

THE RELATIONSHIP BETWEEN FINANCIAL FAILURE AND MARKET VALUE: AN EMPIRICAL STUDY USING A SAMPLE OF INDUSTRIAL FIRMS LISTED AT QATAR STOCK EXCHANGE

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ABSTRACT

This study aims to detect the existence of signs of financial failure for industrial companies listed on the Qatar Stock Exchange. The study uses the Altman Model to calculate the financial failure indicators. It also measures the relationship between the financial failure score and the market value of these companies. The analysis is based on the belief that the financial reports provide information to investors which can be taken as indicators of the financial failure or success of companies. This information will affect investment decisions which, in turn, will be reflected in the share price.

The study uses financial data for a sample of seven Qatari industrial companies for a period of 10 years from 2008 to 2017. The researchers find that most Qatari industrial companies do not suffer signs of financial failure. Furthermore, the regression analysis of the panel data indicates that there is a positive relationship of statistical significance between financial failure indicators and the market value of these companies. This is due to investors' investment decisions being affected by the financial failure indicators used in this study.

Keywords: Financial Failure, Altman Model, Qatar, Panel Data.

INTRODUCTION

The complexity of the business world resulting from intense competition and open markets has exposed companies to a multiplicity of issues which can threaten firms with the prospect of financial failure. This financial failure would not only affect the company and its various stakeholders but also the country's economy in which it operates.

The risk of financial failure has motivated researchers, financial analysts, management and owners to investigate this issue. This has contributed to the emergence of several quantitative and descriptive models that help to forecast the likelihood of financial failure and thereby help prevent this happening. In addition, this research helps investors rationalize investment decisions.

Hence, the idea and importance of this research lies in analysing the potential levels of financial failure in Qatari industrial firms listed on the Qatar Stock Exchange. It also assesses the extent to which investors are aware of those levels (if any) and how this reflects on their investment decisions as represented by the stock prices of these firms. The research uses fixed-effect (within) regression in which the data panel method was adopted for a period of ten years from 2008 to 2017.

This study is divided into a further four sections, with the second section reviewing the literature, the third section outlining the methodology, the fourth section highlighting the results and the conclusions being discussed in the final section.

LITERATURE REVIEW

Financial and accounting literature addresses many meanings of the concept of financial failure which varies according to the degree and impact the organization. Financial failure can be seen on a continuum from short-term losses over, say, one year through to insolvency, bankruptcy and liquidation (Al Shareef et al., 2012) which has the strongest impact on the company, stakeholders and economy (Altaweel, 2008).

Insolvency or financial deadlock is one of the most important aspects of financial failure. The company has to focus on how it incurred such a serious financial problem, which could lead bankruptcy. The issue could come about because of the inability to repay obligations, or due to consecutive losses for several years, which forces the company to stop its activity (Aldghaem et al., 2006; Ali & Abbas, 2015).

There are many internal and external indicators of financial failure, which can be summarized as follows (Al Shameri, 2015):

1. Failure to achieve adequate returns on funds invested in the company.
2. Imbalances in the firm's financial structure, such as a heavy reliance on borrowing, particularly short-term, and consequent high financial leverage.
3. The company's inability to repay loans on due dates.
4. The company's inability to keep pace with technical developments and following traditional means of activities characterized by low efficiency and effectiveness, especially under conditions of intense competition.
5. The fluctuation of the financial ratios derived from the analysis of the financial position at successive periods.
6. Downplaying problems associated with expansion and proliferation.
7. Repeated delays in payment of their dues.
8. Change in accounting policies, methods or auditor.
9. Holding the company mortgaged assets by creditors
10. Preparation of budgets and future expectations based on unreasonable assumptions.

It should be noted that not all these indicators will result in the failure of the company. Indeed, some indicators can be associated with a successful company.

Meanwhile, Ross et al. (2013) distinguish between economic failure and financial failure. They argue that economic failure occurs when the company cannot achieve an acceptable return on investment, or when the company's net assets are negative, that is when the book value of liabilities exceeds the book value of their assets. In contrast, financial failure means that the company cannot pay its obligations to creditors and meet its debts (Ross et al., 2013).

From the literature it is apparent that there are five main causes of financial failure:

1. Administrative reasons: these reasons include selecting the wrong employees, conflict between these employees, the lack of integrated management systems for financial and moral support and the absence of modern management information systems that provide timely information (Rammo and Al Wattar, 2010; Chavez and Hernandez, 2018).
2. Financial reasons: these reasons include a lack of financial resources, a failure to obtain the requisite funding, and accumulated losses resulting from incorrect cost systems which may contribute to the institutions being unable to fulfil their obligations towards others (Matar, 2010; Prayanthi and Kakunsi, 2017).

3. Marketing reasons: these reasons include the failure to properly research the market regarding consumer tastes, preferences and purchasing behaviour (Abbas, 2010).
4. Production reasons: these reasons include production processes that lead to high rates of defects or stoppages in production, the inability of manufacturing production to take advantage of economies of scale and outdated machinery leading to higher costs for maintenance (Abbas, 2010).
5. External reasons: these are reasons that are beyond the control of management but affect the company and include inflation, sharp fluctuations in exchange rates, rapid technological changes, unexpected law changes, regional political crises and other causes (Al Shameri, 2015).

There are a number of measurements of financial failure, including descriptive ones such as A-Score and quantitative such as Z-Score. Descriptive models evaluate multiple factors (Argenti, 1976), such as the type of industry, competition, operational performance, cash flow, management type and financial position with relative weights assigned to reach a total for the success or failure of the company. Researchers argue that the main problem with these models is the lack of agreement among researchers on which factors to include on the one hand, and on the relative weights given to them on the other hand. In contrast, the features of quantitative model are easily measured and used extensively by many financial analysts and researchers (Altman, 1968; Kida, 1998; Altman et al., 1995; Chaudhuri and Ghosh, 2017; Chavez and Hernandez, 2018).

The researchers supports the conclusion reached by Al Gagawi and Ibrahim (2015) who compared the financial failure prediction model A-Score and Z-Score to assess the best model for Iraqi firms for the period of 2006 to 2010. They concluded that the Z-Score model based on financial ratios was better and more accurate in detecting financial failure than the A-Score model based on descriptive factors. In addition, the researchers believe these quantitative indicators (ratios) are more appropriate as they are derived from the company's financial reports, which reflect its operating performance.

The Altman model (Z-score) for financial failure is one of the most widely used standards in financial and accounting literature for measuring signs of financial failure (Rees, 1990; Ali and Abbas, 2015; Prayanthi and Kakunsi, 2017; Fito et al., 2018). The Z-Score measurement scale is based on the total of relative weight of five financial ratios (percentage of capital to total assets (1.2); the ratio of retained earnings to total assets (1.4); profit before taxes and interest to total assets (3.3); the market value of total liabilities (0.6); and total assets to sales ratio (1.00)). The Z-Score indicates the company will fail if the Z -Score is less than 1.81 while the company will not fail if the value of Z is greater than 2.99 (Altman, 1968).

Importantly, this model is used to evaluate industrial companies, whereas a different model is used to evaluate non-industrial companies. This model uses the relative weight of four financial ratios (Altman et al., 1995): ratio of working capital to total assets (6.56); the ratio of retained earnings to total assets (3.26); profit before taxes and interest to total assets (6.72); and ratio of shares' book value to total liabilities (1.05). In this model, a company will fail if the value of the Z-Score is less than 1.1, while the company will not fail if the value of the Z-Score is greater than 2.6.

Financial and accounting literature is replete with studies that address the topic of financial failure on firms in developed and developing markets. For example, Altman (2002) tested the suitability of the Z-Score model developed in 1968 to predict financial failure in troubled economic conditions, based on changes in the economy and corporations, across three different time periods. He used 86 firms for 1969 to 1975, 110 firms for 1979 to 1995 and 120 firms for 1997 to 1999. He proved that the Z-Score developed in 1968 was precise, convenient and reliable. In addition, Georheta and Georgia (2015) identified bankrupt and non-bankrupt

companies by using the Z-Score model for 27 companies in the Romanian stock market of 2008. The study found that nearly 52% (14 of the 27 companies) of the Romanian companies faced financial problems and were threatened with bankruptcy.

Using quantitative models based on financial reports, this research addresses two issues; first, it determines whether or not Qatari industrial companies will suffer from financial failure; and second, whether or not investors have the ability to find the same outcomes which is achieved by examining the relationship between financial failure indicators and market value (Al Saedi, 2016; Fito et al., 2018).

But why do we calculate financial failure? And who benefits from financial failure index scores? The answer is that shareholders and investors are the most interested stakeholders in financial failure as this influences their investment decisions. In turn, the individual decisions of investors will affect the share price of the company positively or negatively (Al Khatib, 2011; Al Saedi, 2016; Al Manaseer and Al Oshaibat, 2018).

Based on the discussion, two hypotheses are tested in this study. The first is related to the extent of the financial failure. The second is related to the relationship between the financial failure score and the market value of the Qatari industrial companies listed on the Qatar Stock Exchange.

H1: There are no statistically significant differences between Qatari industrial companies in terms of their financial failure indicators.

H2: There is no statistically significant positive relationship between the financial failure score and the market value of Qatari industrial companies.

METHODOLOGY

Population and Sample

Most similar studies have been conducted on companies in developed markets. However, this research is applied to industrial companies in Qatar, because the Qatari market is characterized by rapid growth, and the companies in Qatar differ from other regional companies through the adoption of modern electronic applications and international accounting and auditing standards, and operate in an open market economic system.

This study relied on secondary data collected from the published financial statements for industrial companies listed on the Qatar Stock Exchange from its website (www.qe.com.qa).

There are nine industrial firms listed on the Qatar Stock Exchange. Hence the researchers attempted to determine the largest possible sample of those companies allied with the longest possible timescale, which was ten years from 2008 to 2017. After identifying those companies whose data did not cover the 10 years, seven companies, representing about 78% of the study population which is generally acceptable, were left.

Models

In this research two models are used. The first, the Altman Model, determines if the Qatari industrial company suffers signs of financial failure (Rees, 1990; Ali and Abbas, 2015; Basovnikova et al., 2018; Fito et al., 2018) by using the Z-Score. The second model tests if there is any significant relationship between the financial failure score and the market value of these

companies. This test investigates the awareness of investors to potential financial failure as this should be reflected in their investment decisions, which, in turn, impacts the price of the stocks.

The Z-Score is calculated using the following equation:

$$Z_{it}=1.2X_1+1.4X_2+3.3X_3+0.6X_4+1.00X_5$$

Where,

- Z_{it} = Financial Failure rate for company i for the time t .
 X_1 = The ratio of working capital to total assets for company i for the time t .
 X_2 = The ratio of return earnings to total assets for company i for the time t .
 X_3 = The ratio of net profit before tax and interest to total assets for company i for the time t .
 X_4 = The ratio of equity market value to total liabilities for company i for the time t .
 X_5 = The ratio of total sales to total assets for company i for the time t .

The rule follows Altman (1968) suggestion:

1. If the Z-Score is greater than 2.99, the company will not suffer from financial failure.
2. If the Z-Score is less than 1.81, the company will suffer from financial failure.
3. If the Z-Score is between 1.81 and 2.99 the company is neither a failure nor a success financially, but suffers in certain areas and is well-placed in other areas.

The second model measures the relationship between the financial failure score and the market value of the industrial company listed on the Qatar Stock Exchange using the following regression equation:

$$MKT_{it}=A_1+B (Z_{it})+u_{it}$$

Where,

- MKT_{it} = Market value for the company i for the time t .
 Z_{it} = Financial Failure rate for company i for the time t

The Use of Panel Data

Most studies use multiple regression for either cross section analysis or time series analysis. Cross section analysis can be undertaken in one of two ways. First by using multiple regression across a number of companies for one year, or second by computing the mean for the years under study for each company and then comparing the companies. Meanwhile, the time series analysis is a multiple regression of a time series for one company over a number of years.

The Panel Data method combines the two methods without using means; the term “*cross section analysis of time series*” is used (Gujarati, 2003; Hsiao, 2003; Baltagi, 2005) to refer to where there are several cases (section analysis) for a number of time periods (time series). This approach combines the advantages of each method as using the Data Panel method allows the use of the data without resorting to means. This reduces the disparities in the data which impacts positively on the results.

RESULTS

The first hypothesis stipulates that there are no statistically significant differences between Qatari industrial companies in terms of their financial failure indicator. To test this

hypothesis the financial failure indicators using the Altman Model were calculated. See Table 1 for the results.

Year	Financial Failure			
	Mean	Standard Deviation	Max.	Min.
2008	4.251	2.991	9.943	0.733
2009	4.996	2.535	7.678	0.767
2010	5.260	3.459	9.853	0.723
2011	5.362	4.256	12.100	0.876
2012	7.804	7.897	22.415	1.744
2013	9.314	8.715	22.672	2.687
2014	7.456	7.161	22.539	2.291
2015	6.321	6.739	20.823	1.553
2016	6.928	9.190	27.334	1.010
2017	7.139	10.346	30.223	0.757
Total	6.483	6.573	30.223	0.723

The researcher was able to categorise the companies into not failures, failures and unclear (Table 2).

Year	Total Sample		Not Failure		Failure		Unclear	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
2008	7	100.00%	5	71.43%	1	14.29%	1	14.29%
2009	7	100.00%	5	71.43%	1	14.29%	1	14.29%
2010	7	100.00%	5	71.43%	1	14.29%	1	14.29%
2011	7	100.00%	5	71.43%	2	28.57%	0	0.00%
2012	7	100.00%	4	57.14%	2	28.57%	1	14.29%
2013	7	100.00%	6	85.71%	0	0.00%	1	14.29%
2014	7	100.00%	5	71.43%	0	0.00%	2	28.57%
2015	7	100.00%	5	71.43%	1	14.29%	1	14.29%
2016	7	100.00%	5	71.43%	2	28.57%	0	0.00%
2017	7	100.00%	5	71.43%	2	28.57%	0	0.00%
Total	70	100.00%	50	71.43%	12	17.14%	8	11.43%

From the results it is obvious that Qatari industrial companies are mostly successful, with the number of successful results being 50 out of the total of 70 (71.43%) during the ten years covered by the study, while the number of failure results was 12 (17.14%). This means that a small percentage of Qatari industrial companies suffer from signs of financial failure. The researchers believe that the reason for the results is due to the promising investment environment available to Qatari industrial companies.

The second hypothesis stipulates that there is no statistically significant positive relationship between the financial failure score and the market value of Qataris industrial companies. To interpret the impact of independent study variables on the dependent variable depends primarily on comparing the calculated t value with the indexed value, and measuring the value of $P > t$ at the 5% significance level. To determine the existence of a relationship between

the independent variable (Financial Failure) and the dependent variable (Market Value), the value of the calculated t was compared with the index t. If the calculated t is greater than the index t then it can be concluded that there is a relationship between the independent variable and the dependent variable. Moreover, if the value of $P > t$ is less than the 5% significance level, when it has been tested by the fixed-effect regression using the STATA program, this means there is a relationship between the independent variable and the dependent variable, and vice versa (Berenson et al., 2009). Table 3 displays the results of the analysis of the independent variables and the dependent variable at the 5% level of significance (95% confidence level).

Independent Variable	Coefficient	t	P>t
Financial Failure	2.67848	2.59	0.012
R Square (%)			10.9
F (1, 59)			6.72
Prob (F-statistic)			0.012

From the results, the following multiple regression equation is obtained:

$$MKT_{it} = A_1 + B (Z_{it}) + u_{it}$$

$$MKT_{it} = 59.36127 + 2.678483(Z_{it})$$

From the results displayed in Table 3, it is clear that the t-value of the financial failure variable is greater than its carrying value of 1.9991 and the value of $P > t$ is less than the significance level of 5%. This means a rejection of the null hypothesis that there is no statistically significant relationship between the financial failure score and market value of industrial shares in Qatar, and therefore an acceptance of the alternative hypothesis that there is such a relationship.

The results indicate a positive statistical significance relationship between the financial failure indicator of Qatari industrial companies and the market value of those companies. This means that shareholders and investors understand the impact of the financial failure indicator and take their investment decisions accordingly.

CONCLUSIONS

By studying signs of financial failure using a sample of Qatari industrial companies, we found that the Altman model can be used to measure signs of failure. This is because it contains a number of financial ratios covering most of the operational and financial activities of the company. It relies on accounting data derived from financial reports that reflect the company's performance and activities. In addition, most industrial companies in Qatar are not prone to financial failure for a number of reasons; most importantly because Qatar is a strong emerging economy with significant growth opportunities.

In addition, the study found a positive relationship between the financial failure score and the market value of the industrial companies in Qatar. This indicates that most investors in the shares of industrial companies in Qatar attach importance to the results of financial failure analysis in their investment decisions, which, in turn, determines the market value of those shares.

The result is limited by the small sample size in comparison with other studies. This is due to lack of depth and breadth in the Qatar Stock Market because of the small size of the market. However, this study showed that the ALTMAN model is one of the most important indicators for measuring financial failure. This has uniquely positioned researchers to adopt other indicators to measure financial failure in future studies, or to choose a sample from other economic sectors or a larger sample of industrial companies and a longer period of time if data are available.

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