

# The Effect of Using Accounting Measurement Bases (Cash and Accrual) on the Performance of the Industrial Companies Listed on Palestine Stock Exchange

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## Abstract

This study aimed to measure the performance of the Palestinian industrial corporations, a sample of 13 industrial companies listed on Palestine Stock Exchange had selected for the period between 2009 and 2018, researchers used multiple linear regression analysis to create two models representing the financial performance on accrual and cash basis, return on assets (ROA) was the dependent variable. The independent variables of the accrual based model included: current ratio, net profit margin, return on capital employed, debt to assets and interest coverage ratios, all of them had significant impact on ROA. The cash-based model included: cash to current liabilities, cash to sales, cash to working capital, cash to debt, and cash interest coverage ratios, all of them except debt to assets had significant impact on ROA. Comparison between previous models showed that accrual based model had better performance in explaining changes in ROA.

**Keywords:** performance evaluation, accrual basis, cash basis

## 1. Introduction

The financial disclosure process for public shareholding companies is a mandatory matter according to the laws in force in Palestine. Each of these companies is obligated to disclose the four financial statements (income statement, financial position, change in property rights, and cash flows), and to prepare them in accordance with international accounting standards. Financial disclosure - whenever it is - (quarterly, semi-annually, or annually) is the main source of data for the financial analysis process by the relevant parties, whether: management, investors, lenders, and others (Palestine Stock Exchange, 2006).

The financial evaluation of a company's performance is that evaluation that gives a full impression of how the company uses each of: assets, liabilities, and equity. This evaluation can be constructed using financial ratios (numerator and denominator) derived from the components of the published financial statements, so that the relationship between two or more elements is linked in a way that gives meaning to the reader, so financial ratios can be divided into two types: traditional financial ratios (based on the accrual basis) Others are based on cash flow.

Accrual basis is defined as that accounting basis that recognizes commercial transactions when they occur regardless of when cash is received or paid (Khan and Mayes, 2009). From this standpoint, the accrual basis provides information about the current and future cash for the activities of the various companies, so that the accounting recognition of revenues is in accordance with the laws in force that adopt the accrual basis (Danescu & Rus, 2013).

In the twentieth century, dramatic changes took place with regard to companies' use of the statement of cash flows, and the first evidence was what the American Institute of Certified Public Accountants recommended that the list of cash flow and financial resources should be present in the reports of public joint-stock companies (Mason, 1961). This was followed by the obligation of public shareholding companies to prepare a statement of cash flows, which became mandatory in the United States of America in 1987 in accordance with the decision of the Financial Accounting Standards Board (SFAS) No. 95 of 1987, and then came the International Accounting Standard IAS No. 7 of 1992 to confirm that the statement of cash flows is part of the financial statements that companies are required to publish.

### *1.1 Importance of the Study*

The utmost importance of this study stems from the fact that it helps in evaluating the performance of Palestinian industrial companies based on the foundations of accounting measurement (accrual and cash), which helps in identifying the strengths and weaknesses within these companies in terms of: liquidity, profitability, and indebtedness, by providing information Sufficient performance of the company from which internal bodies (company management) benefit from, in addition to external bodies benefiting from financial analysis data such as: auditors, in the analytical tests, and any other party of rational economic decision-makers.

### *1.2 Problem of the Study*

The two lists of income and financial position - despite their importance - are prepared on an accrual basis, which does not represent the real liquidity of the company. Therefore, industrial companies, like the rest of the companies listed on the Palestine Stock Exchange, resort to, and in compliance with Palestinian law, to prepare a list of cash flows for the year ended, according to the research conducted by (Atieh, 2014) Therefore, a difference appears in the evaluation of the performance of listed companies on the stock exchange due to the foundations of accounting measurement (cash and accrual). This study will address three types of financial ratios, namely: liquidity ratios, profitability, and indebtedness. Therefore, the study will try to answer the question below:

What is the impact of using the foundations of accounting measurement (accrual, and cash) on the performance of industrial companies listed on the Palestinian Stock Exchange, through the return on assets index? The following sub-questions are derived from the previous question:

1. What is the study variables used to measure return on assets according to the accrual basis of accounting?
2. What is the study variables used to measure return on assets according to the cash basis?
3. What is the extent of correlation between the study variables using the accrual basis and the return on assets index as a tool for evaluating the performance of companies?
4. What is the extent of correlation between the study variables using the monetary basis and the return on assets index as a tool for evaluating the performance of companies?
5. Is there a relationship between each of the ratios: liquidity, profitability, and indebtedness calculated according to the accrual basis with return on assets?
6. Is there a relationship between each of the ratios: liquidity, profitability, and indebtedness calculated according to the cash basis with return on assets?
7. What is the preference of any of the cash basis and merit over the other as a tool for evaluating the performance of industrial companies listed on the Palestine Exchange?

### *1.3 Limitations of the Study*

It is related to the theoretical and practical frameworks of the study: the study was limited to the financial ratios of liquidity, profitability, and indebtedness (which were mentioned only within the theoretical and practical frameworks). And it included a total of eleven financial percentages within all independent and dependent factors, which the researcher had sufficient financial data to calculate.

## **2. Theoretical Framework**

The financial ratio is a mathematical relationship of numerator and denominator (Faello, 2015). These numbers have been calculated from the announced financial statements of the companies, which include income statement, the statement of financial position, and cash flows from the various operations carried out by the company, in addition to the statement of changes in stockholders equity, and according to the company's need, the figures announced in the financial statements are converted into relevant ratios. These percentages are analyzed by qualified persons, and the results are presented to the company's management or to a relevant party.

### *2.1 Accrual Basis*

What distinguishes the accrual basis from the cash basis is the use of the principle of matching, that is, matching revenues with expenditures, which means recording expenses as soon as the income of the company is realized (regardless of the cash receipt) during the accounting period (Horngren et al, 2012).

Hence, accrual accounting can be defined as that accounting system that the company uses to link economic benefits (revenues) with economic costs (expenses) to achieve a correct and fair income for the company. Therefore, revenues are defined as economic benefits for the company that is recognized when they are realized, and expenses are economic

costs. Or the cost of assets is recognized when it generates revenue for the company (in a specific time period) (Revsine et al, 2012).

In addition, public shareholding companies are obliged to prepare financial statements (except for the cash flow statement) based on the accrual basis, and therefore when the company uses the accrual basis, all of: assets, liabilities, property rights, and also revenues and expenses are recognized when they fulfill the conditions related to them according to Basis of accrual (IAS1, 2007). Therefore, based on the above, financial ratios can be derived on an accrual basis.

## 2.2 Cash Basis

The cash flow statement is one of the four lists disclosed by the public shareholding companies listed on the Palestine Stock Exchange (PSE, 2006). This list shows the cash in and out of the company for a specific period of time.

Historically, Beaver (1966) has indicated the importance of analyzing cash flows from operations and their role in predicting the probability of corporate failure. (Wild et al, 2011) confirms that the use of the cash basis depends mainly on the recognition of revenues in the case of cash receipts, and that the expenses are recognized only in the case of cash payment.

The information provided by the cash flow list is considered very useful in evaluating the company's performance in terms of its ability to generate cash and parallel cash, and benefit from this cash, in addition to that, the cash flow list can be divided into three sections, which are the cash flows for each of: operating, financing, and investment activities. Of the company (1992, IAS7). Therefore, we can rely on the statement of cash flows and use them to derive financial ratios associated with them.

## 2.3 Ratio Analysis

It is the analysis that explains the relationship between any two items in the financial statements of companies. Examples of financial ratios that can be calculated are: liquidity ratios, profitability, indebtedness, activity, and investment. It should be noted that there is no international body authorized to determine the financial ratios that analysts must calculate. Rather, the method of calculating some ratios varies from one analyst to another and from one institution to another (Robinson et al, 2008).

### 2.3.1 Liquidity Ratios

They are the financial ratios that measure the company's ability to fulfill its short-term financial obligations when the time comes to pay them and are represented in cash and parallel cash, so they give an indication of the number of times that cash and parallel cash can cover the company's short-term benefits, hence it can be concluded that there is no numerical value Specific to the optimal liquidity ratios, and as the companies' need for liquidity to cover short-term liabilities may vary from one company to another and from one industry to another, and this research will include the current ratio (current) in its two parts based on the accrual and cash basis (Robinson et al, 2008).

### 2.3.2 Profitability Ratios

Profitability means the ability of companies to generate profits from the capital that has been invested (Robinson et al, 2008). It can also be said that profitability reflects the company's competitive position in the market, and the efficiency of management in generating profit, and it can be measured by financial ratios.

Here, it is necessary for us to differentiate between the terms profit and profitability, so we see that profit is an abstract number resulting from subtracting expenses from the sale proceeds during a specific period of time, while profitability is an indicator of the efficiency of the use of the institution's resources (efficiency), which are financial ratios of numerator and denominator, in which it is measured in a manner. The head of net profit is to assets, for example, and to equity or other elements that give us an indication of the efficiency of this company compared to other companies in the same industry (Gibson, 2012).

### 2.3.3 Solvency Ratios

It means the ability of the company to survive and grow (viability) while maintaining its ability to pay off long-term debt. This means the company's commitment to pay debt installments, which consist of interest and a part of the principal amount of the loan (Wild and Subramanian, 2009), and as defined by (Robinson et al, 2008) as the company's ability to meet long-term debts, including interest and principal.

### 3. Previous Studies

(Barua and Saha, 2015)

The main objective of this study is to test the effectiveness of financial ratios derived from the statement of cash flows, and traditional financial ratios in evaluating the performance of non-industrial companies listed on the Dhaka Stock Exchange, for the period from 2001 to 2010. The study used fifteen traditional financial ratios against which fifteen derivative financial ratios were used. From the list of cash flows, the traditional financial ratios have included: liquidity ratios, asset management ratios (measure the company's ability to use assets to achieve returns), Debt ratios, profitability ratios, and financial sufficiency ratios (measuring the company's ability to pay debts through profits). The aforementioned traditional financial ratios were matched with corresponding financial ratios on the monetary basis, and by calculating the percentage difference between the traditional financial ratio and the financial ratio on the cash basis and according to the following equation:

(The value of the traditional financial ratio - the value of the financial ratio on the monetary basis) / The value of the traditional financial ratio

The study concluded that the financial ratios derived from the statement of cash flows are better than the traditional financial ratios as an indicator for evaluating the performance of non-industrial companies listed on the Dhaka Stock Exchange during the aforementioned period of time, as differences appeared in varying percentages for the various traditional financial ratios according to the above equation.

(Erdogan, E., Erdogan, M., & Omurbek, 2015)

This study aimed to assess the financial performance of companies based on a set of financial ratios, and the study included nine companies listed on the Istanbul Stock Exchange for the period from 2002 to 2013, and the dependent factor was the net profit margin, and the independent factors contained both: the current ratio and the profit per share. The ratio of financial leverage (total debt / total assets), the size of the company (measured by the growth rate in net sales), the ratio of the market value to the book, and based on regression analysis, the study concluded that there is a (positive) statistically significant relationship between the dependent variable and both: the current ratio and the company size. There was also a (negative) statistically significant relationship between the company's performance and financial leverage.

(Hamidah, 2015)

This study aimed to evaluate the performance of private banks listed on the Indonesian Stock Exchange for the period from 2011 to 2013, and the sample included 30 banks listed on the stock exchange, and the study relied on building a model based on multiple regression analysis, and the dependent factor was shareholder wealth, which consisted of: (high Stock prices, dividends, and capital investments). As for the independent factors, they included: economic value added, earnings per share, return on equity, and return on working capital. The study concluded that the added economic value had a positive, non-statistically significant effect on shareholder wealth. As for earnings per share and return on working capital, they had a statistically significant positive effect, while return on equity had a statistically significant negative impact on the dependent factor.

(Oshoke and Sumaina, 2015)

This study aimed to evaluate the performance of all public joint-stock companies listed on the Nigerian Stock Exchange for the period from 2009 to 2013, and the sample included 50 companies. The study adopted return on assets as a dependent variable. As for the independent variables, it included: current ratio, debt to equity ratio, share of profits, and return on equity. By using multiple regression analysis, the study concluded that the current ratio (LIQR) has a negative impact (statistically significant) on the performance of companies. The debt to equity ratio (LEVR) had a negative effect (not statistically significant), the share of earnings per share (MKTR) had a positive effect (not statistically significant), and the return on equity (PROFTR) had a positive, statistically significant effect.

(Atieh, 2014)

This study aimed to measure liquidity in the Jordanian pharmaceutical industry by using the liquidity ratios derived from the list of financial position (traditional financial ratios), and the liquidity ratios derived from the cash flow list. The sample included seven major companies specialized in the pharmaceutical industry in Jordan for the period from 2007 to 2012. Based on the information contained in the annual report of these companies, the financial ratios related to liquidity were calculated for all previous years, which are: the current ratio, the quick ratio, Coverage ratio for interest, operating profit margin, cash ratio, cash coverage ratio (necessary), cash coverage ratio for interest, cash margin from operating operations, by comparing each conventional ratio with its counterpart related to cash flow and by relying on

t-tests and by calculating the arithmetic mean and the standard deviation for each two ratios The study concluded that some companies showed better conventional liquidity ratios than those based on cash flow, and other companies showed liquidity ratios linked to cash flow better than traditional liquidity ratios. The researcher concluded that the liquidity ratios related to flow Cash is better than traditional liquidity ratios in evaluating the liquidity of Jordanian pharmaceutical companies because of its utmost importance in fulfilling obligations.

(Azmi et al, 2014)

The main objective of this research is to identify the effect of financial ratios on the financial performance of the Dutch chemical company LYBP, and the quarterly data published for the company for the period from 2004 to 2011 were relied on, and for the dependent worker, the financial performance of the company was, and as for the independent factors, it included: The quick ratio, the debt ratio, the debt to equity ratio, the operating profit margin, the net profit margin, and by conducting multiple regression, the study concluded that: circulation ratio, quick ratio, debt ratio, and net profit margin have a positive relationship with the financial performance of the company, At the same time, the study showed that: the debt to equity ratio and the operating profit margin ratio have a negative relationship with the company's financial performance. The study also showed that the current ratio, debt ratio, and net profit ratio have the largest statistically significant impact on the company's financial performance.

(Banykhaled and Taani, 2011)

The main objective of this study is to test the effect of accounting information on EPS, using five types of financial ratios. As for the sample, a sample was taken from forty companies listed on the Amman Stock Exchange, and to measure the effect of financial ratios on earnings per share, the multiple regression method was used. And the gradual decline, and for the independent factors, the profitability ratios were: net profit margin, return on equity, liquidity (current ratio of liquidity), liabilities to equity, market to book ratio for shares, company size through total assets, cash flow from operating operations to the sales. The dependent factor was EPS. The study concluded that the return on equity, the liability to equity ratio, the market to book ratio, and the cash flow from operations to sales combined together (through regression analysis) affect the earnings per share. The researchers noted that the model is not sufficient to explain the earnings per share where the R squared is 42%.

#### **4. Methodology**

The study relied on the descriptive approach for the purpose of describing the problem of the study, and gathering information related to it, in order to reach the goal. The study also adopted the historical approach through previous studies, and the researcher relied on the analytical approach in order to understand the effect of independent factors on the dependent factor (performance of industrial companies. General), and all of those factors (variables) were financial ratios (on the basis of accrual and cash) that were calculated by the researcher, and the researcher relied on multiple linear regression analysis to measure the relationship between the independent variables and the dependent variable, by creating two models, one of which relies on financial ratios on Accrual basis, and other financial ratios depend on cash basis.

##### *4.1 Sample*

The study population consisted of all the 48 companies listed on the Palestinian Stock Exchange, which belong to different sectors, including: banks, insurance, services, investment, and industrial firms, by referring to the website of the Palestine Stock Exchange in July 2019.

All Palestinian industrial companies listed on the Palestinian Stock Exchange were approved as a sample for this research, which is the sample that is determined by a prior judgment of the researcher, and since this study concerned only industrial companies, the industrial companies were approved and all other companies that do not follow the sector are excluded. Industry, for which all (industrial companies) had published financial data (audited by a legal auditor) and numbered 13 industrial companies listed on the Palestinian Stock Exchange for the period from 2009 to 2018, and these companies were affiliated with various industrial sectors such as: aluminum, pharmaceuticals, plastics, and vegetable oils, Cigarettes, cartons, and other industrial specialties, by referring to the Palestine Stock Exchange website.

#### **5. Variables**

##### *5.1 Dependent Variable*

The dependent variable for both models was return on assets (ROA) as proxy of performance.

## 5.2 Independent Variables

Table 1. Independent variables

The aspect that will be analyzed	Cash based ratios (variables)	Accrual based ratios (variables)
Liquidity	Cash to short term debt (CSTD)	Current ratio (CR)
profitability	Cash to sales ratio (CSR)	Net profit margin (NPM)
	Cash to equity employed (CEE)	Return on capital employed (ROCE)
Solvency	Cash to debt ratio (CDR)	Debt to assets ratio (DAR)
	Cash interest coverage ratio (CICR)	Interest coverage ratio (ICR)

## 5.3 Reasons for Choosing Previous Variables

First: The possibility of calculating it for all the sample companies of the study, due to the availability of sufficient published and audited financial data during the ten years from 2009 to 2018.

Second: The researcher adopted the return on assets as a dependent variable, which was adopted by some previous studies as a study (Oshoke and Sumaina, 2015), which was adopted to create a model for evaluating the performance of public shareholding companies, (Nadeem et al, 2015) used the return on assets as a dependent variable to measure the relationship between Leverage and profitability.

## 5.4 Models

Two equations used in this research represented the financial performance of companies, as follow:

Accrual based model:

$$ROA = \beta\alpha + \beta_1 CSTD + \beta_2 CSR + \beta_3 CEE + \beta_4 CDR + \beta_5 CICR + e$$

Cash based model:

$$ROA = \beta\alpha + \beta_1 CR + \beta_2 NPM + \beta_3 ROCE + \beta_4 DAR + \beta_5 ICR + e$$

## 5.5 Hypotheses

First main null hypothesis:

H01: There is no statistically significant relationship between: liquidity, profitability and indebtedness (accrual based) ratios with the return on assets as a tool to measure the performance of Palestinian industrial corporations, Sub-hypotheses were:

H01.1: there is no statistically significant relationship between current ratio and return on assets as a tool to measure the performance of Palestinian industrial corporations.

H01.2: there is no statistically significant relationship between net profit margin and return on assets as a tool to measure the performance of Palestinian industrial corporations.

H01.3: there is no statistically significant relationship between return on capital employed and return on assets as a tool to measure the performance of Palestinian industrial corporations.

H01.4: there is no statistically significant relationship between debt to assets ratio and return on assets as a tool to measure the performance of Palestinian industrial corporations.

H01.5: there is no statistically significant relationship between interest coverage ratio and return on assets as a tool to measure the performance of Palestinian industrial corporations.

Second main null hypothesis:

H02: There is no statistically significant relationship between: liquidity, profitability and indebtedness (cash based) ratios with the return on assets as a tool to measure the performance of Palestinian industrial corporations, Sub-hypotheses were:

H02.1: there is no statistically significant relationship between cash to short term debt and return on assets as a tool to measure the performance of Palestinian industrial corporations.

H02.2: there is no statistically significant relationship between cash to sales ratio and return on assets as a tool to

measure the performance of Palestinian industrial corporations.

H02.3: there is no statistically significant relationship between cash to equity employed and return on assets as a tool to measure the performance of Palestinian industrial corporations.

H02.4: there is no statistically significant relationship between cash to debt ratio and return on assets as a tool to measure the performance of Palestinian industrial corporations.

H02.5: there is no statistically significant relationship between cash interest coverage ratio and return on assets as a tool to measure the performance of Palestinian industrial corporations.

Third main null hypothesis:

H03: There is no statistically significant difference between accrual and cash based models in measuring the performance of Palestinian industrial corporations.

## 6. Data Analysis

### 6.1 Descriptive Statistics

Table 2. Descriptive statistics of variables

Skewness	Minimum	Maximum	Std. Deviation	Mean	N		variable
					Mis sing	Valid	
-2.265	-.60	.27	.098	.047	0	130	ROA
descriptive statistics of accrual based variables							
1.599	.130	12.19	2.188	3.055	0	130	CR
-2.467	-5.64	1.19	.616	.052	0	130	NPM
-1.959	-1.10	.95	.179	.061	0	130	ROCE
.321	.05	.64	.157	.294	0	130	DAR
8.490	-36.0	4913.0	487.140	112.925	11	119	ICR
descriptive statistics of cash based variables							
1.350	-1.60	3.560	.586	.348	0	130	CSTD
1.887	-.490	1.160	.170	.106	0	130	CSR
1.928	-.20	.580	.120	.077	0	130	CEE
1.375	-1.20	2.70	.419	.246	0	130	CDR
4.371	-196.0	1320.0	222.858	66.003	11	119	CICR

Table 2 shows all the descriptive statistics for the dependent and independent study variables, including (the arithmetic mean, standard deviation, highest, lowest value, and torsion). It is evident from the results in the table that all the study variables except for the variable liabilities to assets (DAR) have a left or right twist, that is, they do not follow the normal distribution because all the values of the Skewness test are outside the period -0.5 and 0.5, since the sample size is relatively large (greater than 30) and by means of the "Central Limit Theorem" (if the sample size is greater than 30, then the average distribution of samples follows the normal distribution), the assumption of the normal distribution can be overridden at this stage, Except for the two variables, the interest coverage ratio and the cash interest coverage ratio (ICR and CICR), the curvature value is very high (due to the presence of extreme values in the data for these two variables). In addition, the number of elements for each of these two ratios is 119 instead of 130 due to the presence of Eleven times, there were no benefits accruing to some industrial companies, so the value of the benefits was equal to zero in those years, so the coverage ratio for the mentioned years could not be calculated according to the data given directly, and the standard values (Z-score) for these two variables, With the aim of processing extremist data.

The above table shows the highest and lowest value of the financial ratios for this research, and clear and fundamental differences can be observed between the lowest and highest value of all independent variables, and this indicates the presence of high fluctuations in some years of companies' performance, especially in the value of profits, assets, current assets, liabilities, and cash from Operating operations, and this fluctuation was very sharp in the interest

coverage ratio, the cash coverage ratio for the benefits due to the high value of profits or cash from operating operations, and the low value of the interest for some years, and at other times the value of profits or cash was negative, so the value of this ratio was negative.

The realization of losses or the presence of negative cash flow for some companies in some years led to a fluctuation in the value of the financial ratios associated with them, such as the two ratios: the net profit margin and the cash to sales, and this applies to the two ratios: the return on working capital, and the corresponding ratio on the cash basis, Where the value of profit before interest and taxes was negative in some companies for different years, and this fluctuation in the value of profits and assets of some companies affected the value of the dependent variable whose value for the same company varied from year to year, and in some companies this variation was significantly high, as well as the fluctuation in the value Both current assets and current liabilities resulted in noticeable differences in the current ratio.

### 6.2 Examination of Correlation Between Independent Variables (Collinearity)

Is there a collinearity between the independent variables?, the measurement of Variance Inflation Factors was used, as this test is used to examine the inflation in variance of two variables that have a collinearity relationship.

Table 3. Pearson correlation between the independent variables of the first model

	CR	NPM	ROCE	DAR	Z-score (ICR)
CR	1	.238	.18	-.337	.292
NPM	.238	1	.419	-.301	.227
ROCE	.186	.419	1	-.212	.220
DAR	-.337	-.301	-.212	1	-.258
Z-score (ICR)	.292	.227	.220	-.258	1

Since all values of the Pearson correlation examination between the independent variables were all less than 0.8, this is considered evidence of the absence of a serious correlation relationship between the independent variables (Gujarati and Porter, 2010), which makes it possible to enter them together within the equations of linear multiple regression analysis.

Table 4. Pearson correlation between the independent variables of the second model

	CSTD	CSR	CEE	CDR	Z-score(CICR)
CSTD	1	.208	.213	.447	.082
CSR	.208	1	.256	.198	.038
CEE	.213	.256	1	.277	.245
CDR	.447	.198	.277	1	.128
Z-score(CICR)	.082	.038	.245	.128	1

Since all the values of the Pearson correlation test between the independent variables of the second model are less than 0.8, this is considered evidence that there is no serious correlation relationship between the independent variables (Gujarati and Porter, 2010), so they will be entered into the second study model.

### 6.3 Study Models

Models summaries include:

Correlation coefficient (R): investigates the relationship between the independent variables together with the dependent variable (Gujarati and Porter, 2010).

Coefficient of determination (R<sup>2</sup>): looks at the percentage of variance in the dependent variable that can be explained by the independent factors of the model (Gujarati and Porter, 2010).

Adjusted R Square: searches for the percentage of variance in the dependent variable, which can be explained by the independent factors of the model or any other independent factors that explain this variance, and therefore less than the

value of the coefficient of determination (Gujarati and Porter, 2010).

### 6.3.1 Accrual Based Model (First Model)

Table 5. Model summary (accrual based)

Std. Error of the Estimate	Adjusted R square	R Square	R	Model
.0686562	.799	.801	.895	1

Table 5 shows the values of the correlation coefficient R, which reached 0.895, the coefficient of determination equals 0.801, and finally the adjusted R square, which reached 0.799, which means that the independent (explanatory) variables (DAR, ROCE, NPM, CR Z-score (ICR)) was able to explain about 80.1% of the changes in the dependent variable (ROA) and the rest (19.9%) was attributable to other factors.

#### 6.3.1.1 Testing the Null Hypothesis of the First Model

Table 6. (ANOVA) for first model

Sig.	F	Mean Square	df	Sum of Squares	Model 1
.000	38.672	.145	5	.727	Regression
		.004	113	.425	Residual
			118	1.151	Total

Table 6 represents the analysis of variance, through which the explanatory power of the model as a whole can be identified by means of the F statistic, and as we can see from the high significant analysis of variance table for F-test (P = 0.000). This confirms the high explanatory power of the (first) multiple linear regression model from a statistical standpoint.

Table 7. The coefficients in the first regression model

Sig.	t	Standardized Coefficients		Unstandardized Coefficients		Model 1
		Beta		Std. Error	B	
.883	.147			.030	.004	(Constant)
.019	2.685	.111		.005	.006	CR
.000	6.955	.453		.010	.070	NPM
.000	6.468	.412		.034	.220	ROCE
.045	2.331	.030		.058	.019	DAR
.038	2.478	.108		.006	.011	Zscore(ICR)

Table 7 shows the values of the regression coefficients for the estimators and the statistical significance tests for these parameters. Due to the severe skew in the distribution of the variable (ICR), the standard values of this variable were dealt with (Zscore (ICR)) where the arithmetic mean = 0, and the standard deviation = 1 when calculating Rate z score. Zscore values represent a statistical treatment of extreme data (Gorrie, 2016).

We conclude that all independent variables were statistically significant according to the t-test (at the level of significance  $P \leq 0.05$ ). Where the variables were: net profit margin and return on working capital are the most significant statistically and the least variable was the ratio of liabilities to assets.

The first model can be summarized as follows:

$$ROA = 0.004 + 0.006 CR + 0.07 NPM + 0.22 ROCE + 0.019 DAR + 0.011 Zscore(ICR)$$

What does that mean?

An increase in CR by 1 unit increases the average ROA value by 0.006 units, with the remaining variables remaining constant. This can be measured on all independent variables in the model.

The value 0.004 is the value of the dependent factor when all the values of the independent variables are equal to zero.

The following conclusion can be reached:

Rejecting the first main null hypothesis and all the sub-hypotheses emanating from it, which states (there is no statistically significant relationship between each of the ratios: liquidity, profitability, and debt (based on accrual) with the return on assets index as a way to measure the performance of Palestinian industrial companies). Where the study showed the existence of a positive statistically significant relationship between the five financial ratios (independent factors of the first main model) based on the accrual basis and the dependent variable.

### 6.3.2 Cash Based Model (Second Model)

Table 8. Model summary

Std. Error of the Estimate	Adjusted Rsquare	R Square	R	Model
.0932621	.601	.611	.782	2

Table 8 shows the coefficient of correlation R, which is 0.782, the coefficient of the determination which equals 0.611, and finally the Adjusted R Square, which reached 0.601, that means the independent variables (explanatory) (Zscore (CICR), CDR, (CEE, CSR), CSTD were able to explain about 61.1% of the yield area in (ROA) and the remaining 38.9% was attributable to other factors.

#### 6.3.2.1 Testing the Null Hypothesis of the Second Model

Table 9. (ANOVA) for second model

Sig.	F	Mean Square	df	Sum of Squares	Model 2
.002	3.973	.034	5	.172	Regression
		.009	113	.979	Residual
			118	1.151	Total

Table 9 represents the analysis of variance, from which the explanatory power of the model as a whole can be known by means of the F statistic, and as we can see the significant analysis of variance for F-test ( $P = 0.002$ ). This confirms the good explanatory power of the second multiple linear regression model from a statistical standpoint.

Table 10. The coefficients in the second regression model

Sig.	t	Standardized Coefficients		Unstandardized Coefficients		Model 2
		Beta		Std. Error	B	
.002	3.201			.011	.036	(Constant)
.019	2.319	.434		.057	.075	CSTD
.006	-2.778	-.340		.069	-.191	CSR
.039	2.193	.305		.117	.246	CEE
.390	-.863	-.295		.079	-.068	CDR
.015	2.450	.167		.011	.017	Z-score(CICR)

Table 10 shows the values of the regression coefficients for the estimators, and the statistical significance tests for these factors, due to the sharp distortion in the distribution of the variable in the ratio (CICR), the standard values of this variable were dealt with (Z-score (CICR)), where the arithmetic mean = 0, Standard deviation = 1 when calculating

Z-score values, and Z-score values represent statistical treatment of outliers (Gorrie, 2016).

We conclude that most of the independent variables were statistically significant according to the t-test (at the level of P 0.05), except for the variable CDR was not significant. The CSR variable was the most statistically significant and the least significant was the CEE.

The second model can be summarized as follows:

$$ROA = 0.036 + 0.075 \text{ CSTD} - 0.191 \text{ CSR} + 0.246 \text{ CEE} - 0.068 \text{ CDR} + 0.017 \text{ Z-score(CICR)}$$

The following conclusion can be reached:

Rejecting sub-hypotheses: first, second, third, and fifth. And accepting the fourth where the cash-to-debt ratio was not significant.

We see that the results of the analysis showed a positive relationship between the current ratio and return on assets, an inverse relationship between the ratio of cash to sales and return on assets, a direct relationship between the ratio of cash to working capital and return on assets, and an inverse relationship between the ratio of cash to debt and return on assets ( Was not a statistically significant), and a direct relationship between the cash interest coverage ratio and the return on assets.

**7. Comparison of Both Models**

The researcher used Hotteling’s –t and Steiger’s-z testes to test the below hypothesis:H0: model # 1 – model # 2 = 0

H1: model # 1 – model # 2 ≠ 0

Table 11. Statistics used in Hotteling’s –t and steiger’s-z testes calculations

r 1,y = 0.895	r 2,y = 0.782
N =119	r 1,2 = 0.503

The results were:

Table 12. Results of Hotteling’s –t and Steiger’s-z testes

t = 2.48	z = 2.44	P = 0.0171
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Because of p < 0.05 (z > 1.96 the researcher can reject the null hypothesis (the two models are not the same), and by depending on the correlation between the independent variables in the first model and the dependent which is higher than the correlation in the second model (r 1,y > r 2,y), also the R squared is greater in the first model, we can say that the first model is better than the second one in performance evaluation of industrial corporations in Palestine and reject the third main null hypothesis.

**8. Discussion of the Analysis**

This study has adopted general statistical methods such as: the arithmetic mean, the standard deviation, the highest, the lowest value, and it can be seen that this study is adopted at the beginning of the section on analysis to give the above-mentioned general statistical indicators that give a general perception of the researcher about the nature of the data intended to be used, and the similarity of this research With (Erdogan, et al, 2015) and (Banykhaled & Taani, 2011) study in terms of adopting the aforementioned statistical indicators. The results of the study showed a fluctuation in most of the values and not subject to a normal distribution due to the presence of an apparent difference in the financial ratios of the companies in the study sample as in the two aforementioned studies. For the years included in this research, and this is evident in the debt ratios on the basis of accrual and cash, Therefore, it can be said that the simple statistics table provided an important indicator for the researcher about the fluctuation of the performance of the Palestinian industrial sector in its various specializations, and this may be attributed primarily to the existence of sharp competition between the national product with products imported from abroad, which mainly affects the performance of Palestinian industrial companies and puts them in a state of instability.

The liquidity ratios of the two models (the current ratio and the ratio of cash to current liabilities) showed great importance in explaining the dependent factor (return on assets), as both of the mentioned ratios had a statistically

significant effect in explaining the performance of companies in both models, and this result is consistent with what it has reached. A study (Oshoke and Sumaina, 2015) regarding the fact that the current ratio is important in evaluating the performance of companies (taking into account the large size of the research sample that included 50 companies). This study also intersected with the research (Durra et al, 2016) by noting the positive effect. The clear ratio of the current ratio on the return on assets.

This research is also similar to the study (Azmi et al, 2014), where the current ratio was associated with a positive statistically significant relationship with the financial performance of the research sample company, with an emphasis on using the aforementioned research for linear discriminatory analysis due to the failure to measure the dependent factor financially. This research also contradicted the study (Oshoke and Sumaina, 2015) in that the relationship between the current ratio and return on assets is an inverse relationship in the mentioned study, and this may be attributed to the difference in the nature and size of the sample. Therefore, it can be said that liquidity ratios (in the two models) are of the utmost importance for industrial companies, which entails from the viewpoint of the researcher the necessity to give priority to monitoring the company's liquidity in order to maintain its ability to pay its obligations, especially short-term liabilities, knowing that most industrial companies The Palestinian Authority suffered from fluctuations in the value of both ratios: current and cash-to-liabilities, during the period covered by the study.

This study adopted the following profitability ratios: net profit margin (return on sales), return on working capital, cash to sales, and cash to working capital. The study concluded that there is a statistically significant effect in both models (for all the four mentioned ratios) in Interpretation of the dependent variable (return on assets) as a measure of the performance of Palestinian industrial companies. In addition, this research agrees with a study (Azmi et al, 2014), which in turn confirmed that the net profit margin is associated with a positive relationship with the improvement in the financial performance of the Dutch chemical company, and this study agreed with (Banykhaled and Taani, 2011) that the ratio of cash from Operations to sales affect the company's performance significantly, Knowing that the performance of the companies in the aforementioned study was measured by earnings per share (EPS). In addition, this research is similar to the study conducted by (Hamidah, 2015) in the fact that the return on working capital (on an accrual basis) has a positive statistically significant relationship in explaining corporate performance. This result comes from the researcher's point of view that profitability ratios have a clear impact on management decisions in the fact that maximizing shareholder wealth is its main goal, and this is achieved by focusing on profitability maximization, i.e., earnings per share (EPS). It can be seen that the profitability ratios in this study It was a statistical function (on the basis of accrual and cash), so the cash basis in this case is considered very important so that the sales (and thus the profits) resulting from it do not turn into receivables that may be doubtful.

This research is based on the following debt ratios: the liabilities to assets ratio (debt ratio), and the interest coverage ratio, both of which are on an accrual basis, and the study is based on the cash to liabilities ratio and the cash coverage ratio for interest, which are on the cash basis. The two ratios of interest coverage were characterized by the presence of very large differences in the values, which led to the use of the standard value of these two ratios in the analysis to avoid the effects resulting from the presence of outliers, and the reason for the existence of outliers is due to large differences in the value of the benefits paid from year to year with some of the companies sample of the study Interest expense was also absent in eleven years for some companies.

This study is similar to the study (Azmi et al, 2014) in that the debt ratio (debt ratio) on an accrual basis is statistically significant in explaining the performance of industrial companies, but it contradicted with it in that the relationship between the debt ratio and the performance of the company was negative in the aforementioned study. On the other hand, this study showed that there are huge differences in values between the interest coverage ratio and the cash interest coverage ratio, where the arithmetic average on the accrual basis was twice the arithmetic average on the cash basis. This can be explained by the fact that there are large differences between cash from operating operations and EBIT for most companies. It can also be seen that the debt ratio (as an arithmetic average) was approximately 0.30, and this is considered a reasonable percentage in that the corporation's financing through debt is less than one-third as it is less than 0.40 (Al-Sheikh, 2008), while the rate of operating cash flow to liabilities was equal to 0.25. It means that the ability of cash in industrial enterprises to fulfill obligations does not exceed a quarter, and this percentage from the researcher's point of view is very weak and may affect in some way the payment of obligations.

It can be said that the model based on financial ratios on an accrual basis was better than the model on the monetary basis for other reasons such as the value of F, which was very high in the first model, which confirms the high explanatory strength of the model as a whole, in addition to that the square R value was higher for the first model, which confirms On the ability of the first model to explain the variance in the dependent factor more than the second model, taking into account that all the independent variables of the first model were statistically significant, while the

second model contained an independent factor that was not statistically significant. These results come from the researcher's point of view that the accrual basis is the accounting basis adopted in presenting the results of companies' business and thus it is the main representative of what happens from the operations carried out by the company during the fiscal year, and the effect of the accrual basis appears clearly in the financial ratios that contain the income statement elements, And the list of financial position (based on the accrual basis).

## 9. Conclusions

This study aimed to evaluate the performance of Palestinian industrial companies listed on the stock exchange using two models, one of which depends on financial ratios on an accrual basis, and the other relies on financial ratios on the monetary basis, and after conducting the analysis of the data, the study concluded the following results:

1- Defining two models that explain the financial performance of the Palestinian industrial companies listed on the stock exchange, depending on the accrual and cash basis. And that is through five independent variables for each model, representing: liquidity, profitability, and indebtedness.

2. The current ratio, net profit margin, return on working capital, debt ratio (indebtedness), and interest coverage ratio showed a statistically significant direct relationship with the return on assets of the first model (based on accrual). The model was as follows. :

$$ROA = 0.004 + 0.006 CR + 0.07 NPM + 0.22 ROCE + 0.019 DAR + 0.011 Zscore (ICR)$$

3. The ratio of cash to current liabilities showed a statistically significant direct relationship with the dependent variable, and cash to sales were correlated with a statistically significant inverse relationship with the dependent variable, and cash to working capital was correlated with a statistically significant positive relationship with return on assets, while cash to liabilities was related by a relationship Negativity is not statistically significant with the dependent variable, and the cash coverage ratio for interest was correlated with a statistically significant positive relationship with the return on assets of the second main model (based on cash). The model was as follows:

$$ROA = 0.036 + 0.075 CSTD - 0.191 CSR + 0.246 CEE - 0.068 CDR + 0.017 Zscore (CICR)$$

4. The study compared the two models to determine which is better in evaluating the performance of industrial companies, and by relying on Hotellings t formula and Steiger's Z formula, the study concluded that the first model (based on accrual) is better than the model based on the cash basis.

## 10. Recommendations

Based on the results above, the researchers recommend the following:

1- The importance of the Palestinian public shareholding companies in general, and the industrial companies in particular, periodically analyzing the financial statements, including the various types of financial ratios, and publishing them in annual reports, with a focus on both types of financial ratios (maturity and cash).

2. Paying attention to the cash side of the company, so that the company is not exposed to the risks of financial hardship or even the possibility of bankruptcy.

3. The need to conduct financial analysis in a more comprehensive manner, including other financial ratios not mentioned by this research, such as asset management efficiency ratios, investment ratios, the possibility of adding liquidity ratios, profitability, and additional debt. In addition to the possibility of proposing additional models for various sectors.

4. The importance of having reference financial ratios for the Palestinian industrial sector, taking into account the size of companies' assets, the volume of their sales and their profits, which was not present when this research was conducted.

5. The need to do more financial and non-financial research for some companies that suffer losses for successive years, to discover the reasons for the decline in the performance of some of them for long periods of time, in order to reach the points of imbalance and suggest effective solutions.

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