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Research Article

The Impact of the Financial Distress on Tax Avoidance in Listed Firms: Evidence from Tehran Stock Exchange (TSE)

[1]Mehdi Feizi, [2]Esmaeil Panahi,[3]Farzad Keshavarz,
[4]Saeideh Mirzaee and [5]Sayed Mohsen Mosavi
[1,2,3]Department of Accounting,
Genaveh Branch, Islamic Azad University, Genaveh, Iran
[4]Department of Accounting,
Shahrood Branch, Islamic Azad University, Sahrood, Iran
[5]Department of Managment,
Hendijan Branch, Islamic Azad University, Hendijan Iran

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ABSTRACT
A lot of firms appear to be involved in tax avoidance. For that reason, identification of factors contributing to corporate tax avoidance is of utmost importance. Tax avoidance is an inseparable part of capital management strategies in a firm. In a serious financial crisis firms are confronted with the risk of bankruptcy. Since the potential costs of bankruptcy are high, firms attempt on tax avoidance through certain financial strategies and implementation of plans to reduce their income taxes. The purpose of the present research is to investigate the relationship between financial distress and tax avoidance in firms in the light of recent global financial crisis. This research studies a six-year time period from 2008 to 2013. After application of the determined limitation on the population, 118 firms have been investigated; and after omission of irrelevant data, 708 firm-years have been observed in regard to the three research hypotheses. This is a descriptive-correlational type study which is based on an ex-post-facto design.
The obtained results suggest that intensification of global financial crisis as well as firms' financial distress give rise to corporate tax avoidance. Therefor and based on the findings of the present research, auditors and revenue agents, capital market activists, decision makers, analysts, and active or potential investors of Tehran Stock Exchange are advised to pay special attention to income tax returns, analysis of plans for investment in financial assets and listed securities, firms' financial condition (firms' financial distress), and global financial crisis and their relationship with corporate tax avoidance.

Keywords: financial distress, tax avoidance

INTRODUCTION
In most countries, a major part of government's income is made through taxation. However the total share of public incomes from taxation differs from one country to another. In the mean time, tax avoidance and tax evasion have always made the actual income from taxation fall short of the estimated amounts. Hence, tax avoidance and tax evasion and their causes and effects are

among the most important subjects in many studies. From a theoretical point of view, tax avoidance is the attempt to reduce the taxes to be paid [Hanlon et al. 2010]. While tax evasion is considered to be a legal crime, tax avoidance is in fact the exploitation of legislative defects in order to reduce the taxes. Therefore, since tax avoidance appears to be a legal activity, it is more easily observable in comparison to tax evasion. Also because tax avoidance occurs in a certain time period in order to exploit taxation advantages, there are no general and cohesive legislations to limit and control tax avoidance. On that note, it seems that a lot of firms are involved in tax avoidance; therefore it is of utmost importance to determine the factors contributing to tax avoidance in firms [Khani et al. 2013].

Statement of problem

Taxation is an important source of income for governments. In addition to financing the government, taxation helps better distribution of wealth in the society. Due to economic and cultural factors, composition of tax income differs from one country to another. In a developing country such as ours, taxation income is an important resource after oil export income. Refusal to pay taxes, tendency to evade taxes, or taxation management are all originated from cultural motives or low taxation culture in the society as well as economic motives.

Income taxes impose considerable costs on firms and their stockholders. Through the conventional method of taxation a great deal of organizational resources are transferred to the governments. In order to reduce and decelerate this resource transfer, firm managers take measures known as tax avoidance. Tax avoidance plans are usually carried out through designation and adjustment of financial accounts, creative deployment of accounts, or by avoiding the disclosure of all the necessary information [Mousavi Jahromi et al. 2009].

From a theoretical point of view, tax avoidance is the attempt to reduce the taxes to be paid [Hanlon et al. 2010]. Since tax avoidance appears to be a legal activity, it is more easily observable in comparison to tax evasion. Also because tax avoidance occurs in a certain time period in order to exploit taxation advantages, there are no general and cohesive legislations to limit and control tax avoidance [Mohammad Jam, 2000].Therefor, it seems that a lot of firms are involved in tax avoidance; therefore it is of utmost importance to determine the factors contributing to tax avoidance in firms.Tax avoidance is an inseparable part of capital management strategies in a firm. In large corporations, taxes are important and huge costs. In order for development of long-term strategies, firm management needs capital; this in turn becomes a motivation for reduction of taxes payable. The estimation by the International Monetary Fund (IMF) of tax collection during the financial crisis reveals that in order to finance their operation, firms used tax avoidance as an important mechanism for preservation of the capital or for confrontation with reduction of capital demands during the crisis [Brondolo, 2009].

The global financial crisis can also affect tax avoidance in the firms. Since the fourth quarter of 2007, the economic turbulences in the USA became an important problem for global economy. After a few months, this crisis swept over global financial markets and reached real sections of the economy in many countries, affected employment and demand in different countries, and thus created widespread recession and unemployment, negative economic growth, and reduction of demand in global economy. Countries with inter-connected financial markets experienced direct impacts of the crisis first hand. Although countries which did not have direct dealings with international market did not experience the primary impacts of this crisis, still the secondary impacts of this crisis is evident in their economy due to the worldwide recession. Iran's little share of international markets and global banking system may create the misconception that the problems caused by this crisis have had little impact on this country's economy. However, in light of the fact that a great deal of Iran's connection to other countries is in the form of trade, the economic crisis would leave its most destructive impact on prices and costs of trading goods and services. Moreover, the decrease in oil export income will damage Iran's economy. As oil export constitutes a large share of government's income, reduction of oil export income will intensify the budget defect with which Iran is dealing for consecutive years. It is obvious that decrease in firms' profits is followed by decrease in taxation income, because taxation of firms comprises a considerable part of direct taxes.

Research background

Richardson et al. (2014) study the impact of financial distress on corporate tax avoidance spanning the global financial crisis in Australia. They conclude that financial distress has a positive and significant relationship with tax avoidance. Moreover, the relationship between financial distress and tax avoidance has been intensified due to the global financial crisis.

McGuire et al. (2012) study the relationship between audit firm's expertise and tax avoidance in firms. The results suggest that when an audit firm has financial expertise, its clients are more involved in tax avoidance. On the other hand, auditors who are overall industry experts are also associated with higher levels of tax avoidance as compared to other firms.

Hoopes et al (2011) investigate whether IRS Audits Deter Corporate Tax Avoidance. They investigate 173231 US firm-years during 1992-2008 and conclude that increase in IRS monitoring has resulted in a considerable decrease in tax avoidance.

The results from the study by Wang (2010) reveal that tax avoidance has a stronger relationship with corporate disclosure rather than ambiguity. Also in firms with high quality disclosure, tax avoidance has a positive and significant relationship with firm value.

Mehrani & Seyedi (2014) study the effect of income tax and conservative accounting on tax avoidance. The results indicate that tax avoidance and conservatism are substitute instruments for reduction of taxes; in this sense, conservative inclinations decrease along with tax avoidance and vice versa. Moreover, the negative relationship between the average three-year taxes and tax avoidance indicates that firms prefer to be conservative and reduce their taxes by reduction of earnings rather than reduce their taxes by tax avoidance strategies.

Haghighat & Mohammadi (2012) study the relationship between tax avoidance and firm value and disclosure quality. The results indicate that firms with better transparency have less potential for agency problem and more potential for tax avoidance as opposed to firms with low transparency. Also, individuals outside the organization are not especially concerned with firms' tax avoidance.Therefore; it is highly important for firms which attempt on tax avoidance to have acceptable transparency.

Zayer & Shafiei (2009) study the impact of global financial crisis on country's tax income. They study the effects of global financial crisis on variables of macro-economy in Iran. The results indicate that considering the declining trend of studied variable in 2008, the impacts of financial crisis would be more evident in Iran's economy in 2009.

Research hypotheses

The first hypothesis: assuming that other conditions remain constant, financial distress has a positive impact on firms' tax avoidance.

The second hypothesis: assuming that other conditions remain constant, financial distress has a significant impact on firms' tax avoidance.

The third hypothesis: assuming that other conditions remain constant, the global financial crisis has a positive impact on the relationship between financial distress and tax avoidance in firms.

Statistical population and sample

The statistical population of the present study is consisted of all firms listed in Tehran Stock Exchange. The time period is from March 20^{th} 2008 to March 19^{th} 2014.After application of the determined limitation on the population, 118 firms have been studied; and after omission of irrelevant data, 708 firm-years have been observed in regard to the three research hypotheses.

Research variables:

Firm's financial distress (FDISS): financial distress is one of the variables of this study. In order to assess this variable, Altman (1983) bankruptcy prediction model is used:

Equation (1)

$$Z' \text{Score} = \text{۰.۷۱۷} * X_{\text{۱}} + \text{۰.۸۴۷} * X_{\text{۲}} + \text{۳.۱۰۷} * X_{\text{۳}} + \text{۰.۴۲} * X_{\text{۴}} + \text{۰.۹۹۸} * X_{\text{۵}}$$

Where:

X1 = Working capital/Total assets

X2 = Retained Earnings/Total assets

X3 = Earnings before interest and taxes/Total assets

X4 = Book value of equity/Book value of total liabilities

X5 = Sales/Total assets

Global financial crisis (GFC): the global financial crisis is another variable in this study. It is a binary variable. In this sense, it assumes 1 value in the years when there is a global crisis and 0 otherwise.

Corporate tax avoidance (CTA): there is no single index for assessment of tax avoidance in accounting literature. Decrease in effective tax rate is a sign of high degrees of tax avoidance [Gupta & Newberry, 1997; Rego, 2003]. In this research, the effective tax rate is used for assessment of tax avoidance:

Equation (2):

CTA= income tax cost/earnings before tax

Firm age (FAGE): in this study, firm age is a control variable which refers to the number of years from a firm's foundation to the present.

Firm size (SIZE): it is another control variable in the study which is the natural logarithm of firm's total assets. The more a firm's total assets, the larger the firm size is.

Equation (3)

SIZE= Ln (total assets)

Firm's financial leverage (LEV): it is a control variable. It refers to the percentage of assets financed through debts. In this research, financial leverageis measured as long-term debt scaled by total assets at the end of fiscal year.

Ratio of net property, plant and equipment to total assets (CINT): it is yet another control variable which is measured as net property,plant and equipment scaled by total assets.

Ratio of research and development (R&D) expenditure to total assets (RDINT):it is a control variable measured by R&D expenditure scaled by total assets.

Ratio of inventory to total assets (INVINT): it is a control variable measured by inventory scaled by total assets.

Tax haven use dummy variable (THAV):it is a dummy variable of 1 if the firm has at least onesubsidiary firm and 0 otherwise.

The market value of equity scaled by the book value of equity (MKTBK): it is the last control variable measured as the marketvalue of equity scaled by the book value of equity.

Models of hypotheses examination

In order to examine the first hypothesis the following multivariate regression model is used:

Equation (4):

$$CTA = \beta_0 + \beta_1 FDISS + \beta_2 FAGE + \beta_3 SIZE + \beta_4 LEV + \beta_5 CINT + \beta_6 RDINT + \beta_7 INVINT + \beta_8 THAV + \beta_9 MKTBK + \varepsilon$$

Also in order to examine the second and third hypotheses the following multivariate regression model is used:

Equation (5):

$$CTA = \beta_0 + \beta_1 FDISS + \beta_2 GFC + \beta_3 GFC * FDISS + \beta_4 FAGE + \beta_5 SIZE + \beta_6 LEV + \beta_7 CINT + \beta_8 RDINT + \beta_9 INVINT + \beta_{10} THAV + \beta_{11} MKTBK + \varepsilon$$

The durability of study variables

The results of durability test are demonstrated in the table below. According to the Levin, Lin & Chu test, since the p-value is less than 5%, hence all the dependent, independent, and control variables are stationary. This means that the mean and variance of the variables in the time period and their covariance between different years have all been constant. As represented in the table, all variables are stationary and durable hence there is no need for co-integration test.

Table 1: results of the test of stationarity

Variables	Levin, Lin & Chu		Result
	Statistic	P-value	
CTA	-59.5986	0.0000	Stationary
FDISS	-10.1552	0.0000	Stationary
GFC	-13.3180	0.0000	Stationary
FAGE	-24.0913	0.0000	Stationary
SIZE	-10.5371	0.0000	Stationary
LEV	-11392.3	0.0000	Stationary
CINT	-19.0906	0.0000	Stationary
RDINT	-132.073	0.0000	Stationary
INVINT	-38.6570	0.0000	Stationary
THAV	-14.3785	0.0000	Stationary
MKTBK	-24.9120	0.0000	Stationary

Hausman test and Limer F-test

As presented in table 2, the p-value of F-statistic for both models is less than 5% percent; therefor panel data method is used for estimation of both models. Also, since the p-value for Hausman test in both models is less than 5%, the fixed effects model is used for the estimation of both models.

Table 2: results of Limer F-test and Hausman test

Model	Test	Statistic	p-value	Result
1st	Limer F	7.4468	0.0000	Panel data
	Hausman	22.5456	0.0073	Fixed effects
2nd	Limer F	7.5169	0.0000	Panel data
	Hausman	23.1461	0.0169	Fixed effects

Results of hypotheses examination

The first hypothesis:

assuming that other conditions remain constant, financial distress has a positive impact on corporate tax avoidance.

The p-value (or significance level) for F is 0.0000 which is less than 0.05; therefor at the 95% confidence level, the null hypothesis is rejected i.e. the model is significant.

In general, the results indicate thssat the coefficient of FDISS variable equals 0.000922 which points out to the positive impact of financial distress in tax avoidance; considering the t-statistic, the coefficient of FDISS variable is significant. Regarding the issues discussed above, it is possible to confirm the first hypothesis. This means that there is a positive and significant relationship between financial distress and corporate tax avoidance.

In other words, intensification of financial distress in a firm will lead to increase in corporate tax avoidance.

Table 3: the results of the first model estimation

$$CTA = \beta_0 + \beta_1 FDISS + \beta_2 GFC + \beta_3 GFC * FDISS + \beta_4 FAGE + \beta_5 SIZE + \beta_6 LEV + \beta_7 CINT + \beta_8 RDINT + \beta_9 INVINT + \beta_{10} THAV + \beta_{11} MKTBK + \varepsilon.$$

Variable	Estimated coefficient	Standard error	t-statistic	p-value
C	-0.037754	0.051492	-0.733196	0.4637
FDISS	0.000922	0.000394	2.339127	0.0197
FAGE	-0.005539	0.001833	-3.021283	0.0026
SIZE	0.024936	0.002919	8.542446	0.0000
LEV	-0.068692	0.032515	-2.112670	0.0351
CINT	-0.019760	0.029420	-0.671643	0.5021
RDINT	0.759347	0.372974	2.035924	0.0422
INVINT	0.102710	0.046067	2.229565	0.0262
THAV	0.001728	0.002810	0.615174	0.5387
MKTBK	5.67E-05	0.000148	0.383919	0.7012
Coefficient of determination	0.626			
Adjusted coefficient of determination	0.545			
Durbin-Watson	1.717			
F-statistic	7.7130			
Sig. (f-statistic)	0.0000			

The second hypothesis: assuming that other conditions remain constant, the global financial crisis has a significant relationship with corporate tax avoidance.

The p-value (or significance level) for F is 0.0000 which is less than 0.05; therefor at the 95% confidence level, the null hypothesis is rejected i.e. the model is significant (table 4).

Generally, the results indicate that the coefficient of GFC variable equals 0.012037 which reveals the positive impact of global financial crisis in tax avoidance; the coefficient of GFC variable is significant considering the t-statistic. Considering the topics discussed above, the second hypothesis is confirmed. This means that there is a positive and significant relationship between global financial crisis and corporate tax avoidance. In other words, the rise of global financial crisis leads to increase in corporate tax avoidance.

The third hypothesis: assuming that other conditions remain constant, the global financial crisis has a positive impact on the relationship between financial distress and corporate tax avoidance.

The p-value (or significance level) for F is 0.0000 which is less than 0.05; therefor at the 95% confidence level, the null hypothesis is rejected i.e. the model is significant (table 4).

In general, the results show that the coefficient of FDISS*GFC variable is 0.000354 which indicates the positive impact of global financial crisis on the relationship between financial distress and corporate tax avoidance; considering the t-statistic, the coefficient of FDISS*GFC variable is significant. Regarding the discussion above, it is possible to confirm the third hypothesis. This means that the global financial crisis has a positive and significant impact on the relationship between financial distress and corporate tax avoidance. In other words, the rise of global financial crisis intensifies the relationship between financial distress and corporate tax avoidance.

Table 4: the results of the second model estimation

$$CTA = \beta_0 + \beta_1 FDISS + \beta_2 GFC + \beta_3 GFC * FDISS + \beta_4 FAGE + \beta_5 SIZE + \beta_6 LEV + \beta_7 CINT + \beta_8 RDINT + \beta_9 INVINT + \beta_{10} THAV + \beta_{11} MKTBK + \varepsilon.$$

Variable	Estimated coefficient	Standard error	t-statistic	p-value
C	-0.105430	0.024409	-4.319245	0.0000
FDISS	0.000796	0.000306	2.603570	0.0095
GFC	0.012037	0.002637	4.564445	0.0000
GFC * FDISS	0.000354	0.000241	1.470340	0.0153
FAGE	-0.004289	0.000793	-5.410755	0.0000
SIZE	0.026467	0.003128	8.460974	0.0000
LEV	-0.066001	0.030849	-2.139522	0.0328
CINT	-0.024339	0.028638	-0.849893	0.3957
RDINT	0.753255	0.305454	2.466015	0.0140
INVINT	0.094876	0.046718	2.030810	0.0427
THAV	0.000969	0.003015	0.321446	0.7480
MKTBK	5.41E-05	0.000171	0.316931	0.7514
Coefficient of determination	0.630			
Adjusted coefficient of determination	0.548			
Durbin-Watson	1.711			
f-statistic	7.7030			
Sig. (f-statistic)	0.0000			

Research limitations

The limitations of the present study are explained below:

A- The present research is carried out using the data pertaining to firms listed in TSE; investment firms, leasing, and insurance firms are not included in the studied population due to the certain nature of their activities. Therefore; the findings of the present study cannot be extended and generalized to all firms.

B- The items and accruals listed in financial statements are not adjusted with regard to the effects of inflation; since the studied business units have been founded in different times and have acquired their assets in different times, therefor the quality of listed items can affect the results obtained in this study and limit the capability of generalization of the findings.

However, we strongly believe that none of the above-mentioned limitations are potent enough to discredit the study, and the present research still has acceptable internal and external validity.

Conclusion

Taxation is a potentially challenging issue for stockholders in Iran. The policies and trends firms use for reduction or avoidance of taxes might be beneficial for their shareholders at first; however, since part of these taxes are used for construction of firms and laying out governmental infrastructures and social planning, these policies would in the long-run hurt the society [Sica, 2010].

Corporate tax avoidance is a concerning problem for authorities, auditors and legislators, shareholders, and the public. Authorities and tax legislators are interested to know about the existing conditions about aggressive taxation and methods to prevent tax avoidance.

On the other hand, corporate stockholders want to know whether the firm management is able to carry out its task of furthering the profits and wealth of the shareholders; they also want to know whether the management who deceives the government by avoiding taxation tries to deceive them as well. The stockholders expect the firm management to control the costs. Yet, the public need to know whether these firms and syndicates can be considered as good and fair citizens or not [Hosseinof & Kalim, 2012].

Considering the discussed issues, the present research seeks to find out whether financial distress and the global financial crisis affect corporate tax avoidance or not.The present research also seeks to find out whether the global financial crisis has any impact on the relationship between financial distress and corporate tax avoidance. In order to answer these questions, the research hypotheses have been examined and the findings are presented below:

Conclusions from the first hypothesis

According to this hypothesis, financial distress has a significant effect on corporate tax avoidance. In order to examine this hypothesis, a regression model using panel data method (fixed effects) has been employed; the results of model estimation are demonstrated in table 3. With the use of t-test, the significance of the estimated coefficient for FDISS variable has been examined; the result indicates that the estimated coefficient is significant. Also the p-value of the F-statistic shows that the whole model is significant. In general, at the 95% confidence level, the results suggest that there is a positive and significant relationship between financial distress and corporate tax avoidance.In other words, intensification of financial distress in a firm will lead to increase in corporate tax avoidance. These findings are in alignment with those of the study by Richardson et al. (2015).

Conclusions from the second hypothesis

According to this hypothesis, global financial crisis has a significant relationship with corporate tax avoidance. In order to examine this hypothesis, a regression model using panel data method (fixed effects) has been employed; the results of model estimation are demonstrated in table 4.

With the use of t-test, the significance of the estimated coefficient for GFC variable has been examined; the result indicates that the estimated coefficient is significant. Also the p-value of the F-statistic shows that the whole model is credible.

In the end, at the 95% confidence level, the results show that there is a positive and significant relationship between the global financial crisis and corporate tax avoidance.In other words, the rise of global financial crisis leads to increase in corporate tax avoidance. These findings correspond to the findings by Richardson et al. (2015).

Conclusions from the second hypothesis

According to this hypothesis, the global financial crisis has a positive impact on the relationship between financial distress and corporate tax avoidance. In order to examine this hypothesis, a regression model using panel data method (fixed effects) has been employed; the results of model estimation are demonstrated in table 4. With the use of t-test, the significance of the estimated coefficient for GFC*FDISS variable has been investigated; the result shows that the estimated coefficient is significant. Also the p-value of the F-statistic shows that the whole model is significant. In general, at the 95% confidence level, the results show that the global financial crisis has a positive and significant impact on the relationship between financial distress and corporate tax avoidance.In other words, the rise of global financial crisis intensifies the relationship between financial distress and corporate tax avoidance. These findings correspond to those of the study by Richardson et al. (2015).

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