ABILITY OF COMBINATIONS OF CASH FLOW COMPONENTS TO PREDICT FINANCIAL DISTRESS

Gholamreza Kordestani[1], Vahid Biglari[2], Mehrdad Bakhtiari[3]

[1, 3]Imam Khomeini International University, Iran-qazvin-Boulevard, 34149-16818 Qazvin, Iran
[2]Malaya University, 50603 Kuala Lumpur, Malaysia
E-mails: [1]gkordestani@ikiu.ac.ir; [2]vahidbiglari@siswa.um.edu.my (corresponding author); [3]bakhtiari@dashiacpa.com

Abstract. The aim of this research is to provide a model that predicts company's financial distress on the basis of the operational, investment and financing components of its cash flow statement. To prevent bankruptcy and its negative consequences that among them are abuse of creditors, investors, management and employees' right, the prediction of financial distress and its probable consequence such as bankruptcy is essential. To serve this purpose, for the research 70 reliable firm-years and 70 distressed firm-years within the years 1995 to 2008 were selected from Tehran stock exchange. Considering the information that is reflected in the cash flow statement, the viability of financial distress prediction was examined. The result of chi-square test shows that there is significant difference in incidence rate of financial distress among the companies with different cash flow composition in one, two and three years before distress. In other words, the financial distress can be predicted on the basis of the contents and composition of the cash flow statement.

Keywords: cash flow statement, cash flow composition, financial distress, bankruptcy, shortage of cash, operational activities, investment activities, financing activities.

JEL Classification: G17, G33.

PINIGŲ SRAUTŲ KOMPONENTŲ DERINIŲ GALIMYBĖS NUMATYTI FINANSINIUS SUNKUMUS

Gholamreza Kordestani[1], Vahid Biglari[2], Mehrdad Bakhtiari[3]

[1,3]Tarptautinis Imam Khomeini universitetas, Iran-qazvin-Boulevard, 34149-16818 Kazvinas, Iranas
[2]Malajos universitetas, 50603 Kvala Lumpūras, Malaizija
El. paštas: [1]gkordestani@ikiu.ac.ir; [2]vahidbiglari@siswa.um.edu.my; [3]bakhtiari@dashiacpa.com

Santrauka. Tyrimo tikslas – pateikti modelį, leidžiantį numatyti finansinius bendrovės sunkumus remiantis operatyvinės, investicinės ir finansinės veiklos pinigų srautais. Siekiant išvengti bankroto ir jo neigiamų padarinių, tarp jų piktnaudžiavimo kreditorių, investuotojų, vadovybės ir darbuotojų teisėmis, finansinių sunkumų ir galimų jų pasekmių, pavyzdžiui, bankroto, prognozavimas laikytinas itin reikšmingu uždaviniu. Siekiant užsibrėžto tikslo, tyrimui pasirinkta 1995–2008 m. 70 sėkmingai veikiančių ir 70 sunkumų patyrusių įmonių iš Teherano vertybinių popierių biržos. Atsižvelgiant į informaciją, kuri pateikta pinigų srautų ataskaitose, nagrinėjama finansinių sunkumų tikimybė. Chi kvadrato testo rezultatai rodo, kad įmonėse su skirtingos sudėties pinigų srautais pirmaisiais, antraisiais ir trečiaisiais tyrimo metais finansinių sunkumų tikimybė skiriasi. Kitaip tariant, finansiniai sunkumai gali būti numatyti remiantis pinigų srautų ataskaitų turiniu ir pinigų srautų struktūra.

Reikšminiai žodžiai: pinigų srautų ataskaita, pinigų srautų struktūra, finansiniai sunkumai, bankrotas, pinigų stygius (trūkumas), operatyvinė veikla, investicinė veikla, finansinė veikla.

1. Introduction

This research investigates the ability of cash flow composition to predict the incidence of financial distress. It aims to enable the insiders and outsiders of organization to utilize financial statements and to enable them to make correct decision based on those statements. The main theme of argumentations on support of accounting knowledge is the emphasis on its usefulness in evaluation process and users' decision making. Beaver (1966) is among the first researchers that applies statistical techniques to predict bankruptcy (Etemadi, Tariverdi 2006). He believes that even though prediction is independent of decision making process, correct decision cannot be made unless forecasting is considered (Mehrani *et al.* 2005). Prior to decision making, the ability to forecast uncontrollable aspects of phenomena, improves the decisions through increasing awareness of the onward situation.

In most cases not only the bankruptcy leads to wealth spoilage of bulks of investors and creditors, it also creates adverse psychological effects that influence different society's groups and may last for years. In addition, in accounting profession, the continuity is pre-assumption about financial statements. Therefore, in order to prevent bankruptcy, its prediction, especially at one stage in advance, that is while the firm is financially distressed, is vitally important.

The reason this research emphasizes on cash flow statement is because it cannot be significantly manipulated under management's diverse decisions about the homogenous transactions. So the cash flow statement increases the comparability of operational aspects of companies' financial information. It is believed that even though in every organization the revenue is important but profit is more important and cash flow is of the most importance. controlling the cash flow in the company is as important as the control of blood pressure in human being (Schellenger, Cross 1994). Additionally, professor lee explicitly has stated that the final result of the company's operation is not profit but cash flow. While Profit is an artificial concept, cash flow is objective and real (Etemadi, Tariverdi 2006).

2. The need for bankruptcy theory

In recent decades, financial distress and bankruptcy has been the topic of many researches and variety of models has been introduced so far. However, since around 1930s, when pioneer studies were conducted, the literature on bankruptcy suffers from lack of integrated theory. The bankruptcy causes considerable losses for stockholders, investors, creditors, managers, employees, suppliers and customers. It has been suggested that to take preventive actions, underlying factors of liquidation should be identified. Lack of economic theory about financial distress is the salient weakness of researches in the area of predictions about bankruptcy (Soleimani, Nikoomaram 2008).

2.1. Stages of bankruptcy

Bankruptcy is caused by multitude of factors. In some cases its reason can be recognized after analysis of financial statements. But there have been some cases that while the company was to decline, some of the items in its financial statements indicated good short- term performance. Thus, although no exact line can be drawn for stages of the bankruptcy, according to their life cycle most of the companies go through the following stages. Few companies may go bankrupt without going through these steps. Figure 1 shows the stages of the bankruptcy.
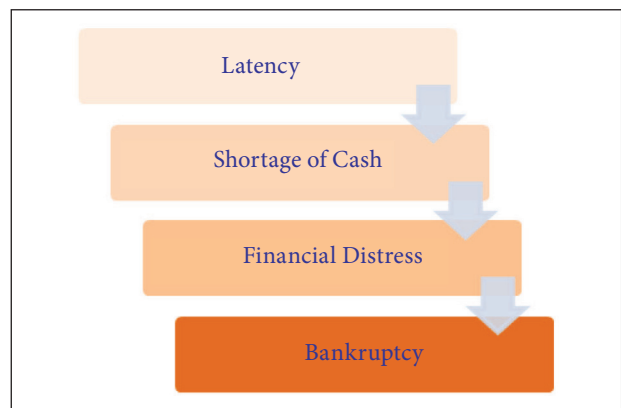

Fig. 1. Stages of bankruptcy

In latency stage, it is expected that the return on assets be decreased considerably.

In shortage of cash flow stage, the company does not have enough cash resources to meet current obligations, although it may still have strong profitability background.

Financial distress can be perceived as financial exigency. However, researchers believe that financial distress is the stage between bankruptcy and financial exigency.

If a company can't cure the symptoms of financial distress, it will definitely go bankrupt (Banks 2005).

2.2. Financial distress and bankruptcy

Some definitions that are found in the accounting and financial literatures regarding financial distress are:

A state in which incoming cash flow of the company is lower than outgoing cash flow. Such situation reflects a net cash outflow which corroborates financial distress (Gentry *et al.* 1990).

When the company cannot satisfy its obligations or such perception is apparent form of the financial statements, the company is financially distressed (Brigham *et al.* 1999).

Financial Distress is a state in which in the company's profitability decreases. It increases the likelihood of company's unability to pay the principle and interest of debts (Fallahpour 2004).

Increase in the cost of capital, stricter requirements by creditors and suppliers to finance the company, decrease in the cash flow, increase of financial leverage, and regular change of the key employees are among the signals of financial distress. They result from inefficiency and ineffectiveness of operations, deficiency of market conditions (recession and market share decrease), and mismanagement (Banks 2005).

When company cannot conform to the terms of its debt contract, it is financially distressed (Gentry *et al.* 1990; Raee, Fallahpour 2008).

The companies that report loss for three consecutive periods suffer from financial distress (Jantadej 2006).

Suspension of preferred stocks' dividend and decrease in cash dividend are the sign for financial distress. Decrease in cash dividend can lead to dissemination of negative information about company's future cash flow (Jantadej 2006).

3. Components of cash flow statement

Cash flow statement contains three parts. They are operational, investment, and financial activities. Based on the counting principle, all the probable forms of cash flow statement are 8. Those forms are shown in Table 1.

The analysis of first composition: information synergy of the first cash flow composition indicates that company is on threshold of financial exigency. The negative operational cash flow shows that company cannot meet the needs to cash for operations. Consequently, management begins to sell assets in order to make the cash inflow needed. This leads to positive cash flow from investment activities. At the same time management engages in financing through borrowing or issuance of stocks. So it is expected that the company gradually gives up ability to pay debts on time, and therefore enters exigency.

Table 1. Cash Flow Compositions

Cash Flow Compositions	Operational Activities	Investment Activities	Financing Activities
1	–	+	+
2	–	+	–
3	–	–	+
4	+	+	–
5	+	–	+
6	+	–	–
7	–	–	–
8	+	+	+

The analysis of the second composition: Due to negativity of the operational and financial activities, the company is complied to sell assets to meet the need for cash.

If cash deficiency problem doesn't resolve, to cover cash needs and continue its activities the company should sell some valuable assets. In addition, the continuance of such situation leads to loss of credibility and decrease of outsider's reliance. Simultaneously, noticeable decrease in incoming cash flow leads to worse situation and company enters exigency.

The analysis of third composition: prior evidences show that the companies that follow third cash flow pattern experience financial depression within relatively short period of time. Despite weak cash inflow from operational activities, by providing fund from borrowing, management invest in variety of opportunities. The third composition justifies company's movement toward growth. Due to high leverage and impediment to assets' utilization and forceful obligation of paying principle and interest of loans, company will involve in challenges that shortly leads to financial exigency.

The analysis of fourth composition: This composition of cash flow conveys signals of financial distress. Here, although operational activities cash flow is positive, it doesn't adequately cover the financing activities of the company. Since cash flow from investing activities is negative as well, there is sign of lack of financial strength. In this condition, management is motivated to engage in activities that involve investment and sale of the assets so that the incoming cash flow from investing activity compensate for outgoing cash flow of financing activities.

If the weakness in cash flow from operational activities persists, its detrimental effects will be transfered to investment activities. Shleifer and Vishny (1990) argue that when a firm's financial distress brings about assets selling, presumably the industry peers are facing the same problems. This leads to assets be sold at prices below of their value in best use. This condition may also exist for the companies that are in the same industries and they may suffer from similar problems (Chava, Jarrow 2004).

After a while the shrinkage of assets, leads to decline in incoming cash flow from investing activities. Inabilities to pay debts along with negative reaction of securities market increase the financing costs. These factors are strong enough to put the company in financial depression in near future.

The analysis of fifth composition: in this composition, the company has growing trend and satisfactory performance. It enjoys various profitable investing opportunities. Still the cash flow from operational activities does not cover the needed cash for investing activities. To provide enough cash for investing, the solution that most of the companies follow is raising the capital through borrowing. Therefore, due to financial soundness of and ease of financing, a portion of funds is invested in profitable activities. Thus, it is expected that these companies attain considerable operational cash flow in the future.

The analysis of sixth composition: this composition belongs to prosperous companies. Therefore, it is consi-

dered as ideal cash flow composition. Gantry *et al.* (1990) emphasize that the financial health of a company depends on its ability to generate net operating cash flows that are sufficient to cover a hierarchy of cash outflows. The volumes of incoming cash flow from financial activities are so that it is enough both for repayment of principle and interest of financiers and provides the possibility of investing in profitable opportunities.

The analysis of seventh composition: although the seventh composition happens rarely, it is in companies that are facing financial problems. Despite the operations weakness in cash production and difficulties in dividend payment and loans repayment, among the company's priorities are to invest and buy new assets. While the cash flow from operational activities is negative, the previously stored cash is used for operational, investment and financial activities. Obviously, if operational activities don't produce enough cash, this will lead to running out of stored cash in near future.

Analysis of eighth composition: the 8th composition seems to be unusual. Often companies that store cash from all the three levels will act one or more of the following options of future development. They either do huge investment to repay long-term debt obligations or decrease capital. If they keep extra cash, it will definitely lead to inefficiency and waste of the capital. On the other hand, keeping less cash than is needed leads to less trust of creditors, and consequently company ends up in loss of ideal opportunities.

4. Review of the previous researches

Researches in Iran: in most of the empirical studies done about financial distress and bankruptcy, financial analysts concluded that a set of financial ratios could be used to predict the continuity of the company's activities and its future trends. Hence, the bankruptcy prediction models are in fact a composition of financial ratios used by analysts and researchers in different countries throughout the world. There have been some researches in Iran about the bankruptcy prediction (Khoshtinat, Ghosuri 1384; Mehrani *et al.* 2005; Soleimani, Nikoomaram 2008). However, few researches have been conducted about financial distress in Iran.

A number of methods are used to predict financial distress. One is multivariate linear discriminator method. This method uses five variables including current ratio, the ratio of net earnings before interest and tax over assets, stockholders equities over liabilities, working capital over total assets and earnings before interest and tax over sale. The other method is neural network. The result of comparison between neural network and multivariate linear discriminator method shows that Artificial Neural Network (ANN) has significantly higher precision in predicting financial distress than multiple discriminate analysis (MDA) (Fallahpour

2004). Another research that compares the efficiency of Support Vector Machine (SVM) with statistical logistic regression (LR) shows that the average of precision of model in SVM is 96.6% where as LR is 91.6% (Raee, Fallahpour 2008).

Researches outside of Iran: there are many researches about financial distress as well as bankruptcy prediction and comparison of different models. Moreover, there have been some researches on these models application in the countries other than where they were originally developed. Some of these researches will be discussed in the following.

The first researcher who thoroughly studied prediction of financial distress was FitzPatrick (1932). By using 13 financial ratios for 20 of bankrupted and healthy firms in 13 years period, he concluded that all of the financial ratios can predict bankruptcy to some extent.

By using logit analysis Lau (1987) developed a model. Instead of dividing the companies into bankrupt and healthy, his model was consisted of five financial conditions. These conditions were: condition zero: financial permanency, condition 1: decrease or elimination of dividend, condition 2: technical default and default in loan repayment, condition 3: the activities which are done under the supervision of bankruptcy act and fourth condition: bankruptcy and liquidation. The more we move from the first condition to the fourth, the more it is likely that the company will be involved in financial distress. The chosen financial ratios measure the trends, current financial position and financial flexibility. The precision of the model in one, two and three years before bankruptcy were 96%, 92% and 90% respectively.

Considering a sample of construction companies Kaplinski (2008) draws the route of company toward bankruptcy. He concludes that in order to predict bankruptcy effectively, previously developed Z-score index should be adjusted according to the economic conditions of each country and each industry.

Among the important researches that have been done about prediction of financial distress and bankruptcy are: Beaver (1966), Largay III and Stickney (1980), Gentry, Newbold and Whitford (1985), Gilbert, Menon and Schwartz (1990), Schellenger and Cross (1994), Sharma and Iselin (2003) Turetsky and Mcewen (2001).

In addition, recently there have been some attempts to develop various models that can predict financial distress. Interestingly, the recent researches have emphasized the importance of considering new variables that characterize specifics of our economic era. Some of the recently proposed models have been discussed in the following section.

A local recent research that has been done in the field of bankruptcy prediction belongs to Salehi and Abedini (2009). Using the ratios of liquidity, profitability, managing of debt and managing of property, Salehi and Abedini (2009), develop a multiple regression models to predict financial distress

in Tehran Stock Exchange companies. However, according to Haber and Colleg (2005), their model is not efficient. The reason is that they divide their total samples into two *equal* groups of bankrupt and non-bankrupt firms whereas in reality only 6% of companies go bankrupt. Therefore according to Haber and Colleg's (2005) allegation, their model is not practically appropriate.

Haber and Colleg (2005) address the shortcomings of traditional bankruptcy prediction models and emphasize that the traditional dichotomous model that so far has been used in researches is not practically effective. Further, Haber and Collge (2005) contend that in 1960s bankruptcy filing was thought to be the last resort. However, nowadays bankruptcy has lost much of its stigma and is considered as a strategic decision. Thus, a new evaluation framework must be developed to encompass such changes and to make it useful in a practical setting.

Following Haber and Colleg (2005) assertion, by concentrating on risk factors of export orienting companies in China, Zheng and Yanjun (2010) develop a logistic regression model to identify internal factors that lead to corporate financial crisis. They believe that when the world is dealing with financial crisis, the risk factors that cause companies to face series of financial problems are different from such risk factors when the environment is stable.

Similarly, Christidis and Gregory (2010) Claim that adding macroeconomic variables to the dynamic logit model that were previously suggested by Campbell and Szilagyi (2008) adds to the model's predictive power. In addition, they suggest that adding industry control cause great improvement in predictability of purely accounting based model. However, it does not significantly add to the power of models that use accounting, market and economic variables.

Wang *et al.* (2009) apply the Multiple Criteria Quadratic Programming model to predict financial distress of the manufacturing companies. They show that Multiple Criteria Quadratic Programming is more accurate and stable than Logistic Regression and SVM models. Finally they conclude that Multiple Criteria Quadratic Programming is capable of providing stable and credible results in predicting financial distress

Furthermore, Bhunia *et al.* (2011) use discriminant analysis to analyze 16 financial ratios in order to predict financial failure. They found that a discriminant function that was constructed with seven ratios has predictive accuracy rate of between 88% and 94% for each of the five years before actual failure. They claim that multiple discriminant analysis is a very reliable and potent statistical tool for predicting financial distress.

According to the above researches the field of bankruptcy prediction modeling is dynamic and ongoing. Therefore it is expected that more complicated and accurate models be developed in the future.

5. Research method

The research population is all the companies accepted in Tehran Stock Exchange and the time period is from 1995 to 2008, that is 13 consecutive years. The sample was selected on the basis of available information and it covers a number of industries including textile, automotive, food, chemical, contracting, pharmaceutical, etc. According to Tehran Stock Exchange (TSE) website[1] only the companies that have at least two hundred billion Rials (approximately twenty million Dollars) capital are qualified to be listed in TSE. Such companies are considered as large companies in Iranian Capital Market. The distressed companies were chosen based on either article 141 of Iranian Commercial Codes, i.e., accumulated losses exceeds half of equity, or if they have loss for 3 consecutive years. Healthy companies are the companies that in 13 year period of 1995 to 2008 did not suffer from loss and also didn't report negative retained Earnings. Overall, 70 healthy and 70 distressed firms were selected.

Hypotheses

As explained in the literature the source, magnitude and repeatability of cash inflow and outflow set the liquidity status of company (Fight 2006). Furthermore, as explained by DeFond *et al.* (2002) liquidity status highly shapes going concern of the company. Therefore it is suggested that various cash flow compositions along with their spring, continuity and repeatability may significantly affect the company's going concern. Thus, the hypotheses of this research would be defined as:

Hypothesis 1: *The companies that have the first composition of cash flow experience financial distress.*

Hypothesis 2: *the companies that have second composition of cash flow experience financial distress.*

Hypothesis 3: *the companies that have third composition of cash flow experience financial distress.*

Hypothesis 4: *the companies that have fourth composition of cash flow experience financial distress.*

Hypothesis 5: *the companies that have fifth composition of cash flow experience financial distress.*

Hypothesis 6: *the companies that have sixth composition of cash flow experience financial distress.*

Hypothesis 7: *the companies that have seventh composition of cash flow experience financial distress.*

Hypothesis 8: *the companies that have eighth composition of cash flow experience financial distress.*

6. Research findings

The number for each one of the compositions of cash flow for healthy and distressed firms for 1 and 2 and 3 years is shown in Table 2.

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[1]   http://www.tse.ir

Table 2. Descriptive Statistics Regarding Different Compositions of Cash flow

Period	Company's Status	No., %	1st	2nd	3rd	4th	5th	6th	7th	8th	Total
One year before Financial distress	Distressed	Number	7	3	35	2	15	6	2	0	70
		Percent	10	4.3	50	2.9	21.4	8.6	29	0	100
	Healthy	Number	0	2	4	2	29	32	0	1	70
		Percent	0	2.9	5.7	2.9	41.4	45.7	0	1.4	100
	Total		7	5	39	4	44	38	2	1	140
Two years before Financial distress	Distressed	Number	6	0	29	3	18	14			
		Percent	8.6	0	41.4	4.3	25.7	20	0	0	100
	Healthy	Number	0	0	5	6	26	33	0	0	70
		Percent	0	0	7.1	8.6	37.1	47.1	0	0	100
	Total		6	0	34	9	44	47	0	0	140
Three years before Financial Distress	Distressed	Number	4	0	20	1	10	21	2	3	70
		Percent	5.7	0	28.6	1.4	27.1	30	29	4.3	100
	Healthy	Number	0	0	4	5	36	23	1	1	70
		Percent	0	0	5.7	7.1	51.4	329	1.4	1.4	100
	Total		4	0	24	6	55	44	3	4	140

7. Results

To analyze the relationship of ordinal variable with dependent variable we used chi-square test. This test is able to statistically measure the difference between observed and expected rate of occurrence. Table 3 reflects the results of the test.

Statistical analysis of the first cash flow composition: As shown in Table 3, in one, two and three years prior to financial distress, 7,6 and 4 companies experienced negative cash flow from operating activities and positive cash flow from investing and financing activities respectively. The distressed firms experienced the first composition only a year before financial distress.

The results of Pearson and Fischer Chi-square are shown in Fig. 3. This figure shows that if the firm experiences the first cash flow composition, the probability of becoming distressed is more than the probability of remaining healthy. Such result was also expected theoretically.

Statistical analysis of the second cash flow composition: According to the Table 3, five companies experienced the second cash flow composition one year before financial distress. Two of them were distressed firms and three were healthy firms. These findings show that in the second composition of cash flow, 60% of distressed firms and 40% of sound firms experienced this situation. None of the healthy and distressed firms experienced second composition at two or three years before financial distress.

The Pearson and Fischer chi-square statistic shows that in none of the years the difference between the incidence of financial distress and healthiness is significant. Such result confirms theoretical predictions.

The statistical analysis of third composition of cash flow: According to the information in Table 3, in one, two and three years before financial distress, 39, 34 and 29 companies experienced the third composition of cash flow respectively. The numbers of distressed companies were 35, 29 and 20 and the numbers of healthy companies were 4, 5, and 4 in one, two and three years before financial distress respectively. Around 85% of distressed firms and 15% of healthy firms experience the third composition of cash flow in one, two and three years before financial distress.

The Pearson chi-square and fisher chi-square shows that there is significant difference between the probability of distress and healthiness for the companies that experience the third composition. This conclusion is consistent with our theoretical prediction.

The statistical analysis of fourth cash flow composition: according to Table 3, in one, two and three years before financial distress, 4, 9 and 6 companies experienced fourth cash flow composition. That is, they experienced negative cash flow from their operational and investment activities and positive cash flow from financing activities. Of the total number of the companies that are in the fourth composition, 2, 3 and 1 companies were distressed and 2, 6 and 5 companies were healthy in one, two and three years before financial distress respectively. In other words around 31% of distressed firms and 69% of healthy firms experience the fourth composition of cash flow in one, two and three years before financial distress respectively.

The result obtained from Pearson chi-square and Fischer chi-square shows that the fourth composition of

Table 3. Results for Tests of Hypotheses

n-th Cash Flow Compositions		Distressed companies			Healthy companies		
		n years before financial distress			n years before financial distress		
		1	2	3	1	2	3
1	Number	7	6	4	0	0	0
	Chi-square	7.368*	6.269*	4.118*	7.358*	6.269*	4.118*
2	Number	3	0	0	2	0	0
	Chi-square	0.207	–	–	0.207	–	–
3	Number	35	29	20	4	5	4
	Chi-square	34.156*	22.375*	12.874*	34.156*	22.375*	12.874*
4	Number	2	3	1	2	6	5
	Chi-square	0	1.069	2.786	0	1.069	2.786
5	Number	15	18	19	29	26	36
	Chi-square	6.496*	2.121	8.655*	6.496*	2.121	8.655*
6	Number	6	14	21	32	33	23
	Chi-square	24.417*	11.563*	0.133	24.417*	11.563*	0.133
7	Number	2	0	2	0	0	1
	Chi-square	2.029	-	0.341	2.029	-	0.341
8	Number	1	0	2	0	0	1
	Chi-square	1.007	–	1.029	1.007	–	1.029
✳ significant at 0.05 level							

cash flow cannot offer an accurate forecast of financial distress. Theoretically, the fourth composition contains some signals of financial distress. So, the statistical results for this composition to some extent conform to the theoretical predictions.

The analysis of the fifth composition of cash flow: According to Table 3, 44 and 55 companies experienced the fifth composition of cash flow. That is, they experienced negative cash flow from operational, investment and financial activities. Of these total number, 15, 18 and 19 companies were distressed and 29, 26 and 36 companies were healthy in one, two and three years respectively. In other words, for the fifth composition of the cash flow, 57% of the companies experienced financial distress and 43% of the companies were healthy in one, two and three years.

Pearson and Fischer statistic indicates that the probability that the company is healthy is greater than the probability of distresses of the company. The statistical result confirms our theoretical predictions. In two years before the financial distress, there is no significant difference between the probability of distress and healthiness of the company.

The sixth composition of cash flow: According to the information of Table 3, 38, 47 and 44 companies experienced the sixth composition of cash flow in 1 and 2 and 3 years before financial distress respectively. Of the total

number of the companies 6, 14 and 21 companies were financially distressed and 32, 33 and 23 companies were healthy companies. In other words, around 32% of distressed companies and 68% of healthy companies experienced sixth composition of the cash flow in 1 to three years before financial distress.

The result of Pearson and Fischer chi-square test shows that in one, two and three years before financial distress the probability of healthiness of company is significantly greater than its depression. The result of statistical analysis confirms our theoretical predictions in one and two years. But for three years there is no significant difference between the probability of healthiness and financial depression. However, according to the theoretical predictions, we expect that the sixth composition happens for healthy companies.

The statistical analysis of the seventh composition: According to Table 3, only 2 companies experienced the seventh composition of cash flow (negative cash flow from operational activities and positive cash flow from investment and financial activities). Both companies are among the depressed companies. Therefore, 100% of the companies in the seventh composition experienced financial depression in one year. There were no companies that could be fit for seventh composition in two years before financial

depression. In three years before financial depression, three companies experienced the seventh composition. The numbers of distressed companies were 2 (67%) and the numbers of healthy companies were 1 (33%).

The result of Pearson and Fischer test indicates that the difference between the probability of the companies' depression and healthiness in none of the years was significant. From the theoretical view point the seventh composition of cash flow rarely happens. This theoretical view is consistent with the statistical results that we observed. However, the statistical result of the seventh composition is not in conformance with theory. Because according to the theory this composition should occur in distressed firms, however, the statistical result does not show that. So, the statistical result for this compostition is not consistent with theoretical prediction.

The statistical analysis of eighth composition: according to Table 3, only one firm experienced the eighth composition one year before the financial depression (positive operational, financial and investment cash flow). None of the firms experienced the eighth composition in two years before the financial depression. 3 companies experienced the eighth composition in three years before the financial depression. 2 companies (67%) are distressed and 1 (33%) is healthy.

The Pearson chi-square and Fischer chi-square indicate that there is no significant difference between the probability of firms' distress and healthiness in any of the years. From the theoretical viewpoint the eighth composition similar to the seventh composition is a special case that rarely happens. From the theoretical view point it is expected to occur for healthy companies. However, we didn't obtain such result statistically. So the statistical result for this composition is not similar to the theoretical prediction.

8. Conclusions

The continuation of activity of enterprises depends on various factors. Some of them like liquidity and cash flow are of essential importance in all companies. In this research we investigated the ability of cash flow composition to predict future financial distress in Tehran stock exchange companies. The result of chi-square test shows that there is significant relationship between first, third, sixth and seventh cash flow compositions and future financial distress.

Despite the ability of cash flow to predict the financial distress, the reason for lack of precision in analysis is the several years of difference between the time of submission of tax proposal and the time of its payment. In other words based on Iranian accounting standards the tax figure in cash flow statement corresponds to tax number of two years before. However, practically in many cases the tax figure relates to more than two years before. Because according to the

article 238 of Iranian taxing regulation the taxpaying companies can appeal for reinvestigation of their income tax. Therefore tax payment would be accomplished after its confirmation on several years later. So in financially distressed companies, the figure in cash flow statement is not related to the distress that the company is facing in the respective period, but is related to the past periods that firm had usual or even healthy condition.

In conclusion we can say that cash flow composition can be considered as a sign for financial distress and therefore can be useful for management and other users of accounting information.

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Gholamreza KORDESTANI is Associate Professor at Imam Khomeini International University in Iran. He got his PhD in Accounting from University of Tehran, Iran. His research interests include companies valuation, earnings quality, cost of capital, bankruptcy prediction, conservatism. He has published several articles in Iranian and international journals.

Vahid BIGLARI is a PhD Student in the Department of Accounting at University of Malaya, Kuala Lumpur. He anticipates to get his PhD in late 2012. He was Lecturer of accounting at Payame Noor University in Iran from 2007-09. Along with his studentship he is teaching as a teacher assistant for the course 'Accounting Theory and Practice' in university of Malaya. His current research activities include earnings management, forecast management and bankruptcy, he managed to publish two articles in the journals of "Asia-Pacific Financial Markets" and "Iranian Journal of Trade Studies" and has presented them in "International Conference of Islamic Economic Integration" and "2nd International Conference On Business And Economic Research - 2011". He Received his Master in Accounting from University of Tarbiat Modares in Iran.

Mehrdad BAKHTIARI got his Master in Accounting from International University of Imam Khumeini in 2007. He is currently a senior Auditor in Dash & Co. Certified Public Accountants in Iran.