Sharp (1963)[1]. It states that security returns are a linear function of rate of return on market portfolio. Market model can be written in mathematical term as:

$$r_{it} = \alpha_i + \beta_i RSUBmt + \mu_{it}. \quad (5)$$

Where,

r_{it}= Return on security i in period t.

R_{mt}=Rate of return on market portfolio in period t.

μ_{it}= Stochastic portion of the individualistic factor, which is part of security return that can not be explained by $R_{mt.}$

$\alpha_{i,}$ β_i= Intercept and slop respectively.

$\beta_i=cov(r_{jt}, R_{mt})/\sigma^2(R_{mt})$.

$\alpha_i = E(r_{it})-\beta_i[E(R_{mt})]$.

The assumption needed for market model:

Investors are risk averse, single period, expected-utility-of-terminal-wealth maximizes who have selected their holding portfolio on the basis of mean and variance of distribution return (Dyckman and Morse, 1986).

$$A_{i,t} = r_{i,t} - \alpha_i - \beta_i R_{m,t} \quad (6)$$

Where,

A_{it} = Abnormal return for security i at period t.

α_i and β_i =OLS value from the estimation period.

There are another motivations for using the market model as addressed by Strong (1992) "It result in small variances of abnormal return (relative to raw return", and that will result in more powerful statistic test and more conformity to standard statistic tests.

Mean Adjusted Return

The mean adjusted return assumes that, the expected return for security i is equal to a constant K_i which can be different across securities (Brown and Warner, 1980). The abnormal return can be generated by the following:

$$A_{it} = R_{it} - K_i \quad (7)$$

Where,

R_{it} = observed return for security i at period t.

K_i = The simple average of security i's return for estimation period.

Market Adjusted Return

Market Adjusted Return assumes that expected return is constant across securities, although it is not necessarily constant for a given security. The mathematic expression for this model is:

$$A_{it} = R_{it} - R_{mt} \quad (8)$$

[1] Sharp W. F. 1963. A simplified model for portfolio analysis. Management Science. Vol. 9. P 277-93.

Where.

$R_{m,t}$ = the return of market index (FT All SHARE) which is equal to weight index for period t.

This relationship means that market portfolio of risky assets is a linear combination of all securities.

IV. Sample and Data Collection

The sample for this study consists of 15 industrial firms that were in existence from 2000-2003 and have complete data set for the required variables, and all firms were listed in Jordon Stock Exchange (JSE). The data source is JSE C.D. Rom and the firm list is presented in Appendix (A).

Ninth variables are used in this study stock Returns (R) , dividends (DIVID) , Net income on Sale (r. sale) , return of equity (ROE), return on asset (ROA), debt ratio (Debt ratio), interest coverage (Int Cov) , current ratio (CR), price / earning (p/e) and price (P).

V. Research Methods

Six regression equations were used in this analysis. The purpose of this test is to examine the market reaction to accounting numbers release. The dependent variable is stock returns while the independent dividends (DIVID) , Net income on Sale (r. sale) , return of equity (ROE), return on asset (ROA), debt ratio (Debt ratio), interest coverage (Int Cov) , current ratio (CR), and price / earning (p/e) .

Ordinary Least Square method (OLS) is used to solve the regression equations.

All analysis will be performed at pool 2000-2003.

First, tests whether or not profit information have any impact on security returns:

$$R = \propto + \beta \text{ DIVID} + e \qquad \text{M1}$$

Where,

R = security returns .

DIVID = dividends per share.

e = error term.

$\propto$ β = intercept and slope coefficient of the regression equation.

$$R = \propto + \beta \text{ r. sale} + e \qquad \text{M2}$$

Where,

R = security returns .

r. sale= Net income on Sale (r. sale).

e = error term.

$\propto$ β = intercept and slope coefficient of the regression equation.

$$R = \propto + \beta \text{ r. sale} + \beta \text{ ROA} + e \qquad \text{M3}$$

Where,

R = security returns .

r. sale= Net income on Sale (r. sale).

ROA= return on asset.

e = error term.

$\propto$ β = intercept and slope coefficient of the regression equation.

$$R = \propto + \beta \text{ ROE} + e \qquad \text{M4}$$

Where,

R = security returns .

ROE= return on equity.

e = error term.

$\propto$ β = intercept and slope coefficient of the regression equation.

Second, examine whether liquidity information have any impacts on security returns:

$$R = \propto + \beta \text{ CR} + e \qquad \text{M5}$$

Where,

R = security returns .

C.R. = current ratio.
e = error term.
$\propto$ β = intercept and slope coefficient of the regression equation.

Third, examine whether solvency information have any impacts on security returns:

$$R = \propto + \beta \text{ debt ratio} + \beta \text{ Int cov} + e \qquad \text{M6}$$

Where,
R = security returns .
Debt ratio = debt ratio.
Int cov = interest coverage.
e = error term.
$\propto$ β = intercept and slope coefficient of the regression equation.

VI. Results

Statistical Description and Correlations

Table 1 present the satirical description for all the variables, the analysis is performed by pooled all firms over all years for each variable. It were found that P/E, ROE and Int cov have the highest standard deviation due to the presence of extreme observation and this can be confirmed from the maximum row in table 1.

Correlations analysis, in table 2 shows that r. sale and ROA have high correlation 90.8%, so that it might have a problem of multiconllinearity exits in the models, Belsley..el (1980). Further, all variables have a relation with security returns except ROE and P/E.

Regression Results

The regression results for all the models are presented in tables 3,4 and 5. For M1, dividends is significant predictor and can explain the variation in return. The t-statistic is significant at .001 level and R2 equals 78.1% for M1. These results suggest that dividends can be used an estimate for future return. This finding is consisted of pervious research by Garrod and Hadi (1998), Petit (1972), Charest (1978b) , Abeyratana,..*et al.* (1993) and Foster and Vickrey (1978)

For M2, r. sales coefficient is statistically significant. The R^2 equals 31.6% . Further, M3, ROA and r. sale, this model suffer from multiconllinearity problem so that we can not rely on regression results. Therefore, we can rely on correlations results, which show ROA and r.sale high correlation with returns.

On the other hand, M4, ROE coefficient is statistically insignificant. The R2 equals 3%. The result here suggest that ROE not good factors in return movements. This finding is inconsisted of pervious research by Hadi (2005).

In answering the first question, tests whether or not profit information have any impact on security returns? DIVID, r.sale and ROA have impact on security returns.

For M5, CR is significant predictor and can explain the variation in return. The t-statistic is significant at .001 level and R2 equals 14% for M5. These results suggest that current ratio can be used an estimate for future return.

In answering the second question, whether liquidity information have any impacts on security returns? Current ratio have impact on security returns.

For M6, Debt and Int cov are significant predictors and can explain the variation in return. The t-statistic is significant for both of them at .001 level and R2 equals 34.2% for M6. Debt ratio coefficient is negative which carry negative in information to the market. These results suggest that Debt and Int cov can be used an estimate for future returns.

In answering the third question, whether solvency information have any impacts on security returns? solvency information have impact on security returns.

VII. Conclusion

This paper identified EMH and provided some detail on the types of EMH, as well as identifying the empirical research that tested weak, semi-strong and strong forms of market efficiency. Accounting market based research more often assumes that market is efficient in semi-strong form, and the reason for this is that financial reports are considered public information once they are released to the market.

In this paper empirical evidence has been provided from Jordanian market, and it shows the security market reacted with mixed signal on releasing profitability, liquidly, and solvency information.

The selection of the relevant pricing model is very critical in market-based research. Brown and Warner (1980) investigate how different methods performed when some abnormal performance was present. They conclude that " There is no evidence that more complicated methodology conveys any benefit. "(Brown and Warner, 1980). Also, they argue that using more complicated models will make the researcher worse off. Furthermore, the use of the market model or even simple models such as mean adjusted return is better than more complicated models like control portfolio.

In Kuwait, a few research has been investigated in market efficiency in strong form, I suggest for future research test for insider information.

Table 1: Descriptive Statistics

Variable	**N**	**Mean**	**Median**	**TrMean**	**StDev**	**SE Mean**
price	60	2.654	1.570	2.301	2.782	0.359
ROA	60	4.11	5.61	4.99	10.23	1.32
return	60	0.2071	0.1643	0.1876	0.3300	0.0426
divid	60	0.1501	0.1000	0.1251	0.1862	0.0240
p-e	60	11.22	8.68	8.28	49.80	6.43
C R	60	3.873	2.990	3.466	3.514	0.454
r sale	60	3.18	9.22	7.87	33.57	4.33
ROE	60	-4.6	8.1	7.9	116.9	15.1
Debt rat	60	31.81	20.59	27.42	32.16	4.15
Int cov	60	63.8	3.6	40.6	142.5	18.4
Variable	**Minimum**	**Maximum**	**Q1**	**Q3**		
price	0.140	13.000	0.803	3.617		
ROA	-43.39	26.14	0.18	11.31		
return	-0.4982	1.3115	0.0111	0.3243		
divid	0.0000	0.7500	0.0000	0.2200		
p-e	-217.41	277.26	1.92	13.58		
C R	0.000	16.989	1.064	5.300		
r sale	-197.96	58.20	0.20	16.71		
ROE	-883.5	118.3	3.6	14.3		
Debt rat	0.00	177.83	13.24	35.03		
Int cov	-9.1	644.3	0.0	31.9		

Table 2: Correlations (Pearson)

	divid	**p-e**	**C R**	**price**	**return**	**ROA**	**ROE**	**Debt rat**	**Int cov**
p-e	0.032								
	0.810								
C R	0.289	0.072							
	0.025	0.587							
price	0.910	0.029	0.375						
	0.000	0.827	0.003						
return	0.886	0.008	0.399	0.843					
	0.000	0.953	0.002	0.000					
ROA	0.466	0.039	0.438	0.411	0.698				
	0.000	0.768	0.000	0.001	0.000				
ROE	0.119	0.025	0.127	0.123	0.210	0.288			
	0.364	0.849	0.333	0.349	0.107	0.025			
Debt rat -	0.343	-0.023	-0.482	-0.319	-0.529	-0.860	-0.201		
	0.007	0.859	0.000	0.013	0.000	0.000	0.123		
Int cov	0.428	0.004	0.459	0.388	0.430	0.269	0.072	-0.283	
	0.001	0.973	0.000	0.002	0.001	0.037	0.585	0.028	
r sale	0.305	0.054	0.398	0.318	0.573	0.908	0.341	-0.851	0.209
	0.018	0.680	0.002	0.013	0.000	0.000	0.008	0.000	0.109

Table 3: The Regression Results for M1 to M4 Profitability

MODEL	VARIABLES	COEFFICIENT	T-RATIO	PAR VALUE	F-RATIO	P-VALUE	ADJ. (R^2)
M1	DIVID	1.57	14.56	0.000	211.98	0.000	78.1%
M2	r.sale	0.0056	5.32	0.000	28.28	0.000	31.6%
M3	ROA	0.033	4.58	0.000	29.49	0.000	49.1%
	r.sale	-0.003	-1.58	.0120			
M4	ROE	0.001	1.64	0.11	2.67	0.11	3%

$R = \propto + \beta$ DIVID +e.....M1
$R = \propto + \beta$ r. sale +e.....M2
$R = \propto + \beta$ r. sale +β ROA +e.....M3
$R = \propto + \beta$ ROE +e.....M4

Table 4: The Regression Results for M5 Liquidity

MODEL	VARIABL-ES	COEFFIC-IENT	T-RATIO	PAR VALUE	F-RATIO	P-VALUE	ADJ. (R^2)
M5	CR	0.038	3.32	0.002	11.01	0.002	14.5%

$R = \propto + \beta$ CR +e.....M5.

Table 5: The Regression Results for M6 Solvency

MODEL	VARIABL-ES	COEFFIC-IENT	T-RATIO	PAR VALUE	F-RATIO	P-VALUE	ADJ. (R^2)
M5	Debt ratio	-0.004	-4.02	0.000	16.36	0.000	34.2%
	Int cov	0.001	2.76	0.008			

$R = \propto + \beta$ debt ratio + β Int cov +e.....M6

APPENDIX (A)

JORDAN POULTRY PROCESSING & MARKETING
JORDAN DAIRY
THE PUPLIC MINING
ARAB ALUMINIUM INDUSTRY /ARAL
ARAB PHARMACEUTICAL MANUFACTURING
THE INDUSTRIAL COMMERCIAL & AGRICULTURAL
NATIONAL STEEL INDUSTRY
DAR AL DAWA DEVELOPMENT & INVESTMENT
INTERMEDIATE PETRO-CHEMICALS INDUSTRIES.
THE JORDAN WORSTED MILLS
JORDAN CERAMIC INDUSTRIES
JORDAN PAPER & CARDBOARD FACTORIES
JORDAN PHOSPHATE MINES
THE JORDAN PIPES MANUFACTURING
JORDAN TANNING
NATIONAL POULTRY

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