The Relationship between Solvency Ratios and Profitability Ratios: Analytical Study in Food Industrial Companies listed in Amman Bursa

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ABSTRACT

This study aims to examine the relationship between solvency ratios and profitability ratios. The study was conducted on the food industrial companies listed in Amman Bursa during the period of 2012-2014. The results revealed no relationship between the following solvency ratios (debt/asset ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and the following profitability ratios (gross profit margin and operating cash flow margin). The results show negative relationship between both ratios of solvency (debt/asset ratio, debt/equity ratio) and the following profitability ratios (operating profit margin [OPM], net profit margin [NPM] and return on assets [ROA]). There are no relationships between the remaining of the solvency ratios (long-term debt ratios/assets, long-term debt ratios/equity, and interest coverage) and the following profitability ratios (OPM, NPM, and ROAs).

Keywords: Solvency Ratios, Profitability Ratios, Food Industrial Companies, Amman, Jordan
JEL Classification: M4

1. INTRODUCTION

Solvency refers to the company's ability to meet its obligations in the long term. It means the company's ability to pay its obligations in the long-term including interest and principal debt. In other words, it represents the financial structure of the company (Robinson et al., 2015). Solvency ratios provide a general description of the debts in the company's capital structure, as well as the ability of cash flows to cover interest expenses and fixed costs such as rent payments and leases. Assets are typically fund from two sources, internal and external, including many items such as ordinary shares, preference shares, reserves, bonds and bank loans, securities convertible into loans, and short-term liabilities such as overdrafts and accounts payable (Tze and Heng, 2011; Gitman, 2006).

Financial structure is an important tool by which to identify the risks level that surround the company. Fixed costs are the most important factor that reflects on the performance and profitability of the company both in terms of the production process or financing costs. This refers to the need to work to reduce this type of costs, especially financing costs which will reflect in the reduction of total costs, and thus to improve the profitability (Hasan et al., 2014; Robinson et al., 2015).

Financing of the company's assets through issuing ordinary shares or by holding a percentage of profits can contribute in reducing loans, which will reflect the financing costs and thus profitability. Corporate administration seeks to ongoing calibration between debt and equity, so that the companies operate to maintain the financial structure which include an equity amount bigger than debts. This financial structure helps in maintain the financial independence of the company and reduce risks, as well as reduce financing costs and improve profitability (Tze and Heng, 2011; Gitman, 2006).

This study measures the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets, long-term debt/equity ratio, and interest coverage) and the following profitability ratios (gross profit margin [GPM], operating profit margin [OPM], net profit margin [NPM], operating cash flow margin [OCFM], and return on assets [ROA]).

Many studies and researches have shown that there is a close relationship between solvency ratios and profitability ratios (Tze and Heng, 2011; Gitman, 2006). Accordingly, research problem can be determining in that the adoption of inadequate financial structure could reflect negatively on the profitability of the company because of increase fixed charges. Accordingly, the researcher believes that to determine the factors that can play a major role in improving or declining the profitability of companies, it is imperative to answer the many inquiries that link to this subject by asking the following questions:

- What is the relationship between solvency ratios and GPM?
- What is the relationship between solvency ratios and OPM?
- What is the relationship between solvency ratios and NPM?
- What is the relationship between solvency ratios and OCFM?
- What is the relationship between solvency ratios and ROAs?

The objectives of this study are:
- Identification of solvency ratios in the studied food industrial companies
- Determine the profitability ratios in the studied food industry companies
- Study the relationship between solvency ratios and profitability ratios
- Provide sets of recommendations and proposals that will work to increase the rates of profitability and solvency ratios in the studied food industry companies.

The importance of this study emerges from the importance of the subject studied. This study may help relevant parties to analyze the reality of these companies in a better way by identifying the significant factors that affect the corporate profitability, which may help these companies to take appropriate administrative decisions relating to solvency and profitability.

2. PROCEDURAL DEFINITIONS

Procedural variables of the study have been defined as follows:

2.1. Solvency Ratios

Solvency refers to the company's ability to meet its obligations with respect to long-term debt. In other words, solvency reflects the company's ability to repay long-term obligations including principal payments and its benefits (Robinson et al., 2015).

2.2. Profitability Ratios

Profitability refers to the company's ability to generate profits as a return on the funds invested. Profitability ratios reflect the competitive situation of the company in addition to the quality of management. The ratios reflect the success or failure of the company (Robinson et al., 2015; Lartey, et at., 2013).

## 3. THE STUDY MODEL AND RESEARCH HYPOTHESES

Figure 1 illustrates the default relationships between the study variables which have been built based on series of previous studies in this area with some appropriate adjustments (Hasan et al., 2014; Tze and Heng, 2011; Gitman, 2006). On this basis, five ratios have been adopted for solvency (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage). Also, five ratios have been adopted for profitability (GPM, OPM, NPM, OCFM, and ROAs).

Per the previous data, the following main hypothesis can be formulated:

There is no significant relationship at the level of significance ($\alpha \leq 0.05$) between solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and profitability ratios (GPM, OPM, NPM, OCFM, and ROAs). From this hypothesis, the following sub-hypotheses are emerged:

H_1: There is no significant relationship at the level of significance ($\alpha \leq 0.05$) between solvency ratios and GPM.

Figure 1: Relations among variables
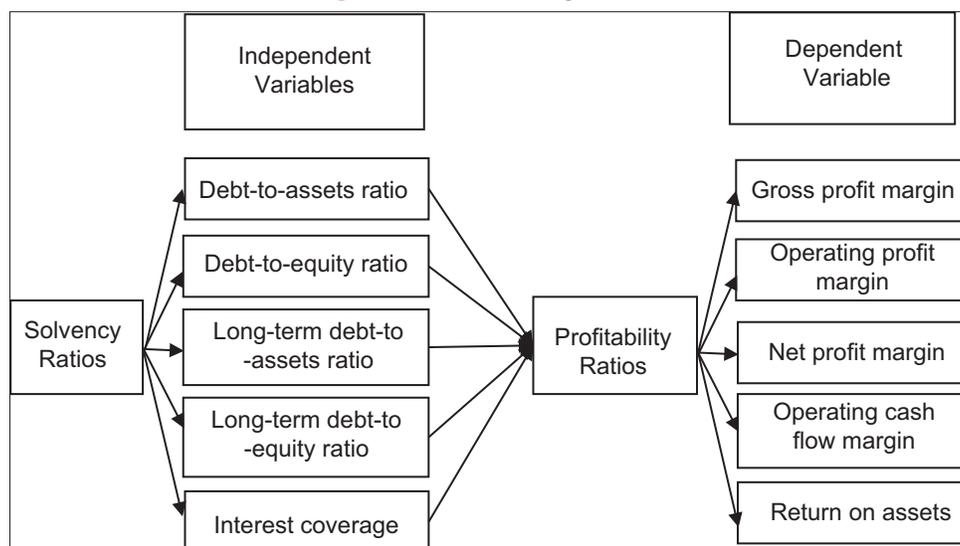
H$_2$: There is no significant relationship at the level of significance ($\alpha \leq 0.05$) between solvency ratios and OPM.

H$_3$: There is no significant relationship at the level of significance ($\alpha \leq 0.05$) between solvency ratios and NPM.

H$_4$: There is no significant relationship at the level of significance ($\alpha \leq 0.05$) between solvency ratios and OCFM.

H$_5$: There is no significant relationship at the level of significance ($\alpha \leq 0.05$) between solvency ratios and ROAs.

4. THE THEORETICAL FRAMEWORK AND PREVIOUS STUDIES

4.1. Solvency Ratios

4.1.1. Debt-to-assets ratio
It measures the percentage of total debts used in the capital structure. The higher the percentage of this ratio, the greater financial risk (Robinson et al., 2015).

4.1.2. Debt-to-equity ratio
This ratio refers to the total debts attributed to shareholders' equity (net assets). Rising this ratio up to one refers to a weak financial solvency and loss of control by the company (Sinha, 2012).

4.1.3. Long-term debt-to-assets ratio
It refers to the long-term debt relative to assets. Rising this ratio means increasing reliance on external financing and thus increase interests and declining profitability (Gibson, 2009).

4.1.4. Long-term debt-to-equity ratio
It refers to the relationship between long-term debt and equity. Declining this ratio below one means that the firm's financial position is better, and if more than one, it means that the long-term debt is greater than equity, and the company will face a dangerous situation. The best situation when this ratio is not more than 50% (Sinha, 2012).

4.1.5. Interest coverage
This ratio refers to the number of times that net profit before interest and taxes related to a company can cover interest payments (Robinson et al., 2015).

4.2. Profitability Ratios

4.2.1. GPM
This ratio refers to the sales' ability to generate gross profit. The high ratio refers to high selling prices and low production costs. The high selling prices mean that the company's products have a competitive advantage. If a product has a competitive advantage either from cost or quality, then this will help a company to increase profitability (Robinson et al., 2015).

4.2.2. OPM
Operating profit can be obtained through operating costs deducted from gross profit. This is a very important ratio because it reflects the company's ability to generate profit from ordinary operations related to a company. The decline in this ratio refers to a weak control over operating costs (Gibson, 2009).

4.2.3. NPM
This ratio includes the operating profit plus extraordinary revenue (non-recurring) and minus extraordinary expenses (Robinson et al., 2015).

4.2.4. OCFM
The ratio measures the cash generated by the regular company's operations per unit in cash from sales. Cash flows can be found from the statement of cash flows, while revenue from the income statement. The rise in this ratio could refers that the company takes effective policies to turn sales into cash, and may also refer to a high quality of profits (Sinha, 2012).

4.2.5. ROAs
It refers to a relationship between net profit and assets. The rise in the ratio refers to an effectiveness of the employment of assets by the company (Robinson et al., 2015).

4.2.6. Ratios of study' variables
Table 1 shows how to calculate each ratio of solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and how to calculate each ratio of profitability ratios (GPM, OPM, NPM, OCFM, and ROAs).

Table 1: Solvency ratios and profitability ratios

Variables	Full name	Measure
Dependent (profitability ratios)		
GPM	Gross profit margin	Gross profit/revenue
OPM	Operating profit margin	Operating income/revenue
NPM	Net profit margin	Net income/revenue
OCFM	Operating cash flow margin	Cash flows from operating activities/revenue
ROA	Return on assets	Net income/average total assets
Independent (solvency ratios)		
D/AR	Debt-to-assets ratio	Total debt/total assets
D/ER	Debt-to-equity ratio	Total debt/total shareholders' equity
LTD/AR	Long-term debt-to-assets ratio	Long-term debt/total assets
LTD/ER	Long-term debt-to-equity ratio	Long-term debt/total equity
IC	Interest coverage	Earnings before interest and tax/interest payments

Source: Robinson et al. (2015), Sinha (2012), Gibson (2009), Mohammed et al. (2008)

5. LITERATURE REVIEW

Many previous studies confirmed the presence or absence of moral relations between solvency ratios or financial structure ratios and profitability ratios with a different degree of each other. The purpose of this study Hasan et al. (2014) is to investigate the impact of the financial structure ratios on the financial performance of companies. The study conducts on a sample of 36 companies listed Dhaka Bursa in Bangladesh, during the period (2007-2012). It uses four ratios for financial performance (earnings per share, return on equity [ROE], ROAs, and Tobin's Q) as dependent variables. It uses three ratios of financial structure (short-term debt, long-term debt and total debt) as independent variables. The results show that earnings per share positively affected by short-term debt, while negatively affected by long-term debt. There was also a statistically significant negative relationship between ROAs and financial structure. On the other hand, there is no statistically significant relationship between financial structure and performance of the company as measured by ROE, and thus, the financial structure ratios have a negative impact on the financial performance of the company.

The study Tailab (2014) aims to show the impact of capital structure on financial performance. It uses ROAs and ROE as dependent variables, while it uses short-term debt, long-term debt, and total debts attributable to shareholders' equity as independent variables. The study sample included 30 US energy company for 9 years starting in 2005. The results indicate that total debt has a significant negative impact on the ROE and ROAs, while the volume of sales has a significant negative impact on the ROE only in America corporates. Also, short-term debt has a positive effect on the ROE.

The study Goyal (2013) aims to explore the effect of financial structure ratios on the profitability ratios related to public sector banks in India listed in national Bursa during the period (2008-2012). The results show a positive relationship between short-term debt and profitability ratios (ROE, ROAs, and earnings per share).

While the study Nirajini and Priya (2013) aims to analyze the relationship between capital structure and financial performance during the period (2006-2010) for the commercial companies listed Sri Lanka Bursa. The results show a positive relationship between capital structure and financial performance. The results also show that the capital structure affect significantly on the company' financial performance, where the results show that the debt/assets ratio, debt/equity ratio have a strong relationship with GPM, NPM, return on capital employed, ROAs and ROE.

The study Ebrati et al. (2013) aims to analyze the impact of capital structure on the company's performance. The study uses number profitability ratios as dependent variables and number of capital structure ratios as independent variables. The results show that the ROAs and earnings per share associate negatively with the capital structure.

The study Saeedi and Mahmoodi (2011) aims to analyze the relationship between capital structure and financial performance

of a sample of 320 companies listed in Tehran Bursa during the period (2002-2009). The study uses four ratios for performance (ROAs, ROE, earnings per share, and Q Tobin) as dependent variables, and three ratios for financial structure (short-term debt, long-term debt, and total debts) as independent variables. The study indicates the presence of a positive relationship between (earnings per share and Tobin's Q) and the capital structure, while the results show a negative relationship between capital structure and ROAs, and the lack of a statistically significant relationship between ROE and capital structure.

What distinguishes this study from its predecessors that it is trying to detect the relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and the following profitability ratios (GPM), OPM, NPM, OCFM, and ROAs) in food industrial companies. This study fills this gap. What distinguishes this study, it also addresses the study of interest coverage and its relationship to the profitability ratios, which is a modern concept, which may raise the attention of many researchers in this field.

6. THE METHODOLOGY

This study adopts the analytical descriptive method which includes the composition of the theoretical framework through access to references and sources related to the subject of solvency and profitability. In addition to collect data and testing of hypotheses, by analyzing data related to food industrial companies listed in Amman Bursa, and detection of relations between the variables of the study and the various dimensions and interpretative them, to identify the factors that control profitably for companies studied, and access to conclusions contribute to improve and develop the position.

6.1. The Study Population and Appointment

The study population consists of all food industrial companies listed in Amman Bursa during the period (2012-2014), which are 11 companies. The study sample was selected 8 companies as described in Table 2, and excluding 3 companies because their data are not completed.

6.2. Statistical Analysis Methods

Statistical Package for Social Sciences has been used to answer study questions and test their hypotheses using the following statistical methods:
- Averages to identify the presence for each variable
- Standard deviations to know dispersion for each variable

Table 2: Company names and their symbols

Company	Name of the company
NATP	National Poultry Company
NDAR	Nutrydar Company
JVOI	Jordan Vegetable Oil Industries Co. Ltd.
SNRA	Siniora Food Industries
JPPC	Jordan Poultry Processing and Marketing Co. Ltd.
JODA	Jordan Dairy Company Ltd.
GENI	General Investment Co. Ltd.
UMIC	Universal Modern Industries Co. for Edible Oil

- Simple Pearson correlation coefficient to test the hypotheses of the study.

6.3. The Study Limits

- Spacing limits: They are the food industrial companies listed in Amman Bursa within the period (2012-2014)
- Timing limits: The period for doing this study is in 2015
- Statistical limits: It is by using of the level of confidence (95%) in testing the validity of hypotheses.

7. RESULTS AND DISCUSSION

7.1. Descriptive Statistics for Solvency Ratios

Arithmetic means and standard deviations have been calculated for solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, and long-term debt/equity ratio) to identify the solvency rate during the 3 years in addition to the average solvency rate for food industrial companies listed Amman Bursa during the period (2012-2014), as illustrate in Table 3.

Table 3 shows the following:

- The solvency ratios rates for the companies studied are between 0.048 and 1.636 at a general solvency rate of 0.456 and standard deviation of 0.573, where the company General Investment Co. Ltd. (GENI) is a minimum rate while the company Jordan Poultry Processing and Marketing Co. Ltd. (JPPC) is the highest rate
- In 2012, solvency rate is 0.053 as a minimum rate for the company GENI and 1.818 as a maximum rate for the company JPPC, and at a general rate of 0.4320
- In 2013, solvency rate is 0.042 as a minimum for companies GENI and Universal Modern Industries Co. for Edible Oil and 1.600 as a maximum for company Nutrydar Company (NDAR), and at a general rate of 0.512
- In 2014, solvency rate is 0.048 as a minimum for the company GENI and 1.588 as a maximum for company JPPC, and at a general rate of 0.424
- Note that the solvency rate fluctuates from year to year. In 2012, it is 0.4320 and then in 2013 it rises to 0.512 and in 2014, it returns to 0.424.

7.2. Descriptive Statistics for Profitability Ratios

The averages and standard deviations have been calculated for the following profitability ratios (GPM, OPM, NPM, and OCFM) to identify the profitability rate during the 3 years in addition to the average of profitability rate in food industrial companies listed Amman Bursa during the period (2012-2014), as illustrate in Table 4.

Table 4 shows the following:

- The profitability rates for the companies studied are between 0.052 and 0.216 at a general profitability rate of 0.0870 and standard deviation of 0.0880, where the company NDAR has the lowest profitability, while the company GENI has the highest profitability
- In 2012, profitability rate is −0.113 as a minimum rate for the company NDAR, and 0.193 as a maximum rate for the company GENI, and a general rate of profitability of 0.0540 and a standard deviation of 0.0940

Table 3: Descriptive statistics for solvency ratios

Company	Solvency			Mean of	Company
	2012	2013	2014	solvency	importance
NATP	0.188	0.155	0.078	0.140	5
NDAR	0.402	1.600	1.033	1.012	2
JVOI	0.298	0.160	0.075	0.178	4
SNRA	0.515	0.465	0.335	0.438	3
JPPC	1.818	1.503	1.588	1.636	1
JODA	0.133	0.135	0.140	0.136	6
GENI	0.053	0.042	0.048	0.048	8
UMIC	0.057	0.042	0.100	0.067	7
Mean of the year solvency	0.432	0.512	0.424	0.456	-
Standard deviation	0.582	0.654	0.574	0.573	-

NATP: National Poultry Company, NDAR: Nutrydar Company, JVOI: Jordan Vegetable Oil Industries Co. Ltd., SNRA: Siniora Food Industries, JPPC: Jordan Poultry Processing and Marketing Co. Ltd., JODA: Jordan Dairy Company Ltd., GENI: General Investment Co. Ltd., UMIC: Universal Modern Industries Co. for Edible Oil

Table 4: Descriptive statistics for profitability ratios

Company	Profitability			Mean of	Company
	2012	2013	2014	profitability	importance
NATP	0.020	0.035	0.033	0.029	7
NDAR	−0.113	−0.088	0.045	−0.052	8
JVOI	0.073	0.193	0.178	0.148	3
SNRA	0.178	0.153	0.198	0.176	2
JPPC	0.065	−0.003	0.043	0.035	6
JODA	0.083	0.095	0.093	0.090	4
GENI	0.193	0.240	0.215	0.216	1
UMIC	0.075	0.043	0.055	0.057	5
For year mean of profitability	0.0710	0.0830	0.1070	0.0870	-
Standard deviation	0.0940	0.1080	0.0760	0.0880	-

NATP: National Poultry Company, NDAR: Nutrydar Company, JVOI: Jordan Vegetable Oil Industries Co. Ltd., SNRA: Siniora Food Industries, JPPC: Jordan Poultry Processing and Marketing Co. Ltd., JODA: Jordan Dairy Company Ltd., GENI: General Investment Co. Ltd., UMIC: Universal Modern Industries Co. for Edible Oil

- In 2013, profitability rate is −0.088 as a minimum rate for the company NDAR, and 0.240 as a maximum rate for the company GENI, and a general rate of profitability of 0.0830 and a standard deviation of 0.1080
- In 2014, profitability rate is 0.033 as a minimum rate for the company NATP, and 0.215 as a maximum rate for the company GENI, and a general rate of profitability of 0.1070 and a standard deviation of 0.0760
- Note that the profitability rate in the companies studied is growing from year to year. in 2012, profitability rate is 0.071 and in 2013, it rises to 0.0830, and in 2014, also it rises to 0.107.

8. TEST HYPOTHESES

To test the hypotheses of the study, simple correlation coefficient for Pearson was calculated between the independent variables of the study and each dependent variable as follows.

8.1. Test the First Hypothesis

There is no statistically significant relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and GPM.

Table 5 shows the following:
- There is no relationship between any of the five solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and GPM as one of the dimensions of profitability, where the level of significance between each two variables is more than (0.05)
- Thus, we accept the first null hypothesis which states that "there is no relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and GPM."

8.2. Test the Second Hypothesis

There is no statistically significant relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and OPM.

Table 6 shows the following:
- There is a negative relationship between debt/asset ratio and OPM, where the correlation coefficient reaches −0.722 and by a level of significance 0.043
- There is a negative relationship between debt/equity ratio and OPM, where the correlation coefficient reaches −0.796 and a level of significance 0.018
- There is no relationship between the following solvency ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and OPM as one of the dimensions of profitability, where the level of significance between each two variables is more than 0.05
- We accept the second null hypothesis partly with respect to ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and its refusal partly also with respect to the following ratios (debt/assets ratio and debt/equity ratio).

8.3. Test the Third Hypothesis

There is no statistically significant relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and NPM.

Table 7 shows the following:
- The existence of a negative relationship between debt/asset ratio and NPM, where the correlation coefficient is −0.760 and the level of significance is −0.029
- The existence of a negative relationship between debt/equity ratio and NPM, where the correlation coefficient is −0.886 and the level of significance is 0.018
- There is no relationship between the following solvency ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and NPM, as one of the dimensions of the profit margin, where the level of significance between each two variables more than 0.05
- We accept the third null hypothesis partly with respect to ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and its refusal partly also with respect to the following ratios (debt/assets ratio, debt/equity ratio).

8.4. Test the Fourth Hypothesis

There is no statistically significant relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and OCFM.

Table 8 shows the following:
- There is no relationship between any ratio of the five solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and OCFM as one of the dimensions of profitability, where the level of significance between each two variables is more than 0.05
- We accept the fourth null hypothesis which states that "there is no relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and OCFM."

8.5. Test the Fifth Hypothesis

There is no statistically significant relationship between the following solvency ratios (debt/assets ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and the ROAs.

Table 9 shows the following:
- The existence of a negative relationship between debt/asset ratio and the ROAs, where the correlation coefficient is −0.753 and the level of significance is 0.031.
- The existence of a negative relationship between debt/equity

Table 5: The results of Pearson correlation between the solvency and GPM

GPM	DAR	DER	LDAR	LDER	IC
R	−0.163	−0.018	−0.284	−0.370	−0.328
Significant	0.700	0.966	0.496	0.367	0.427

GPM: Gross profit margin

Table 6: The results of Pearson correlation between the solvency and OPM

OPM	DAR	DER	LDAR	LDER	IC
R	−0.722	−0.796	−0.329	−0.512	0.004
Significant	0.043	0.018	0.426	0.195	0.993

OPM: Operating profit margin

Table 7: The results of Pearson correlation between the solvency and NPM

NPM	DAR	DER	LDAR	LDER	IC
R	−0.760	−0.886	−0.273	−0.447	0.079
Significant	0.029	0.003	0.514	0.267	0.853

NPM: Net profit margin

Table 8: The results of Pearson correlation between the solvency and OCFM

OCFM	DAR	DER	LDAR	LDER	IC
R	−0.432	−0.491	−0.177	−0.277	−0.575
Significant	0.285	0.217	0.675	0.506	0.136

OCFM: Operating cash flow margin

Table 9: The results of Pearson correlation between the solvency and ROA

ROA	DAR	DER	LDAR	LDER	IC
R	−0.753	−0.942	−0.290	−0.488	0.109
Significant	0.031	0.000	0.486	0.220	0.798

ROA: Return on assets

ratio and the ROAs, where the correlation coefficient is −0.942 and the level of significance is 0.000.

- There is no relationship between the following solvency ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and the ROAs as one of the dimensions of profitability, where the level of significance between each two variables is more than 0.05.
- We accept the fifth null hypothesis partly with respect to ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and its refusal partly also with respect to ratios (debt/assets ratio, debt/equity ratio).

9. DISCUSSION OF RESULTS AND RECOMMENDATIONS

- The results show that the average solvency rates for the all companies studied is 0.456, where the company GENI enjoys a minimum rate of solvency through companies, where is 0.048. This result indicates that this company enjoys a high financial capacity due to the low rate of debt. This indicates that this company enjoys with a great financial independence, and it depends on internal financing to finance most of its assets. While the company JPPC are of highest solvency rate reaching (1.636). This result indicates that the company is suffering from the loss of financial independence because the debt exceeds its equity rate.
- The average profitability rates for the companies studied is 0.0870, where the company NDAR has the lowest profitability rate −0.052, while the company GENI has of the highest profitability rate 0.216. Table 3 show that the company NDAR has a rate of solvency 1.012, the second-weakest company in terms of solvency. If we go back to the Table 4 this company has the least profitability through companies with a profitability rate −0.052. A comparison between the two results we note that there is objective in the results, as the high solvency rate up to one refers that the debt rate exceeds the rate of equity for this company. The increase in debt in this way will lead to increase fixed charges such as interest, which will reflect negatively on profitability, and this explains the low profitability rate of this company as the lowest rate. And vice versa for the company GENI, we note that this company has the lowest debt, where its solvency rate is 0.048, while it enjoys per the results the highest profitability rate which is 0.216. This result is logical, because as the low solvency rate will lead to reduce the debts charges, which will reflect positively on profitability.
- The results indicate that there is no relationship between all solvency ratios (debt/asset ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, interest coverage) and GPM. This reflect that the debt charges incurred

by the company, which is increasing with an increase in dependence on external financing of the assets, is deducted from the income statement after GPM. It is therefore logical that there is no relationship between these two variables. This result varies with the study of (Nirajini and Priya, 2013).

- There is a negative relationship between the following solvency ratios (debt/asset ratio and debt/equity ratio) and OPM, while there is no relationship between the following solvency ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and OPM. We can explain the negative relationship between (debt/asset ratio, debt/equity ratio) and OPM, that the higher debt to assets or equity ratio may lead to rise of financing costs, and then this will lead to reduce OPM, because the financing costs are deducted as part of operating expenses. This result is consistent with the study of Nirajini and Priya (2013). As for the lack of a relationship between the (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and OPM, because the opinion of the researcher is that most of the sample firms did not have long-term loans, which coincided with low interest on loans. This result varies with the study of Nirajini and Priya (2013) and study of Hasan et al. (2014).
- There is a negative relationship between both solvency ratios (debt/asset ratio, debt/equity ratio) and NPM, while there is no relationship between the remaining solvency ratios (long-term debt/assets ratio, long-term debt/equity ratio, interest coverage) and NPM. We can explain the existence of the negative relationship between (debt/assets ratio and debt/equity ratio) and NPM, that the higher rise of debt to assets or to equity will lead to maximize financing costs, and thus will reduces NPM. This is because the financing costs are usually deducting before net profit. Thus, the negative relationship between these two variables is a logical relationship. This result agrees with the study of Nirajini and Priya (2013) and the study of Hasan et al. (2014).
- There is no significant relationship between all the solvency ratios (debt/asset ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, interest coverage) and OCFM. This due to that such a margin affects only by cash receipts and payments made during the year. Therefore, it is natural that there is no relationship between this margin and solvency ratios.
- There is a negative relationship between both solvency ratios (debt/asset ratio, debt/equity ratio) and the ROAs, while the remaining solvency ratios (long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) have no relationship with the ROAs. This result is consistent with the study of Ebrati et al. (2013) and study of Hasan et al. (2014), while differ with the study of Nirajini and Priya (2013). It is a logical result where that whenever the rising of debt to assets or equity will lead to increase financing costs, and therefore the ROAs will decline.

9.1. Recommendations
- The need for further studies to include other sectors of Amman Bursa to explore the reality of the relationship between the variables studied more clearly
- The need for further studies that include longer periods of

time to show the relationship between the variables of the study more clearly

- There is no doubt that (debt/assets ratio and debt/equity ratio) affect clearly and negatively, as referring by many, on profitability ratios, and therefore, companies should maintain a certain level of debt to maintain financial independence and reduce the interests, which will impact on profitability
- The need for further studies to include other ratios related to solvency ratios or profitability ratios.

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