SCRUTINIZATION OF THE EFFECT OF THE GROWTH FACTOR ON THE DURATION OF TEHRAN STOCK MARKET LISTED FIRMS

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ABSTRACT
Due to the considerable economic and social costs that bankruptcy of companies imposed on shareholders and finance and credit institutes, prediction of the bankruptcy of companies is one of the key financial issues. Survival and bankruptcy are two sides of the same coin. Almost in all of the studies which are being done in this area the emphasis is just laid on the aspect of bankruptcy. In the present research by means of Cox Regression Model the influence of growth on the duration span of Tehran stock market listed firms until reaching a condition of bankruptcy (based on article 141 of the trade law) will be scrutinized. The time span of this research is limited to the years of 2004 to 2010. This research in terms of purpose is an applied research and in terms of method is a descriptive-correlational research. Findings of the research illustrates that parallel to staff development the probability of duration of the company augments at first and then decreases. On the contrary, parallel to an increase in the growth of the assets, the probability of the duration of the company at first decreases and then increases. In other words, there is a second-rate relationship between the growth and survival of Tehran stock market listed firms.

Keywords: Staff Development, Development of Assets, Duration of Company, Bankruptcy, Cox Regression

INTRODUCTION
Continuation of activity (which in this research the expression of company duration is being used in lieu of it) and bankruptcy are two sides of the same coin and shareholders of a company constantly estimate and evaluate the share price under the influence of each of these two probability in a way that if a company expose bankruptcy its share price falls And in case any sign of continuation of activity of a company will be observed its share price rises. The hypothesis of continuation of activity as one of the basic and fundamental assumptions of accounting meaning continuation of a company’s activities up to future is predictable (Moradzadeh and Sayyadi, 2011). Bankruptcy of companies is usually influential in the liquidity of the capital market and the economic development. In time of bankruptcy the banks usually decrease their accreditation to the bankrupt companies and in exchange for the loan that they grant to these companies ask for a higher profit in order to compensate for surplus risk. In a similar vein, investment institutes(such as pension funds) decrease buying the shares and mostly go to buy bank bonds. All of these factors leads to a decrease in liquidity in the capital markets, increase or accretion of capital costs of companies, and decreasing the economic growth or economic retardation. (Nikbakht and Sharifi, 2008) On the domestic front of Iran, lots of attempts have been made to present models for predicting the (situation of) Tehran stock market listed firms. But concerning these studies two points should be mentioned. Firstly, the main emphasis of the researches of the same kind which are being carried out in Iran is on the bankruptcy of companies and not on their duration. Secondly, various models exist to predict the bankruptcy of companies. Based on the performed researches and investigations only in one case duration analysis is being used for predicting bankruptcy (Mokarrami and Motefarres, 2011) that in this case the relationship between bankruptcy and the variables of corporate governance has been considered while in this research the emphasis is being put on the survival of stock market listed firms. Meanwhile, the emphasis is merely on the influence of company development. Consideration of factors influencing birth, death, and life span of companies in the developing countries from a long time ago is being taken into consideration (Strotmann, 2007). Despite this, such studies in the developing countries...
such as Iran has been propagated or come into vogue in recent years. In the present research by means of financial information of Tehran stock market listed firms and based on Ha psychology (2013), influential effects on duration of Iranian companies will be considered.

Theoretical Foundations and Formulation of Hypotheses

Nowadays fast development of technology and the extensive environmental evolutions increasingly expedites the economy and the ever-increasing competition of institutes restricts the accession to profit and augments the probability of bankruptcy. Owners, managers, investors, business partners, and creditors are interested in assessing the financial situation of a company and its inclination toward bankruptcy. In this manner financial decision-making has turned out to be more strategic than before (Rahnamaye et al., 2007). Based on economic model of Jovanovic (1982), the price of production resources of a company are constant and the amount of demand for a product is predetermined. Companies by getting aware of the process of changes take their decisions to enter into or exit from market despite that no company is sure about its real costs but each of them has a specific view of its real costs and in the course of time and based on their information and previous experiences update their amount of awareness of real costs. In other words, development of a company influences the rate of failure (Ha, 2013).

Company Development

In general, several definitions are being presented for development. Perhaps in its simplest form it can be deduced as the ability to deal with greater and more complicated issues. In this sense, every step of development in comparison with the previous step deals with simpler issues and in case it become transmitted to the next step it can be able to rise to the challenge of solving more sophisticated problems (Kharazmi, 1990). In recent years problems which have risen up in the global economy have led to miniaturization of the companies more than before. In these conditions the number of institutes and companies that go bankrupt increases and this issue sets the stage for a decline in the global economic growth rate and exacerbation of the crisis.

Thus, Theory of Firm Growth (Penrose, 1959) has constantly been considered as a significant factor in the evolution of commercial rhetoric (mainly economics, financial issues, marketing, and accounting). Diversity of the factors influencing the development of a company and their dissensus over them is the feature of the rhetoric in this domain.

This diversity has led to posing two competitive theories: 1) Theory of firm development-size and 2) Theory of development-learning which are trying to put forward an explanation for the development factors of a company (Ghaemi et al., 2012). In the present research like the one done by Ha (2013), to measure the development of a company two factors or indices of staff development and growth of assets will be used.

Duration of a Company

Duration of a company (continuation and activity), and bankruptcy are two sides of the same coin (Moradzadeh and Sayadi, 2011) Survival of a company or the concept of continuation of activity is one of the basic assumptions in accounting that provides the theoretical foundation of lots of categorizations in accounting since it assumes that a company will strive in a predictable future. Based on these assumptions its assets will be entered in the inventory book at cost price and in the balance sheet the assets are being divided to current assets and non-current assets and the liabilities are being divided to long-term and short-term (Khalegimogaddam and Rostami, 2001). In the present research to judge the survival or lack of survival of a company in the stock market the article 141 of the trade law will be used. According to this law any company that 1) its ratio of liability to the total assets is more than one. 2) The accumulated loss of the company is more than fifty percent of the capital is being considered as bankrupt. By consideration of these explanations in order to achieve the main purpose of the research its premises are being codified and being tested as follows:

H1: Development of a company has a positive influence on its duration.

H2: Concurrently with the growth of development the influence of positive development on survivals suffers.
**Research Article**

**Review of Literature**

The first researches that led to the formation of a model to predict bankruptcy was the researches of Bior (1996). Bior made use of financial ratios and multivariate analysis to predict bankruptcy. After him Daniel (1968) presented a model to predict multivariate bankruptcy. He was looking for predicting the bankruptcy of the agencies by means of multivariate analysis for differentiation. He presented his renowned pattern under the title of Z-score pattern. In this model five financial ratios of working capital ratio to the total assets, accumulated profit to the total assets, earnings before interest and tax to total assets, a company’s market value to the book value of total assets, and the ratio of sales to the total assets, are being used as the determiners of the financial situation of a company. Altman in the year 1993 reconsidered his primary model and used some other financial ratios to predict bankruptcy. Ohlson (1980), for the first time presented the idea of using logistic regression method (logit model) to predict bankruptcy. With regard to the attendance of a considerable number of healthy and bankrupted companies in the sample of the study, the research which was being carried out by him is considered as the most comprehensive research up to that time. The prediction model which was presented by Ohlson could predict the bankruptcy of the companies from the first to the third year with an accuracy of %85.1, %87.6, and %82.6 and the variables of the ratio of total liabilities to total assets and the ratio of net profit to the total assets are among the best differentiating factors in his model. Zavgren (1983), made use of the Logit technique to classify the bankrupted companies. His sample involved forty five companies and forty five healthy productive companies that by means of binary sampling method healthy companies got adapted to bankrupted companies in terms of industry and size. Zavgren (1983), made use of variables such as inventory (cost) flow of articles, flow of accounts receivable, the ratio of cash to the total assets, short-term liquidity, investment return, the ratio of liability to capital and the ratio of sale to the net assets as predictions.

Min and Lee (2005), by means of Support Vector Machine (SVM), got into design a model for predicting the bankruptcy of companies. Their research illustrated that the above-mentioned method enjoys a better performance in comparison with the traditional statistical models. Ameur et al., (2008), got into assessing the probability of failure in the American companies by means of Logistic Regression method. The obtained logistic model consists of two factors of liquidity (i.e. the ratio of working capital to the total assets) and two factors of profitability (i.e. the ratio of net profit to the total assets and the ratio of operational revenue before interest and the ratio of tax earnings to the total assets) and the company size. The results of this research illustrates that the ratios of liquidity and profitability and also company size and the amount of its activity are among the main factors of predicting bankruptcy. Xu and Zhang (2009), in their research scrutinized a series of Japanese companies between the years of 1992-2005. They realized that some conventional criteria such as Altman Z-Score, and Ohlson O-Score which were being used formerly in the U.S. market are also applicable for the market of Japan. In addition, the predictability power of these models have increased through synthesizing various kinds of the conventional models of predicting bankruptcy.

The influence of the development of Vietnamese companies on their duration was being investigated in a research carried out by Ha (2013). In this research Cox Proportional hazards model was being used to scrutinize the influence of some independent variable on the duration of companies. The results of this research illustrated that the relationship between the development of a company and its survival is positive and non-linear in a way that parallel to the growth in the development of a company the influence of growth on duration gradually decreases. The other finding of this research is that company (firm) size has a positive relationship with duration. Also, the operational profit of the previous year and the return of the previous year assets has a positive influence on the duration of the company while the financial leverage of the previous year reduces the probability of the duration of Vietnamese companies in the current year. The research which was carried out by Coad et al., (2013), is among the rare studies that by mere concentration of the life span of companies scrutinized its effect on the performance of the company. In this research which was being carried out on the Spanish companies two contradictory results were obtained: 1) Performance of the company will be improved by elongation of the life span of it. In
their view, this results emanates from the point that long-history companies have a larger size, less amount of liabilities, and a higher level of production. 2) The performance of a company decays parallel to an increase in the life span of the company. The authors of this conclusion justify it in the manner that companies with a more life span have sales rates lower than expectation.

MATERIALS AND METHODS

Research Method

Type of Research Method

This research in terms of purpose is an applied research and in terms of method is a descriptive-correlational one. Since on the one hand it scrutinizes the status quo and on the other hand discovers and determines the relationship between various variables of the research.

Statistical Universe and Sample

To test the hypotheses of this research the information which was inserted in the financial accounts of Tehran stock market listed firms was being used. To choose the statistical sample the following limitations were being imposed and a sampling method of systematic omission of omitting companies which do not enjoy the following qualifications was being used as follows:

1. List a company in Tehran stock market before the years of 2004.
2. Financial year of the company ending on Esfand.
3. Non-investment companies and banks.
4. Lack of fiscal year change in the span of the research.
5. Accessibility of the required financial data to calculate the research variables.

To exercise the above-mentioned limitations at most one hundred and four companies as the statistical samples of the research were chosen.

Data Collection

To collect the required data to measure the research variables the fiscal data of financial statements ending in Esfand (last month of Persian calendar) since 2005 to 2011 is being used. Thus, in terms of time this research is bound to the years 2005-2011. The method of data collecting in this research is of library kind. The required data to write the theoretical foundations of the research is being collected by taking notes from various sources. The required data for the empirical hypothesis testing is being collected and extracted from financial statements of Tehran stock market listed firms which exist in Rahavard-e-novin software. It is worth mentioning that concerning companies which had satellite companies, they are founded on the data of mother companies. Also, in order to determine the number of staff in the sample companies board of directors’ activity report is being used.

Data Analysis Method

To analyze data and scrutinize the relationship between the research variables two groups of statistical methods will be used. The first group is the descriptive statistics methods that consist of measuring the descriptive indices and drawing statistical diagrams. The second group consists of inferential ordeductive statistics which consists of testing the statistical hypotheses by means of Cox Regression analysis model. The whole statistical analysis is being done by means of Stata 12 software.

Based on Jovanovich’s Learning Model (1982), product resources are being supplied by a fixed rate and the amount of demand for the product is predetermined and companies based on being aware of the process of changes in the price take their decision to enter the market, create their product, and/or get out of the market. The number of companies in the industry is countless and a single company is so weak to be influential in setting the price. However, each of them have a specific view of their real costs and in the course of time and by considering their information and past experiences update their amount of knowledge about real costs. In this manner development of a company influences its Failure Rate, that is to say failure Rate is a descending function of the development and size of a company. Precisely, development leads to the reduction of the average costs and an increase in the efficiency and duration of the company. (Ha, 2013) Existence of a positive relationship between development and duration in the
empirical studies such as ones which were being carried out by Mata and Portugal (2002) and Persson (2004) is being proven. Jovanovich’s Model (1982), also illustrates that the amount of output, is a descending function of the received data before the time of \( t \) (e.g., \( x_t \)). Also, \( x_{t+L}=x_t(l_u) \) in which \( u_t \) is the error term with a mean of zero. For the grown up companies which are surviving for a long time \( x_t \) inclines to a constant value. This feature illustrates that the variance of \( u_t \) declines concurrent to the development of the company. The growth rate of the younger companies has more fluctuations and grows more hastily than the older companies (Ha, 2013). Dunne et al., (1989), illustrated that the rate of development of a company concurrent to its size decreases. Thus, while the company gets larger its growth comes to an end and from that point the influence of growth on the duration of the company demolishes in the course of time.

**Evaluation of the Variables**

The dependent variable of this research is Duration of the company. Duration of a company means number of the years which the company experiences bankruptcy. By considering the time span of the research (2004-2010), this variable can be chosen between one and seven. For instance, if a company at the end of the fiscal year of 2004-2005 faces the conditions of bankruptcy, the variable of Duration equals one and if up to the end of the research time span do not fulfill this requirement it chooses seven. The independent variable is the development of the company at the end of the previous year that according to Ha (2013) the following two criteria will be used:

1) Development of the staff in the previous year: development of the staff consists in the number of staff in the previous year minus the total number of staff in the previous year divided by the number of staff in the previous year that is:

\[
\text{Empgrowth}_t = \frac{\text{Employment}_t - \text{Employment}_{t-1}}{\text{Employment}_{t-1}}
\]

In which employment equals the number of the staff at the end of the fiscal year. This amount will be calculated for each of the years of research but its equivalent amount from previous year will be inserted in the model.

2) Growth of the previous year assets (Lag Asset growth): Growth of assets consists in the current year assets minus the previous year assets divided by the previous year assets that is:

\[
\text{Assetgrowth}_t = \frac{\text{Asset}_t - \text{Asset}_{t-1}}{\text{Asset}_{t-1}}
\]

In which Asset equals the total assets of the company at the end of the fiscal year. This amount will be calculated for each of the years of research but the equivalent amount from previous year will be inserted in the model. In addition to this, to scrutinize the existence of a nonlinear relationship between development and duration the second component of each of the above-mentioned variables will be added to the model:

1) The second component of the staff development in the previous year. (Lag Emp growth sq)
2) The second component of the development of the assets of the previous year. (Lag Asset growth sq)

To control the influence of other variables which may be influential in the continuation of the company in compatibility with Ha (2013) the following variables will be used as the controlling variables:

The primary size of the company (Ln size): It equals the logarithm of the number of staff in the year 2004 divided by the life time of the company in this year that is:

\[
\text{Lnsize} = \ln\left(\frac{\text{Employment}_{1385}}{\text{Age}_{1385}}\right)
\]

The primary assets of the company (Ln assets): The logarithm of the total assets of the company in the year 2004 divided by the life time of the company in this year.

\[
\text{Lnassets} = \ln\left(\frac{\text{Assets}_{1385}}{\text{Age}_{1385}}\right)
\]
Primary liability of the company (Ln debt): Total liabilities of the company in the year 2004 divided by the life time of the company in this year that is:

$$\text{Ln债务} = \ln\left(\frac{\text{Debt}_{1385}}{\text{Age}_{1385}}\right)$$

The primary capital of the company (Cap intensive): Total capital of the company per each employee in the year 2004 divided by the life time of the company in this year that is:

$$\text{Cap intensive} = \frac{\text{Capital}_{1385}}{\text{Age}_{1385}} / \text{Employment}_{1385}$$

Net sales of the previous year (Lag Sales Labor): The ratio of the net sales of the previous year divided by the number of staff in the previous year that is:

$$\text{Lag Sales Labor}_t = \frac{\text{Sales}_{t-1}}{\text{Employment}_{t-1}}$$

Profit before tax in the previous year (Lag EBT Labor): Profit before tax in the previous year divided by the number of staff in the previous year that is:

$$\text{Lag EBT Labor}_t = \frac{\text{EBT}_{t-1}}{\text{Employment}_{t-1}}$$

Return of sales in the previous year (Lag ROS): tax on the sales of the previous year that is:

$$\text{Lag ROS}_t = \frac{\text{EBT}_{t-1}}{\text{Sales}_{t-1}}$$

Previous year return of assets: tax on the profit before tax assets of the previous year that is:

$$\text{Lag ROA}_t = \frac{\text{EBT}_{t-1}}{\text{Assets}_{t-1}}$$

Financial leverage of the previous year (Lag Leverage): The ratio of total liabilities of the previous year to the total assets of the previous year that is:

$$\text{Lag Leverage}_t = \frac{\text{Debt}_{t-1}}{\text{Assets}_{t-1}}$$

RESULTS AND DISCUSSION
Research Findings
In the beginning we get into scrutinizing the descriptive consideration of the sample companies. Table No.1 illustrates the descriptive indices of the main variables of the research. In this table mean, standard deviation, and the maximum and the minimum variables are presented. According to the presented descriptive indices duration of the sample companies by average takes 6.73 year with a standard deviation of one year. In other words, it takes by average 6.73 years until a company reaches the conditions of bankruptcy. Descriptive indices which are relevant to the variables of development (development of staff and the growth of the assets) indicates that the number of staff in the sample companies has declined with a negligible tempo (%1) but its monetary value of the assets of these companies in Rial with a slow tempo of %17 has taken an upturn. In other words, in the course of time the number of staff has decreased in a very tangible way but their assets have increased by an average amount.

Research Hypotheses Test
In this section we are going to test the research hypotheses. For this purpose (by considering the entity of the variable that is the required time to reach failure) the Regression model of Cox is being used. To estimate the Regression model of Cox Breslow method and Efron’s method are being used. It is worth mentioning that to test the level of significance of the Regression coefficients the Robust Standard error of these coefficients are being used.
Table 1: Descriptive indices of the main variables of the research

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration time</td>
<td>6.73</td>
<td>1.00</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Development Of the staff in The previous Year</td>
<td>-0.01</td>
<td>0.14</td>
<td>-0.78</td>
<td>0.65</td>
</tr>
<tr>
<td>Development Of the staff in The previous Year</td>
<td>0.17</td>
<td>0.23</td>
<td>-0.25</td>
<td>1.11</td>
</tr>
<tr>
<td>Growth of the assets in the previous year</td>
<td>0.17</td>
<td>0.23</td>
<td>-0.25</td>
<td>1.11</td>
</tr>
<tr>
<td>Primary size</td>
<td>2.80</td>
<td>1.01</td>
<td>0.55</td>
<td>6.18</td>
</tr>
<tr>
<td>Primary assets</td>
<td>9.73</td>
<td>1.38</td>
<td>7.29</td>
<td>14.62</td>
</tr>
<tr>
<td>Primary liability</td>
<td>9.18</td>
<td>1.45</td>
<td>6.15</td>
<td>14.09</td>
</tr>
<tr>
<td>Primary capital</td>
<td>11.81</td>
<td>21.97</td>
<td>0.53</td>
<td>141.80</td>
</tr>
<tr>
<td>Net sale of the previous year</td>
<td>1799.45</td>
<td>1478.57</td>
<td>166.59</td>
<td>10649.96</td>
</tr>
<tr>
<td>Net sale of the previous year</td>
<td>394.58</td>
<td>1168.68</td>
<td>-362.65</td>
<td>10413.22</td>
</tr>
<tr>
<td>Operational profit of the previous year</td>
<td>0.13</td>
<td>0.25</td>
<td>-1.23</td>
<td>0.98</td>
</tr>
<tr>
<td>Operational profit of the previous year</td>
<td>0.10</td>
<td>0.13</td>
<td>-0.25</td>
<td>0.65</td>
</tr>
<tr>
<td>Financial leverage of the previous year</td>
<td>0.66</td>
<td>0.19</td>
<td>0.19</td>
<td>0.97</td>
</tr>
</tbody>
</table>

**Breslow Method**

To manage the nodes in the duration time Breslow method is being used. Results of estimating the Regression model of Cox by means of the above-mentioned method in table No.2 have been illustrated. The following results under the column of model (1) is for the cases that the development of the staff is being used as an index of the development of the company. The following results under the column of model (2) is for the cases that the growth of the assets is being used as an index of the development of the company.

According to the obtained results for the time period that the number of staff is used as the index of company development (model 1), development of the staff in the previous year has a negative influence on the rate of hazard (remember that in the Regression of Cox probability of failure is being schematized) and as a result it has a positive influence on the duration time. In other words, parallel to the growth in the development of staff in the previous year, duration time of the company augments as well. On the other hand, second component of staff development has a positive influence on the rate of hazard and as a result has a negative influence on the duration time of the company.

These two findings is compatible with the performed predictions in the research hypotheses. But the point which we should bear in mind is that based on the statistical value of Z, none of the coefficients of regression which are relevant to the two variables of staff development and the second component of staff development are meaningful statistically (Sig.˃0.05).

The obtained results which are relevant to other variables illustrates that the primary size of the company, primary asset, net sale of the previous year, operational profit of the previous year, sale return of the previous year, and the previous year return of asset all have a positive influence on the duration time of the company. These findings illustrate that for example the more primary size and assets of a company will be, the more probable it will be that the company activity will endure. In other words, larger companies reach the conditions of bankruptcy later than others. Statistical value of Wald illustrates that the estimated model is meaningful statistically ($X^2=37.55$, Sig.˂0.05). According to the above-mentioned discussions, there is not enough evidence to prove the research hypotheses concerning the positive influence of...
development on the duration of a company and the decline of this influence concurrent to the increase in development.

Table 2: Results of Cox estimation of Regression by means of Breslow Method

<table>
<thead>
<tr>
<th>Kind of descriptive Variable</th>
<th>Descriptive Variable</th>
<th>Model(1)</th>
<th>Statistical Value of Z</th>
<th>Level of Significance</th>
<th>Model(2)</th>
<th>Statistical Value of Z</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed time</td>
<td>Primary size</td>
<td>-0.31</td>
<td>-0.40</td>
<td>0.690</td>
<td>-1.11</td>
<td>-1.17</td>
<td>0.242</td>
</tr>
<tr>
<td></td>
<td>Primary asset</td>
<td>-8.05</td>
<td>-1.50</td>
<td>0.133</td>
<td>-9.65</td>
<td>-1.84</td>
<td>0.066</td>
</tr>
<tr>
<td></td>
<td>Primary Liability</td>
<td>8.41</td>
<td>1.60</td>
<td>0.109</td>
<td>10.79</td>
<td>2.01</td>
<td>0.044</td>
</tr>
<tr>
<td></td>
<td>Primary Asset</td>
<td>0.03</td>
<td>0.54</td>
<td>0.590</td>
<td>0.02</td>
<td>0.35</td>
<td>0.729</td>
</tr>
<tr>
<td>Variable time</td>
<td>Development of Staff in The previous Year</td>
<td>-0.38</td>
<td>-0.44</td>
<td>0.658</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Second component of staff development</td>
<td>0.27</td>
<td>0.15</td>
<td>0.884</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Growth of assets In the Previous Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Second component of assets development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Net sale of the previous year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operational profit of the previous year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Return of sale in the previous year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Previous year return of assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Financial leverage of the previous year</td>
<td>1.04</td>
<td>0.69</td>
<td>0.490</td>
<td>0.86</td>
<td>0.60</td>
<td>0.551</td>
</tr>
</tbody>
</table>

When the growth of assets is being used as an index of company development (model2), the above findings to some extent undergo a change in a way that according to the coefficient of the development of assets in the previous year and the second component of this variable it is being deduced that concurrent to an increase in the assets of the company, its time of duration at first decreases and then increases that
this trend of changes is completely the reverse to the changes in the development of the staff. However, the results of other descriptive variables which existed in themodel were almost similar to the previous case.

However, according to the obtained levels of significance in this level the relationship between the variable of development and the duration time of the company is not meaningful as well (Sig.˃0.05). Thus, based on the results which are being obtained out of model (2) none of the research hypotheses will be approved.

Table 3: Results of the estimation of Cox Regression by means of Efron method

<table>
<thead>
<tr>
<th>Kind of descriptive Variable</th>
<th>Model(1) Regression Coefficient</th>
<th>Statistical Value of Z</th>
<th>Level of Significance</th>
<th>Model(2) Regression Coefficient</th>
<th>Statistical Value of Z</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed time</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Primary size</td>
<td>-0.27</td>
<td>-0.34</td>
<td>0.732</td>
<td>-1.15</td>
<td>-1.23</td>
<td>0.220</td>
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<tr>
<td>Primary asset</td>
<td>-8.05</td>
<td>-1.52</td>
<td>0.129</td>
<td>-9.59</td>
<td>-1.92</td>
<td>0.055</td>
</tr>
<tr>
<td>Primary Liability</td>
<td>8.37</td>
<td>1.61</td>
<td>0.106</td>
<td>10.77</td>
<td>2.10</td>
<td>0.036</td>
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<tr>
<td>Primary Asset Development</td>
<td>0.03</td>
<td>0.64</td>
<td>0.521</td>
<td>0.03</td>
<td>0.43</td>
<td>0.670</td>
</tr>
<tr>
<td>Staff in The previous Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development Growth of assets</td>
<td>-0.39</td>
<td>-0.46</td>
<td>0.648</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second component of staff development</td>
<td>0.32</td>
<td>0.18</td>
<td>0.861</td>
<td></td>
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<tr>
<td>Growth of assets In the Previous Year</td>
<td></td>
<td></td>
<td></td>
<td>1.38</td>
<td>1.63</td>
<td>0.104</td>
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<tr>
<td>Second component of assets development</td>
<td></td>
<td></td>
<td></td>
<td>-1.13</td>
<td>-0.93</td>
<td>0.351</td>
</tr>
<tr>
<td>Net sale of the previous year</td>
<td>-0.00</td>
<td>-0.82</td>
<td>0.410</td>
<td>-0.00</td>
<td>-1.49</td>
<td>0.137</td>
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<tr>
<td>Operational profit of the previous year</td>
<td>-0.00</td>
<td>-0.07</td>
<td>0.944</td>
<td>0.00</td>
<td>0.60</td>
<td>0.549</td>
</tr>
<tr>
<td>Return of sale in the previous year</td>
<td>-0.69</td>
<td>-0.45</td>
<td>0.654</td>
<td>-1.92</td>
<td>-1.45</td>
<td>0.147</td>
</tr>
<tr>
<td>Previous year return of assets</td>
<td>-1.51</td>
<td>-0.46</td>
<td>0.645</td>
<td>-1.43</td>
<td>-0.53</td>
<td>0.597</td>
</tr>
<tr>
<td>Financial leverage of the previous year</td>
<td>1.14</td>
<td>0.74</td>
<td>0.459</td>
<td>0.95</td>
<td>0.66</td>
<td>0.510</td>
</tr>
<tr>
<td>Wald Parameter Level of significance of Wald Likelihood logarithm</td>
<td>38.76</td>
<td>41.83</td>
<td>0.000</td>
<td>0.000</td>
<td>-26.41</td>
<td>-24.88</td>
</tr>
</tbody>
</table>
Efron Method

In this section to manage the nodes in the duration time Efron Method is being used. The results obtained from estimating the Regression model of Cox have been illustrated by means of the above-mentioned method. The following results under the column of model (1) are for each situation that the development of the staff is being used as an index of development. The obtained results under the column of model (2) are for the situations that growth of assets is being used as an index of the development of the company. According to the obtained results for each time that the number of staff is being used as an index of company development (model 1), development of the staff in the previous year has a negative influence on the rate of hazard and as a result has a positive influence on the duration time. In other words, concurrent to the growth of the development of the staff in the previous year duration time of the company increases. On the other hand, the second component of the development of the staff has a positive influence on the rate of hazard and as a result has a negative influence on the duration time of the company.

Diagram 1: Diagram of the duration function of the sample companies

Diagram 2: Diagram of the hazard function of the sample companies
These results are compatible with the obtained results out of Breslow method. Based on Z-test score none of the coefficients of Regression which are relevant to the two variables of development of the staff and the second component of the development of the staff are not statistically meaningful (Sig. >0.05). Thus, there is not enough evidence to prove the research hypotheses concerning the positive influence of duration of the company and the decline of this influence concurrent to the growth of development by means of Efron method. This result exists when the growth of the assets is being used as an index of the development of the company. In other words, based on the Efron method growth of the assets has no meaningful relationship with the duration time of the company.

Diagrams (1) and (2) illustrate the diagram of the function of duration and the function of hazard which are being estimated for the sample companies respectively. Function of duration as you see is a constant descending function of time while the function of hazard is a constant descending function of time. Based on diagram (1) during the years of the research the probability that a company does not reach the conditions of bankruptcy is by far more than the final years of the research.

<table>
<thead>
<tr>
<th>Hypothesis Testing Method</th>
<th>Index of company Development</th>
<th>First hypothesis (linear relationship)</th>
<th>First hypothesis (second-rate Relationship)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Predicted Sign</td>
<td>Achieved Sign</td>
</tr>
<tr>
<td>Breslow</td>
<td>Staff Development</td>
<td>Growth of assets</td>
<td>+/-</td>
</tr>
<tr>
<td>Efron</td>
<td>Staff Development</td>
<td>Growth of assets</td>
<td>+/-</td>
</tr>
</tbody>
</table>

Based on Jovanovic’s Learning Model (1982), companies have a specific view of their real costs and in the course of time and based on their previous data and experiences update their amount of knowledge of real costs. In this manner development of the company influences the rate of failure. That is rate of failure is a descending function of development (Ha, 2013). On the other hand, Dunne et al., (1989) illustrated that while a company gets larger its development comes to end and from that point the influence of development on the duration of the company vanishes in the course of time. According to this subjects existence of a second-rate relationship between the development and the duration time of the company is predicted. In the present research existence of a second-rate relationship between the development and duration of Tehran stock market listed firms was being scrutinized by means of Cox Regression. To measure the development two variables of staff development and growth of assets were used. According to the obtained results out of hypotheses testing of the research there is an inverted U-shaped relationship between the growth of number of staff and the duration time of Tehran stock market listed firms. This finding is compatible with the results of the research of Ha (2013) about Vietnamese companies. Existence of an inverted U-shaped relationship means that by a gradual development of the number of staff the probability of continuation of the company’s activity at first increases and then decreases. The first part of this pattern (that is a positive relationship between development and duration) is being proven in lots of researches such as Mata and Portugal (2002) and Person (2004). Amongst the internal researches, first of all in almost all of the studies which are being performed in the area of predicting bankruptcy the dependent variable is being considered as a bilateral variable. In other words, the bankruptcy of the company is being schematized not the duration of the time which ends in bankruptcy. Secondly, a research which uses Cox Regression Model to predict duration except for one case was not found. (Mokarami and Motefarres, 2010) Thirdly, concerning the studies that are concentrated on the duration of activity of the company financial ratios have been used as descriptive variables (e.g. Moradzadeh and Sayyadi, 2010). Scrutinize the relationship between the duration of a company and development based on
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the previous year assets has left an inverse result in a way that parallel to an increase in the growth of the assets, the probability of duration of a company at first increases and then decreases. It means that the relationship between the growth of the assets in the previous year and the probability of duration of Tehran stock market listed firms is U-shaped. This finding is against the obtained result by Ha (2013).

Recommendations Out of the Research Results

Recommendations for the Auditors

According to the content of auditing standards of Iran No.57 the auditors during the process of planning and performing the methods of auditing and assessing the obtained results out of it should assess the continuation or duration of the activity as the corner stone of their work in preparing the financial statements. By means of the relevant auditing standards and statements sixteen influential criteria to assess the duration of activity of the economic agencies in Iran are being identified. Based on the findings of the research there is an inverted second-rate relationship between the duration time of Tehran stock market listed firms and the probability of the development of the number of staff. Thus, we recommend the auditors to pay attention to the existence of a second-rate relationship between development and the duration of the company.

A Recommendation to Grant Givers

Owners, managers, investors, grant givers, business associates, and also the state-owned institutes are interested in assessing the financial situation of the company since in case of bankruptcy lots of costs will be imposed on them. The banks usually decrease their financing to the bankrupted companies and in return for the loan which they lend to companies ask for a higher interest to compensate for the added risk. To finance grants it is necessary to determine the degree of validity and power of the receivers of grants to repay the exact money and the profit of the grants. The probability of lack of return of the main grant and its profit granted by the banks is called credit risk. Thus, it is recommended to the banks and finance and credit institutes to pay attention to the growth level of financial facilities while granting them to Tehran stock market listed firms. Since based on the results of the research there is a second-rate relationship between the development and the probability of duration of a stock market listed firms.

REFERENCES


