Localized distress prediction models in the economic environment of Iran

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Business bankruptcies in world current economic climate intensified the importance of default predictions in societies more. So, a great deal studies is accomplished for finding more effective empirical method to predict corporate bankruptcy. In this research, we try to localize the eight known distress prediction models such as: Thai DA, CA-score, SAF, Springate, Zemijewski, Altman, Taffler and Deakin model and tested them for distresses prediction according to Iran economical conditions, 36 hypotheses of present research categorized in two groups. In first group hypotheses, the power of each model tested for distress prediction and in second group, the presence of meaningful relation between aforementioned models was investigated. For corporate categorization and hypotheses test, the 141 amendment to the Iran business law, approved in 1968 March, was used for determination of bankrupt companies and simple Q-Tobin was used for determination of non-bankrupt companies. For testing the first group of hypotheses, logit correlation was used, while for testing the second group of hypotheses, meaningful test of difference in two correlation coefficients was used. Based on the test results of the first group of hypotheses, all the research models except Deakin model can predict bankruptcy or activity stopping according to the effective ratios of companies accepted in the Stock Exchange of Tehran. Based on the test results of second group of hypotheses, all the models - Taffler model, Deakin model, Thai DA model with CA-score, Zemijewski model, Zemijewski and springate model, and Altman model, have meaningful difference in activity stopping prediction.

Key words: Distress models, bankruptcy, simple Q-Tobin index, the 141 amendment to the business law.

INTRODUCTION

Investment and decision making process for investment is the main debate presented in financial management. Risk and output are two substantial factors investment. By predicting financial conditions of companies, we can always reduce risk of investment in future (Sharma, 2001). In this case, financial analyzers helped stakeholders and investors in optimal decision making by testing proper models for assessment of financial conditions and organizations situation. Considering the unstable economic situation in Iran, despite the unbalanced economic trends and government intervention in economic policy, to assist investors in financial decisions would be useful and effective. And the financial crisis models adapted with Iran could be helpful for investors. Too many studies were done for finding effective empirical methods in distress prediction models of Thai DA, CA-score, SAF, Springate, Zemijewski, Altman, Taffler and Deakin were presented in different countries and in this article we try to adapt these models to Iran economic climate and compare them with each other. This paper will now consider, definitions of bankruptcy, its types and causes of the bankruptcy, then the bankruptcy process can be explained and finally, research performed inside and outside of Iran offered.

BANKRUPTCY, DISTRESS AND DEFAULT

In financial literature, there are different words for
bankruptcy such as financial undesirable condition or
distress, failure, unsuccessful business unit, bankruptcy,
insolvency and (Hajiha, 2006) distress happens when a
company cannot play its own financial obligations
(Piyaratt, 2006). When a business unit is insolvent, it can
be reorganized or dissolved according to conditions.
Disability of business unit can result from numerous
factors like decrease of output rate activity, stopping or
bankruptcy (Soleymani, 2002).

Types of bankruptcies in accounting perspective

Solidity bankruptcy

If corporate assets value is being less than its debts, but
company continues its activities, solidity bankruptcy
happens that its clear mark is a non-profitable operation
of company, but anyway company continues its activities.

Liquidity bankruptcy

When the debts of a company come to maturity, liquidity
bankruptcy is said to have occurred. The occurrence of
this kind of bankruptcy shows that the liquidity state of
companies plays a special role in the issue of bankruptcy
(Monsefi, 2005).

Bankruptcy reasons

Outside organizational reasons

In Newton viewpoint, outside organizational reasons consist of:

i) Economic system properties: Corporate management
should accept changes that happen in economic
structure and should make necessary modifications for
disassembly of new system in corporate operations.
Great companies have an organization, but smaller ones
are more exposed to bankruptcy risk, because greater
companies are more resistant.

ii) Competition: One of the reasons of bankruptcy is
competition, but efficient management is opposite point of
this reason.

iii) Changes in business and improvements and
transfers in general demands: If companies are not
capable of employing new methods and timely, extensive
recognition of new consumer demands, they will be
defeated.

iv) Business fluctuations: Studies that inconsistency
between production and consumption, non-employment,
decrease in selling rate, drop of prices will cause
bankruptcy increase.

v) Financial security: Namaki used World Bank data
during 1980 to 1990 and mentioned that financial security
problems and economic conditions cause bankruptcy of
small companies.

vi) Accidents: some factors like natural incidents are
higher than corporate control.

Interior organizational reasons

These are factors that results from incorrect decision-
making and can be prevented by some actions of
business unit. These reasons consist of:

i) Making credit and more extensive development: If
companies develop credit offers to customers to some
extent, they will encounter a difficulty in receiving debts
from debtors. Distributors can pay their debts if they sell
goods to consumers. However, credits offered from
producers to distributors and finally to consumers will
eventually create a chain that leads to bankruptcy; there
is drop risk of all chains. Then it is appropriate to restrict
credit selling as far as possible.

ii) Inefficient management: Lack of education,
experience, ability, and management innovation, make it
difficult for business units to remain in competition and
cope with innovation. A great number of bankruptcies
occurred as a result of this.

iii) Insufficient capital: In case of capital insufficiency, it is
impossible for a company to pay operational costs and
credit liabilities in maturity. Anyway, the main reason of
this difficulty is usually insufficient capital and the most
important problem is debility in effective management of
capital.

iv) Treason and cheating: Few numbers of bankruptcies
are by artificial planning and because of cheating
(Newton, 1998).

Bankruptcy stages

Newton categorized undesirable stages of corporate
financial condition in latency period, cash deficit, lack of
power to pay commercial or financial debts, lack of power
to pay all the debts and finally bankruptcy. But some
companies may arrive at complete bankruptcy without
going through all stages. Commercial unit position does
not lead to bankruptcy accidentally and unexpectedly. In
latency stage there may be one or some undesirable
position for a commercial unit secretly, without being
identifiable immediately. Economical loss often happens in latency period. Assets output will drop.

The best position for company is discovering problem in this stage. Second problem is that effective, easier solutions in this stage, will not respond in next stages. And the third point, general confidence will be unstable if the problem is discovered and eliminated in this stage. Averting problem in next stages causes decrease of general confidence to company and as result, funds availability becomes more difficult and maybe the company refuses profitable projects necessarily. Cash deficit stage begins when commercial unit for playing current liabilities or immediate need for the first time, does not have access to cash, although it may have physical assets multiple of its needs and sufficient profitability antecedent (Jooste, 2006). The problem here is that assets cannot change to cash and capital is imprisoned. In the case of lacking the power of paying commercial or financial debts, a company is capable of getting sufficient cash from consumption channels. Management has proper means like using commercial or financial professionals, credit committee and restructuring in financial securing methods. By these methods, problem can still be identified and eliminated at this stage. In the case of lacking power to pay complete debts, company goes to destruction. All the debts exceed the value of corporate assets and the company cannot expect more than a complete bankruptcy. Based on the fact that there is no prevailing definition of bankruptcy in this research, activity stoppage of accepted companies in the Stock Exchange of Tehran will be considered. Since bankruptcy is accomplished as a result of court command, there is the need to consider the models that are used to measure or predict activity stoppage (Benos, 2008).

LITERATURE REVIEW

Different researches performed for investigation of ability to predict bankruptcy by studied models. Beaver researches led to making a model that is known as single variable model. Beaver in 1996, selected a collection of 30 financial ratio in his viewpoint these ratios are the best for evaluating health of a company, then he categorized ratios in six groups on the basis of the circumstances of evaluating organizations. In his opinion, among these ratios, the best one is the ratio of cash flow to total debt that its categorization error was 13% for a year before bankruptcy. In 1968, Altman selected five ratios in a compound as the best bankruptcy predictors through analyzing multiple verifications and through 22 financial ratios that in his opinion they were best predictors for predicting bankruptcy.

Five compound ratios consist of filtration, profitability, leverage, flexibility and activity. In 1983, Altman performed an amendment on model and presented a new model called z. The clearest amendment of Altman was substituting stocks book value of market value and then changing coefficients and bankruptcy limits of model. The next rectification of Altman model was analyzing specifications and accuracy of model without considering variable of selling ratio to the total assets. In 1995, Altman accomplished this action for minimizing potential effects of industry sort. In his rectifications, he eliminated selling ratio to the total assets, then produced changes in model coefficients. In 2000, Altman presented a seven variables model that those variables included return on assets, stability of earning, debt service indicator cumulative profitability ratio, liquidity, capitalization and size of company (Pociecha, 2005).

The first idea of Springate model, presented at first in Simon Fraser University by Golden Springate. He used verification analysis for selecting four proper financial ratios through 19 ratios like Altman, which were the best ratios for recognition of healthy and bankrupt companies. Springate tested this model by using 40 companies and confronted with surprising result that was 5/92 percents. These companies were producers (Springate, 1978).

Ohelson accomplished a research as "financial ratios and bankruptcy prediction". He emphasized on studying previous research that were accomplished during 15 years ago, it means from 1966 to 1980. These studies were merely about predicting financial distresses and bankruptcy of companies that were done by financial famous professors. Ohelson accomplished his research on the basis of a predicting model of econometrics, Logit conditional probability. Zemijewski used financial ratios to develop a model that measures liquidity, operation, and corporate financial leverages. These ratios were not selected only on the basis of theoretical viewpoint but were selected on the basis of Zemijewski’s previous studies on financial ratios. In addition he used probit analysis for making a model on 40 bankrupt companies and so non-bankrupt companies that obtained accuracy rate about 78% for a year ago (Ohlson, 1980).

CA-Score model was developed in 1987 by Legant and Vernameau, researchers from the University of Quebec, Montreal, Canada. They used multiple variables analysis for making a model. In their research, they used 30 financial ratios and 113 patterns of commercial luxury that had annual sales equal to about 1 to 20 million dollars. This model was tested by Billiance and the test accuracy percentage obtained was about 83% for producing institutes (Boritz et al., 2007).

Thai DA model was used to test 44 bankrupt and non-bankrupt companies in Thailand for 3 years before bankruptcy in 1997. In these models, financial ratios of 3 years were calculated (Claessense et al., 2000).

Taffler model accomplished some researches about bankruptcy prediction in England in 1983. He collected in formation of 46 bankruptcy companies between 1969 to 1976 and has conformity with in formation of successful Companies (Casey et al., 1985).

Deakon model used fourteen variables in Bior analysis in 1972. Bior used these ratios by single variable perception
that is on the basis of a financial ratio in a specific time and development of a threshold from each ratio to future times, while Deakon applied them with a series of multiple variables pronominal models (Wallace, 2004). Saf model collected by Cindy (2003) and extensively distinguished as one of the bankruptcy prediction models in Japan. This model deals with investigation of predicting corporate activity stoppage, by categorization and identification of corporate financial information between 1992 and 2001 that were bankrupt in Japan (Buggakupta, 2003).

Internal researches

Soleymani (2002) performed a research as "in restigation of bankruptcy predictors indexes in environmental conditions of Iran. For designing hypotheses, He extracted 5 variables and factors related to bankruptcy and used Delphi method for adaption of mentioned variables with environmental conditions of Iran. He prioritized 25 hypotheses respectively on the basis of Delphi method that included financial indexes, industry and etc. order to predict and studied them and finally concluded that we can predict corporate bankruptcy by mentioned indexes.

Farajzadeh (2007) accomplished a research to model corporate bankruptcy prediction that was accepted in stock exchange of Tehran by using genetic algorithm technique. This model consists of 12 bankrupt companies, 12 non-bankrupt companies, during and annual cycles 76 to 83, these companies divided accidentally in two educational group (consist of 51 bankrupt and 53 non-bankrupt companies) for making models and testing group (consist of 21 bankrupt and 19 non-bankrupt companies) for admissibility test of models, by using two techniques of genetic programming and multiple recognition analysis and 5 selected financial ratios, two models extracted for bankruptcy prediction and their results were compared. Genetic programming model categorized 94% of educational pattern companies and 90% of testing pattern companies in bankrupt and non-bankrupt groups one year before bankruptcy, accuracy of model in recognition of bankrupt companies in educational and testing pattern is 96 and 90% respectively.

RESEARCH METHODS

Research method in this case study is a correlation method, and correlation coefficient was used for investigating the presence of relation among variables. And also historical information in this research was used as post-event. According to this fact that this research can be used, this research is applicable too. For analyzing the test results of the first group of hypotheses, Logit statistical method and enter analyze model were used. On the other hand, test statistics for financial conditions, which showed meaningful test of differences between two correlation coefficients was used for testing the second group of hypotheses and for comparing the power of modified models with other models. Collected data were analyzed by SPSS software.

Research hypothesis

According to the eight models of distress prediction described in previous aspects, research hypotheses are expressed in two groups as follows:

First group

This group of hypotheses is dedicated to power evaluation of each model. For the prediction of activity stoppage, eight hypotheses from this group are expressed in the following form and each model is tested separately (Table 1). "Distress prediction models have the power of predicting activity stoppage in companies accepted in the Stock Exchange of Tehran."

Second group

This group of hypotheses investigates the presence of meaningful relation between studied models about prediction of corporate activity stoppage. It consists of 28 hypotheses that its general form for Thai DA model is as follows: hypothesis of other models can be expressed in this way (Table 2) "There is a meaningful relation between Thai DA model and other models for prediction of corporate activity stoppage."

Statistical society

Accepted companies in stock exchange of Tehran in 1997 to 2009 from a statistical society that presented financial inventories to stock exchange of Tehran statistical pattern of research and is divided into two main groups:

First group

Successful companies or companies with activity continuity, number of these patterns are 30 companies and the main criterion of selecting these companies is simple Q-Tobin. Simple Q-Tobin index is for measuring corporate operation; its calculation method is as follows:

\[
Q_{\text{Tobin}} = \frac{\text{Debts book value} + \text{Common and preferred stock market value at the end of year}}{\text{book value of total assets at the end of year}}
\]

If calculated Q is more than one, there is investment motive in these companies and this can be a good index for selecting successful companies.

Second group

Unsuccessful companies or companies with activity stoppage, number of these patterns are 30 companies and the main criterion of selecting these companies is the 141 article of commercial law, as follows:

"If minimum half of corporate capital ruin due to imported losses, board of directors is bound to invite immediately extra general assembly of shareholders to deliberate about dissolution or survival of company."
Table 1. The second group of hypotheses test results.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Model</th>
<th>Effective ratios and test accuracy for a year before basis year</th>
<th>Effective ratios and test accuracy for two years before basis year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 1</td>
<td>Adjusted Thai-DA mode</td>
<td>a) Sale on total assets</td>
<td>a) Sale on total assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c) Long term debt on total assets with total accuracy of 83%</td>
<td>b) Current liability on total assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>c) Long term debt on total assets with total accuracy of 75%</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>Adjusted CA-score model</td>
<td>Earnings before tax and extraordinary items and financial cost on total assets with total accuracy of 91.6%</td>
<td>Earnings before tax and extraordinary items and financial cost on total assets with total accuracy of 81.7%</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>Adjusted Zemijeweski model</td>
<td>Net earnings on total assets with total accuracy 89.9%</td>
<td>Net earnings on total assets with total accuracy 83.3%</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>Adjusted Springate model</td>
<td>EBIT on total assets with total accuracy of 83.3%</td>
<td>EBIT on total assets with total accuracy of 80%</td>
</tr>
<tr>
<td>Hypothesis 5</td>
<td>Adjusted Altman mod</td>
<td>EBIT on total assets with total accuracy of 83.3%</td>
<td>EBIT on total assets Cumulative dividend on total assets with total accuracy 83.3%</td>
</tr>
<tr>
<td>Hypothesis 6</td>
<td>Adjusted Taffler model</td>
<td>Earnings before tax on total debts with total accuracy of 91.7%</td>
<td>Unpredictable 100%</td>
</tr>
<tr>
<td>Hypothesis 7</td>
<td>Adjusted Deakin model</td>
<td>Unpredictable</td>
<td>Unpredictable 100%</td>
</tr>
<tr>
<td>Hypothesis 8</td>
<td>Adjusted SAF model</td>
<td>Earnings before tax on total assets with total accuracy of 86.5%</td>
<td>Earnings before tax on total assets with total accuracy of 77.5%</td>
</tr>
</tbody>
</table>

Case study models in present research are as follows:

**First model:** "Thai-DA model": \( B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 \)

- \( Z = \) zero value for activity stoppage and one value for activity continuity.
- \( X_1 = \) total assets / sale
- \( X_2 = \) total debts / capital book value
- \( X_3 = \) total assets / current debt
- \( X_4 = \) total assets / log-term debt

**Second model:** "CA-score": \( z = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 \)

- \( Z = \) zero value for activity stoppage and one value for activity continuity.
- \( X_1 = \) total assets / share holders capital

**The third model:** "Zemijeweski model" \( z = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 \)

- \( Z = \) zero value for activity stoppage and one value for activity continuity.
- \( X_1 = \) current debt / current asset
- \( X_2 = \) whole assets / whole debts
- \( X_3 = \) whole assets / pure interest

**The fourth model:** "Springate model" \( Z = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 \)

- \( Z = \) zero value for activity stoppage and one value for activity continuity.
- \( X_1 = \) total assets / sale
- \( X_2 = \) current debts / pure interest before tax
- \( X_3 = \) whole assets / pure interest before dividend tax
- \( X_4 = \) whole assets / cash flow
- \( X_5 = \) whole assets / stored interest

**The fifth model:** "Altman model" \( Z = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 \)

- \( Z = \) zero value for activity stoppage and one value for activity continuity.
- \( X_1 = \) whole assets / sale
- \( X_2 = \) book value of total debts / market value of shareholders duties
- \( X_3 = \) whole assets / cash flow.
Table 2. The second group of hypotheses test results.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Model</th>
<th>One year before activity stoppage</th>
<th>Two years before activity stoppage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Calculated Z</td>
<td>Z in confidence interval 90%</td>
</tr>
<tr>
<td>Hypothesis 1</td>
<td>Thai-DA and CA-core</td>
<td>1.975</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>Thai-DA and Zemijeweski</td>
<td>2.556</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>Thai-DA and Springate</td>
<td>0.677</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 4</td>
<td>Thai-DA and Altman</td>
<td>0.985</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 5</td>
<td>Thai-DA and Taffler</td>
<td>1.559</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 6</td>
<td>Thai-DA and Dakin</td>
<td>8.778</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 7</td>
<td>Thai-DA and SAF</td>
<td>1.473</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 8</td>
<td>CA-score and Zemijeweski</td>
<td>0.556</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 9</td>
<td>CA-score and Springate</td>
<td>0.665</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 10</td>
<td>CA-score and Altman</td>
<td>0.056</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 11</td>
<td>CA-score and Taffler</td>
<td>1.125</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 12</td>
<td>CA-score and Dakin</td>
<td>5.589</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 13</td>
<td>CA-score and SAF</td>
<td>1.612</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 14</td>
<td>Zemijeweski and Springate</td>
<td>6.705</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 15</td>
<td>Zemijeweski and Altman</td>
<td>6.903</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 16</td>
<td>Zemijeweski and Taffler</td>
<td>0.893</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 17</td>
<td>Zemijeweski and Dakin</td>
<td>1.771</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 18</td>
<td>Zemijeweski and SAF</td>
<td>1.112</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 19</td>
<td>Springate and Altman</td>
<td>6.903</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 20</td>
<td>Springate and Taffler</td>
<td>9.889</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 21</td>
<td>Springate and Dakin</td>
<td>4.856</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 22</td>
<td>Springate and SAF</td>
<td>0.438</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 23</td>
<td>Altman and Taffler</td>
<td>1.619</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 24</td>
<td>Altman and Dakin</td>
<td>1.963</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 25</td>
<td>Altman and SAF</td>
<td>0.774</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 26</td>
<td>Taffler and Dakin</td>
<td>0.324</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 27</td>
<td>Taffler and SAF</td>
<td>1.555</td>
<td>1.645</td>
</tr>
<tr>
<td>Hypothesis 28</td>
<td>Dakin and SAF</td>
<td>0.995</td>
<td>1.645</td>
</tr>
</tbody>
</table>

The sixth model: "Taffler model". Z=B0+B1X1+B2X2+B3X3+B4X4
X1=dividend before tax / current debts
X2=current debts / total debts.
X3=current debts / total assets
X4=operational costs – amortization / current debts

The seventh model: "Deakin model" Z=B0+B1X1+B2X2+B3X3+B4X4+B5X5+B6X6+B7X7+B8X
X1=cash / current debts
X2 = cash/sale
X3 = cash/total assets
X4 = cash/flow/total debts
X5 = current assets / current debts
X6 = current assets / sale
X7 = Current assets / total assets
X8 = pure interest / total assets
X9 = quick assets / current debts
X10 = quick assets / sale
X11 = quick assets / total assets
X12 = total debts / total assets
X13 = cash flow / sale
X14 = cash flow / total assets

The eighth model: "SAF Model" $z = B0 + B1X1 + B2X2 + B3X3 + B4X4$

Z = zero value for activity stoppage and one value for activity continuity
X1 = whole assets / stored profit and loss
X2 = stock flow during a financial cycle
X3 = sale / interest rate
X4 = total assets / pure interest before tax

Test results of second group hypotheses in research

As seen in Table 2, in cases that calculated Z is more than figure Z in confidence level of 90%, $H_0$ hypothesis is rejected, so you see that in comparison between each models with Toffler model does not have the ability of predicting financial distresses two years before activity stoppage then other models have the ability of better prediction and are more efficient taller model. About comparison of each models with Dakin model, $H_0$ hypothesis is rejected then each models have meaningful difference with Dakin model in relation with predicting activity stoppage one and two years before activity stoppage and it can be interpreted that because then other models have the ability of better and more efficient prediction about activity stoppage in comparison with Dakin model. In addition, there is meaningful difference between Thai DA model with CA-score models in one year before activity stoppage and Zemijeweski in one and two year before activity stoppage.

DISCUSSION

In this research, the ability of stoppage prediction or activity continuity of companies were investigated and compared in these eight models and in this direction 36 hypotheses were presented in two groups. Fives groups hypotheses consist of 8 hypotheses. According to tests result and rejection of $H_0$ hypothesis, indicated that presented models in this research (except Taffler model in two years before activity stoppage and Deakin model in one and two years before activity stoppage) have the ability of categorizing companies in two successful and unsuccessful groups. Second groups hypotheses consist of 28 hypotheses and is related with companions of mentioned models in research and according to test result, it is concluded that when calculated Z is more than figure Z in confidence level 90%, documents show that $H_0$ hypothesis can be rejected and have meaningful difference with each other and about other hypotheses, $H_0$ hypothesis cannot be rejected.

In general, we can conclude this entry that according to effective ratios in Table 1, these models can predict corporate bankruptcy in one and two years before bankruptcy and this can be helpful for decision makers about companies in Iran.

Apart from research subject, about accessibility of required resources and information, researchers often confront with different restrictions. Present research confronted with limitation that some of them are propounded as public restrictions for most researches like restrictions of accessibility to information and some of them produced in research domain. Restrictions that researcher confronted with them consist of:

1) Improper categorization of corporate financial information.
2) Lack of finding a research pattern according to test conditions in last year for updating research more in Iran.

Other main subject is providing financial statements without considering inflation effects by aforementioned companies that can be effective on research result. However, results of this study can raise the ability to predict future decisions. Investors bank government, accountants and other users of accounting information are advised to use effective models in research to evaluate accepted companies stock exchange of Tehran and decision making in relation with stock pure change of Tehran and decision loan to these companies evaluation of operation and declaration of activity continuity in these companies. The following cases are recommended for doing future researches:

1) Comparison of research model ability in prediction of corporate activity stoppage by using modified financial statements on the basis of current values.
2) Comparison of other models in financial distress prediction.
3) Developing models for financial distress prediction by using effective great or small economical indexes in regard.

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