



Predicting Financial Distress in Lebanese Non-Listed Banks

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Abstract

The Study uses the Altman Z-score model for non-manufacturing companies and for emerging markets to examine the financial distress of private non-listed banks in the Lebanese banking sector using a sample of four banks including Bankmed, BBAC Bank, Credit Libanais Bank, and IBL Bank; covering the period from 2013 till 2017. The study also uses trend analysis in order to aid in predicting future performance for the chosen sample. The results show that all banks using the Z-score for non-manufacturing firms have a z below the cutoff of 1.1, which means bankruptcy is predicted in the near future which contradicts the current situation of such banks. While as for Z value for emerging markets is above the cutoff of 2.6 which means that such banks are acting within the safe financial zone. The trend analysis shows that Z is stable and improving for the majority of the banks in the sample.

Keywords: Lebanon; Z-Score model; Non-listed Banks; Financial Distress; Bankruptcy.

1. Introduction

Financial stability has been a critical concept; where the measure of financial stability should be accurate and reliable in order to put in practice. The core element of this research is applying Z-score model for emerging markets and Z- score for non-manufacturing firms on a sample of unlisted commercial banks in Lebanon. Altman's Z-score model was the first multivariate bankruptcy prediction model that spread worldwide, and it is a prototype for failure prediction models used by bankers, investors, asset managers, and even used by unhealthy firms [1].

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The shortage in similar studies in Lebanon makes this research critical for banks, investors and households, in addition it adds a value to the related literature of future studies.

1.1. Structure

The study starts by presenting the objectives and research questions, after that it formulates the hypotheses. In the second section the study presents a review of related literature followed by a practical part that presents the methodology and analyzes the obtained results. The last section includes the conclusions of the study and recommendations for later studies.

1.2. Research problem

The Author in [2] stated that the increase in financial and economic crisis has activated the management of bankruptcy and financial distress in firms; it also rekindled the use of various bankruptcy prediction models. The Author in [3] in using the Z-score model to predict the bankruptcy of Raysut Cement Company SAOG and its subsidiaries in Oman, stated that Financial health of firms depends on its solvency, that must be managed in an effective way that ensure the economic growth and maintenance of the organizations. In order to test financially the importance of financial distress threats in Lebanon, and whether it leads to banking conflicts similar to what happened with Banque intra, the study uses the Z-score model on a sample of non-listed banks. It analyzes the results and its trend over the past 5 years, thus acting as a basis and reference for similar future studies, and shedding the light on current banking situations.

1.3. Research Objectives

(RO1) Predicting the occurrence of financial distress in private Lebanese banks.

(RO2) Test the efficiency of the Z-score model in predicting bankruptcy in private banks.

(RO3) To evaluate the overall performance of the banks included in the sample.

(RO4) To compare the financial health of different unlisted banks in Lebanon.

(RO5) To test the validity of the different Altman Z-score models in testing the financial distress of Lebanese non-listed banks

1.4. Research Questions

The study is conducted to answer some questions such as: Is the Z-score model efficient and critical in predicting financial distress and bankruptcy before its occurrence? Are Lebanese banks facing financial distress problems? Are all private banks located in the same range in managing their financial health?

1.5. Research Hypothesis

H1: Non-listed banks in Lebanon don't face bankruptcy.

H2: Non-listed banks in Lebanon don't face financial distress

H3: Z-score model for non-manufacturing firms can be applied to non-listed Lebanese banks.

H4: Z-score model for emerging markets can be applied to non-listed Lebanese banks.

2. Overview on the Sector

The Lebanese banking sector has been subject to deep changes, where the repairs executed by regulators and mainly the central bank of Lebanon, prepared to merge the institutional setting of Lebanese bank's activities, with a target to get better efficiency of financial intermediations [4]. Lebanese financial institutions include banks and Micro Finance Institutions (MFIs) that provide financial resources for small-scale entrepreneurs in form of loans and other facilities. The main three interrelated functions of commercial banks are holding deposits, creating credit out of lending and investment activities, and providing a payment and transfer of funds mechanism

3. Literature Review

Analyzing financial statements has been used throughout history to estimate the probability of financial distress release. Previously, credit suppliers exercised financial statements to evaluate the eligibility of credit's borrowers. Nowadays, an extensive assortment of ratios that enter in the analysis of financial statements and financial distress indicate the deficiency of a company to settle commitments. There are two notions representing insolvency, the first suits for covering obligations as they come due, and the second concept explains financial distress as when a company's liabilities exceeds its assets. Neither the first concept nor the second one reveals that the cash balance is zero. In fact, a failed or bankrupted firm maintains the cash balance above zero [5]. The Author in [6] defined financial distress as bankruptcy, insolvency, and liquidation for the creditor's interest and found that different analysis techniques provide different results. Forecasting the occurrence of bankruptcy is a serious task, the early the identification of solvency occurrence is, the higher the probability of avoiding fail in the near future. Therefore, bankruptcy forecasting is a commonly explored subject in the sectors of banking and strategic management. Enormous amount of methods were used to determine bankruptcy beginning from Beaver's model in 1966, then logistic regression and hybrid models were used respectively. Usually, the models used in bankruptcy prediction assign firms into two options, i.e. either healthy or unhealthy [7]. The study in [8] examined the financial health of private service sector banks with the use of Z-score model in India with a sample of 6 pioneer Indian banks, covering 5 years starting in 2007 and ending in 2012. The results show that the Z-score calculated for all banks included in the sample is between 1.1 and 2.6, thus considered in the Grey zone.

The study in [9] applies the Z-score model and CAMELS model on a sample of 20 banks from Central, Eastern,

and Southern European countries to determine if these models are trustworthy or not, covering the period 1995-2014. Traditionally, CAMEL stands for capital adequacy, assets quality, management capability, earnings, and liquidity. The study found that, Z-score model is better in measuring the probability of financial distress all over the banking system. A study conducted to answer several questions regarding banks' performance, i.e. success or failure, found that predicting the financial distress and the bankruptcy of commercial banks relies on the "Multiple Discriminant Analysis Model" presented by Altman in 1968. The study depends on secondary data presented by annual financial reports of two successful and two failed banks located in Nigeria covering the period (1999-2003). The result of this study criticizes all the past successful outcomes of multiple discriminant analysis model. The output shows that the score of two non-bankrupt banks is below 1.8, and the score of the other bankrupt banks equals 3 i.e. above 2.676 [10]/ The author in [11] states that bankruptcy happens infrequently, whereas researchers who carefully study the static indicators usually go to base their study on data taken from firms who are suffering tough times. Their study ignores those companies who are enjoying growth times. As a result, the research data are considered to be biased and incomplete. One of the ways to solve the problem associated with the static models is hazard model, which takes the time factor as vital to detect bankruptcy, counting for how long will the firm enjoy healthy period; where the risk of bankruptcy changes from year to year and is inevitably different from static models assuming that the bankruptcy probability remains constant overtime.

4. Data Collection Method

The sample used in this study is made out of non-listed commercial banks located in Lebanon. Data is obtained through using secondary data. In this study quantitative method is used to predict bankruptcy for a sample of 4 banks, different ratios are calculated using data extracted from annual reports mainly the audited consolidated balance sheets and Income statements, over a period of 5 years, from year 2013 till 2017. The sample size is made out of total 4 private banks including BankMed, BBAC, Credit Libanais, and IBL.

5. Methodology

According to [12], when assessing the risk of private firms including banks in 31 European and 3 non-European countries, shows that this model level of accuracy is 80% to 90%. This technique classifies companies into two groups or more using a qualitative model depending on the score.

Group one holds companies with the score less than the cutoff, these companies will bankrupt soon. Group two includes companies with no financial distress. However, group three called grey zone contains companies having greater credit risk than those in group two.

$$Z\text{-score (non-manufacturers): } Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4 \quad (1)$$

$$Z\text{-Score (emerging markets): } Z = 3.25 + 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4 \quad (2)$$

Zones of discriminations:

$Z > 2.6$ – “Safe” Zone

$1.1 < Z < 2.6$ – “Grey” Zone

$Z < 1.1$ – “Distress” Zone

Where:

$$X1 = \text{Working Capital/Total Assets} \quad (3)$$

This ratio represents the bank’s ability to cover its maturing short term obligations. An increasing liquidity is a favorable mark, where Cash and deposits with central bank, Deposits with banks and financial institutions, Loans to banks and financial institutions, Loans and advances to customers, Loans and advances to related parties, Investment securities, customer’s acceptances are considered as liquid assets yet, all liabilities are considered as liquid liabilities.

$$X2 = \text{Retained Earnings /Total Assets} \quad (4)$$

This ratio represents the measurement of a bank’s profitability, it points out the bank’s capacity to gather earnings utilizing its assets.

$$X3 = \text{Earnings before Interest and Tax/Total Assets} \quad (5)$$

This ratio represents the management effectiveness and the productivity of bank’s assets

$$X4 = \text{Book Value of Equity/Book Value of total Liabilities} \quad (6)$$

This ratio expresses the company’s financial leverage, it shows how much bank’s assets can drop in value before the bank becomes insolvent

6. Findings and Results

The sample includes private (unlisted) banks in Lebanon namely, BankMed, BBAC Bank, Credit Libanais, IBL Bank

6.1. Bank MED

Table 1 indicates contradicting conclusions, since as per the non-manufacturing model, the bank my face bankruptcy within 1 year starting 2013, which also contradicts the reality that the bank is still in operations with semi stable z-variables as shown in figure 1.

Whereas the emerging markets result shows a satisfactory position for the bank, meaning that it is not facing

any financial distress.

Table 1: bank Med z- variables and results

	2013	2014	2015	2016	2017
X1	0.0466	0.0499	0.0501	0.0478	0.0409
X2	0.0147	0.0144	0.0154	0.0167	0.0159
X3	0.0104	0.0100	0.0113	0.0098	0.0089
X4	0.1084	0.1078	0.1083	0.1067	0.1041
Z- Non -Manufacturing	0.5376	0.5546	0.5685	0.5458	0.4897
Z emerging	3.7876	3.8046	3.8185	3.7958	3.7397

Source: Prepared by Author using data extracted from [13].

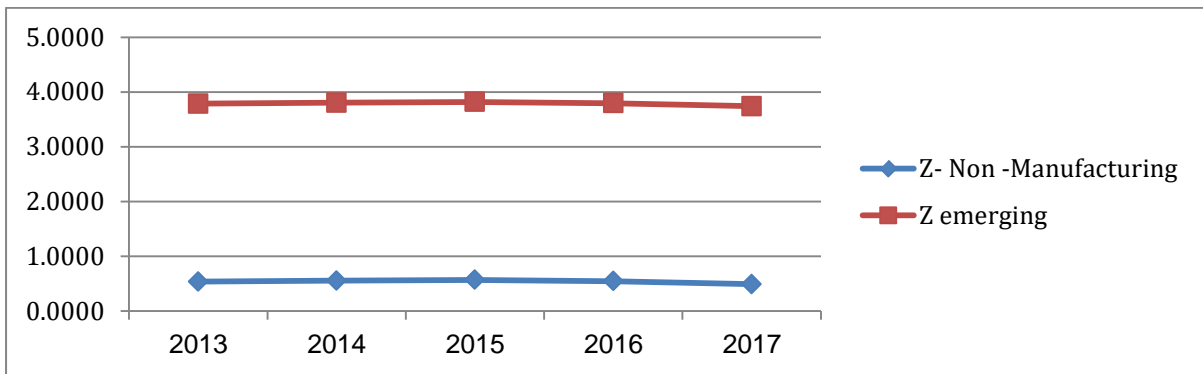


Figure 1: bank Med, z-results trend

If we go into further details, we can notice from figure1 a slight decline in X1 and X4 which the bank has to take it into consideration. It might be a result of increasing assets by financing the increase from increasing liabilities.

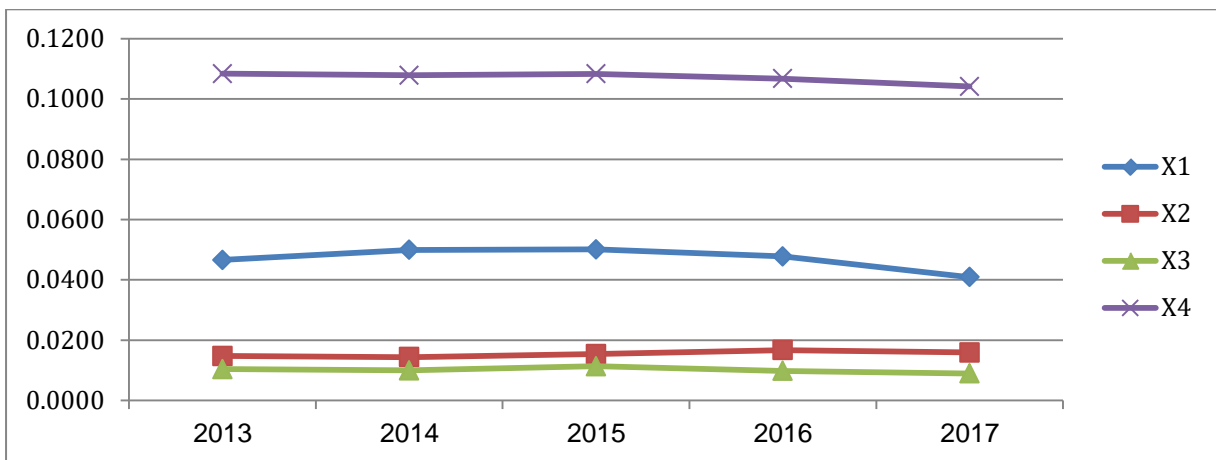


Figure 2: bank Med z-variables trend

6.2. BBAC Bank

From table 2, BBAC shows a satisfactory emerging markets’ model with Z above 2.6 indicating that the bank is not facing any financial distress. In addition, looking at figure 3 both models are showing improvement among the 5 years period.

Table 2: BBAC z-variables and results

	2013	2014	2015	2016	2017
X1	0.0614	0.0618	0.0602	0.0692	0.0688
X2	0.0264	0.0283	0.0287	0.0310	0.0267
X3	0.0102	0.0099	0.0089	0.0126	0.0088
X4	0.0882	0.0891	0.0853	0.0960	0.0955
Z- Non -Manufacturing	0.6500	0.6573	0.6377	0.7404	0.6981
Z emerging	3.9000	3.9073	3.8877	3.9904	3.9481

Source: Prepared by Author using data extracted from [14].

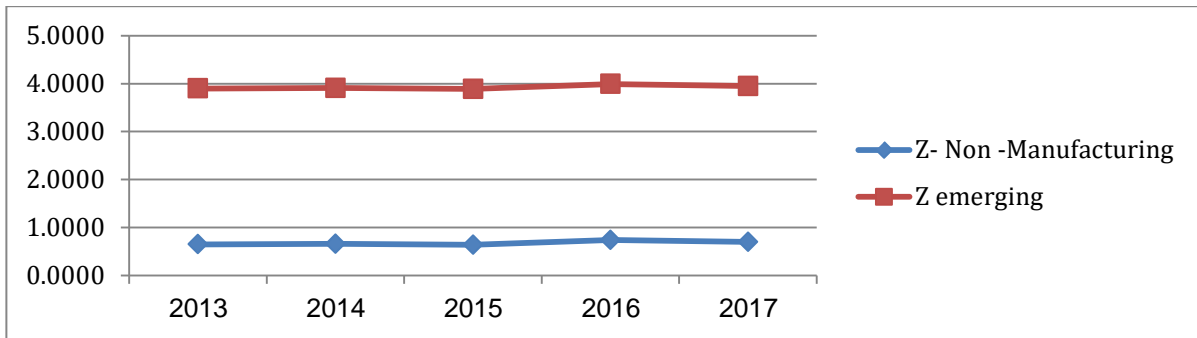


Figure 3: BBAC z-results trend.

From figure 4, we can notice that all variables are sloping upward except for X2 and X3 which show a slight downward number in 2017 which maybe a result of declining operating profits for the bank.

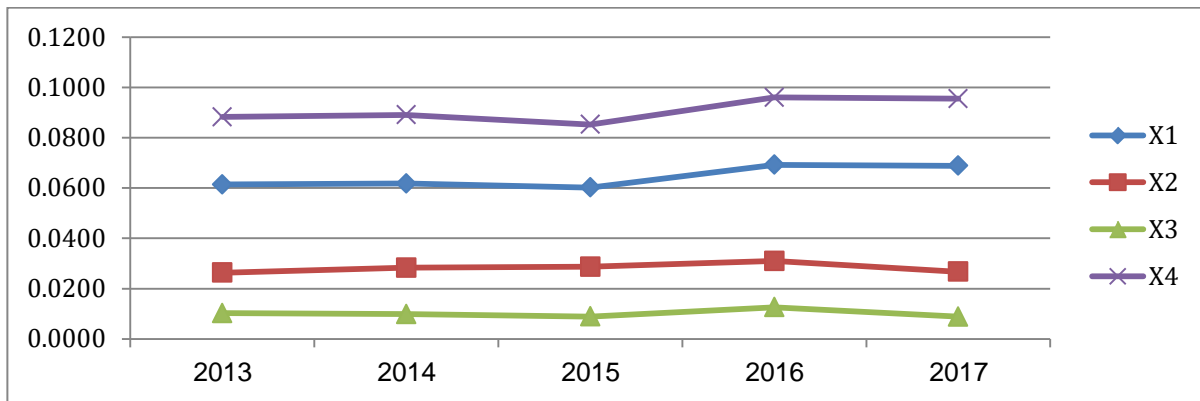


Figure 4: BBAC z-variables trend

6.3. Credit Libanais Bank

Table 3 results show a slightly downward sloping trend, however the emerging markets Z shows a healthy situation above the cutoff of 2.6, and thus no presence of any financial distress.

Table 3: Credit Libanais z-variables and results

	2013	2014	2015	2016	2017
X1	0.0541	0.0482	0.0479	0.0476	0.0473
X2	0.0082	0.0085	0.0084	0.0079	0.0075
X3	0.0095	0.0080	0.0078	0.0078	0.0086
X4	0.0895	0.0845	0.0824	0.0800	0.0788
Z- Manufacturing	0.5394	0.4866	0.4803	0.4748	0.4751
Z- Emerging	3.7894	3.7366	3.7303	3.7248	3.7251

Source: Prepared by Author using data extracted from [15].

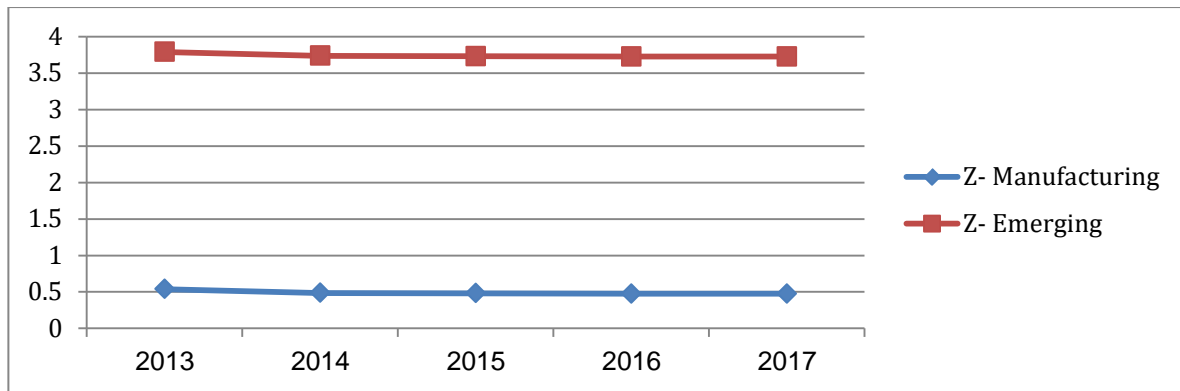


Figure 5: Credit Libanais z-results trend.

The Slight decline in the Z-results is as a result of declining X1 and X4 as shown in figure 6 below, indicating an increase in assets with a majority finance from liabilities.

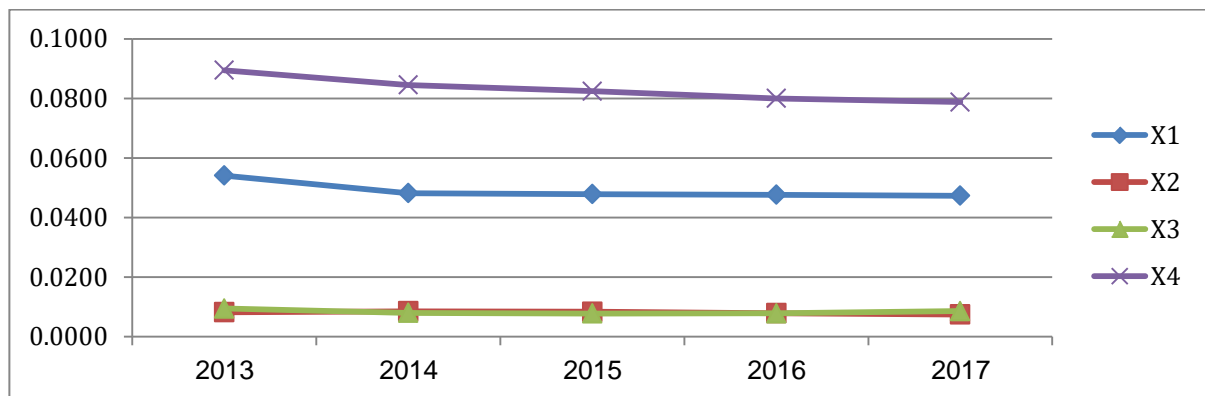


Figure 6: Credit Libanais z-variables trend.

6.4. IBL Bank

IBL bank shows the best results among its peers with the highest numbers in the emerging markets indicator, thus showing a very healthy situation with improving variables.

Table 4: IBL z-variables and results.

	2013	2014	2015	2016	2017
X1	0.0593	0.0612	0.0651	0.0662	0.0723
X2	0.0181	0.0204	0.0230	0.0234	0.0267
X3	0.0134	0.0134	0.0143	0.0143	0.0158
X4	0.0763	0.0774	0.0811	0.0810	0.0875
Z-Non -Manufacturing	0.6182	0.6390	0.6838	0.6924	0.7588
Z emerging	3.8682	3.8890	3.9338	3.9424	4.0088

Source: Prepared by Author using data extracted from [16].

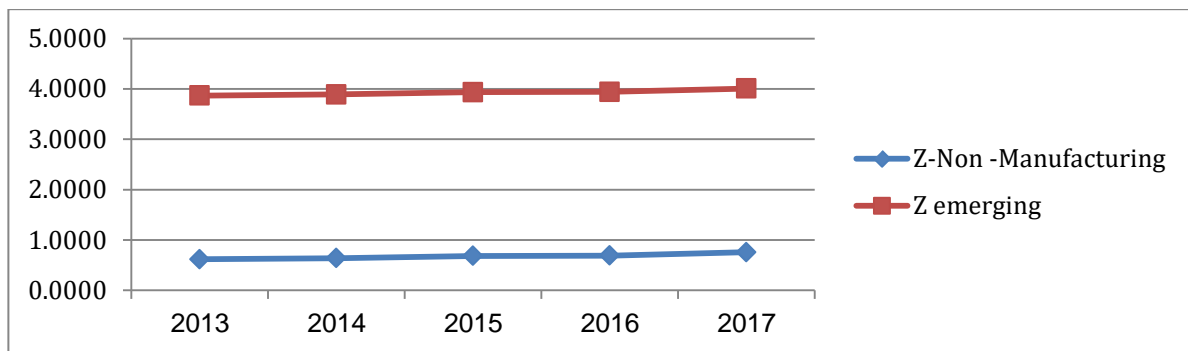


Figure 7: IBL z-results trend

Figure 8 shows an improvement in the ratios of all the variables related to the Z-score models, with an upward sloping trend.

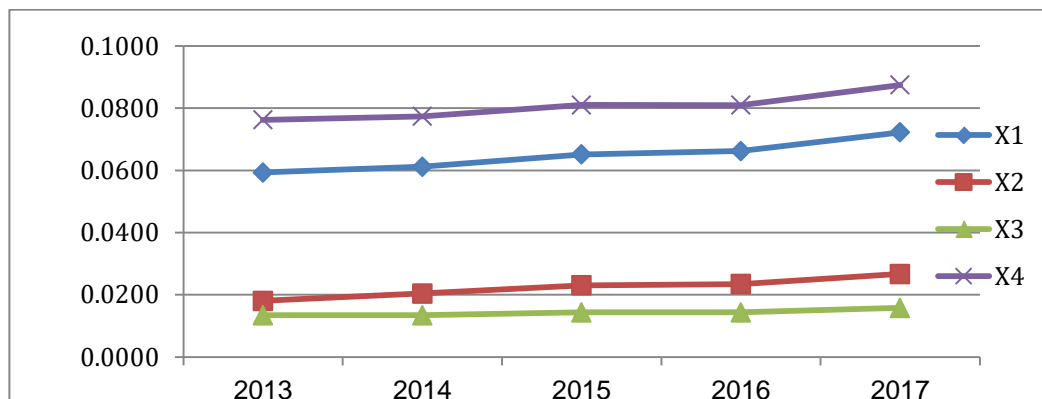


Figure 8: IBL z-variables trend

7. Study Limitations

There is no specific model that shows details of a company or bank failure [17]. First, any public information may be subject to window dressing. In addition, the computation of liquid assets and liquid liabilities that are used in the computation of networking capital is somewhat hazy due to the lack of detailed information in some banks' financial statements; adding that banks don't account for current assets and current liabilities. At last, the z-score high predictive power in one industry is not a sign that it is effective in another country's industry.

8. Conclusion and Recommendations

This study aimed to determine the power of the Z-score model in forecasting the bank's financial situation, and to classify the banks in the sample into healthy or unhealthy banks. Data used relies on the financial statements of the banks included in the sample, ratios were calculated and analyzed starting from the year 2013 and ending in the year 2017 for a period five years. The chosen sample consists of four non-listed banks (BankMed- BBAC Bank- Credit Libanais Bank-IBL Bank). The results show that all banks are healthy without financial distress thus accepting the null hypothesis of no bankruptcy predicted and the null hypothesis of no financial distress. This study progressed to test whether the non-manufacturing model is applicable and efficient tool in classifying the banks in Lebanon. The obtained results of bankruptcy prediction within 1 year contradicts the reality; thus rejecting the null hypothesis that such model can be applied to test the financial distress of banks in Lebanon. Based on all the afore mentioned data and analysis, it has been concluded that the Multiple Discriminant Analysis notion for emerging markets is still powerful mechanism in forecasting financial distress and bankruptcy for the banking sector in Lebanon. However, although all the ratios presented by the variables of Z-score model looks powerful in determining the strength or weakness of a bank, these ratios are not straight forward enough, which makes the process of calculation and analysis sophisticated. Even though the Z-model for emerging markets is shown as beneficial in testing the financial distress for private non-listed banks in Lebanon, however we recommend the use other models in testing financial distress to see whether results are convergent and supportive or not.

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