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Effective factors on the determination of audit fees in Iran

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Abstract

One of the issues that most companies and the independent auditors encounter refers to determining the amount of audit fees to the conclusion of contract for the annual financial statement audit of companies. The auditor should naturally consider the probability of audit duration more than anything. Since the determination of the exact time to do work (before starting work) is not possible, auditors only rely on providing an estimate of fee. This estimate is generally determined by some effective factors in the extent of audit work. This study aims to investigate the effective factors on determination of the company's audit fee and data of accepted companies in the stock exchange in 2000 to 2007 is used. Among the 1380 companies, the 30 industries existed in stock exchange are used. Multivariate regression model to analyze the data and the t-student test to test the meaningfulness of hypotheses are used. The results indicate that the factors of company size, the ratio of debt and the auditortype on audit fees are effective in determining audit fees and inherent risk has no influence on determining audit fees.

Keywords: audit fees, debt ratio, company size, inherent risk, the auditor type

Introduction

The generalization of economic enterprises, financing (borrowing) through public participation and privatization of governmental sectors and covered enterprises in recent years are some of the major factors in fundamental changes of economic environment in Iran. In such circumstances, the favorable transparency and quality of financial and non-financial information which is the basis for economic decisions of potential and actual investors and lenders have major importance. In a free economy, this mechanism is provided in the form of financial audit and by the independent auditors. The main reason for the existence of an independent audit profession from the perspective of agency theory is the duty of accreditation (Yeganeh, 2005). Implementation of this role puts auditors in a unique and very important position in society.The economic benefits of auditor will be provided via fees that are earned from the conclusion of contract with employers. Auditors use various factors for audit services pricing and many studies have been conducted in relation to the identification and evaluation of these factors (Shander and Shim, 1997). Descriptive factors that are considered in most studies include the risk, size and complexity of operations of the investigated unit (Shander *et al*, 1997). In this regard, Defound *et al*.(2000) have stated that the models based on these variables have high descriptive power and have been strengthened through the samples, countries and time periods. Studies conducted in various countries which try to investigate the effective factors on how audit servicespricing, have presented different independent variables as effective factors on audit fees (Ferdinand & Charls, 1998; Menon & Viliamz, 2001).

Management authorities, the need to monitor the performance of management and professional judgment have proposed the independent auditor (Ferdinand & Charls, 1998). In order to use audit services,an amount should be paidas audit fee.This amount is recommended by the auditor and according to the assessment or the risk and amount of audit work.Its approval is the responsibility of General Assembly of shareholders. Identifying the effective factors on audit fees were always consideredby accounting researchers as well as the audit institutions.This study seeks to identify effective factors on audit fees.

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Research Background

A lot of researches were conducted on determination criteria of audit feein various countries. First time, Simunic(1980) assessed the multivariate effect on the audit service fee. Early research on audit fees carried in developed countries such as America, Australia and the UK and subsequently also in other countries the effective criteria on audit fee were tested.

Francis *et al* (1996) examined the effective criteria on audit fees in Bangladesh country and concluded that the large companies use the famous auditors. Therefore these companies to earn a better reputation among investors are willing to pay more fees.

Gram Link *et al* (2000) in a research concluded that the industrial specialty of audit instituteis effective on quality of financial reporting. These investigators stated that audit institutions perform the audit process in less time and with higher quality. Sometimes the employers pay fees even higher than the custom in return for these advantages.

Taylor *et al* (1999) investigated the effect of micro elements (including the characteristics of the auditor and the audited unit) and macroeconomic (legislation, the disclosure rate and proposed claims against auditors) on audit services' fees in 20 different countries and at the international level. According to the results environmental conditions (legislation, the disclosure rate and proposed claims against auditors) influence on the fluctuations of audit fees in the global market of audit services and there is a direct relationship between the desire for more legislation and higher levels of disclosure and further proposed claims against auditors with higher fees of audit services.

David Hay (2004) evaluated the effect of firm size and debt ratio and suggests that the larger the firm size is the higher audit fees and the higher the debt ratio is the higher audit fees.

Rajabi (2005), by offering a model of effective factors on pricing of audit services, has studied this issue that whether the audit profession can supply its benefitsby offering audit services or not. The results indicated that the audit profession did not have enough power in terms of audit fees in 2001 and 2002 in Iran and could not completely supply its direct economic benefits. Based on these results, the obtained fee has been less than the expected rate because of possible reasons such as reducing the profit margin of audit projects, implementation of procedures with low cost and deviation of auditing standards.

AlaviTabari (2003) has studied the determinant factors of internal audit fee and independent audit. The purpose of this study is to evaluate the effectiveness rate of internal audit on independent audit fees. The result of this study shows that the proposed models about determinant factors of audit services fee are consistent with the statistical information of Iran and also empirical evidence confirms the relationship between existence of internal audit and its decreasing effect on independent audit fee.

Research hypotheses

Therefore, to determine the effective factors on audit fee, the following hypotheses are tested:

1. There is a significant relationship between firm size and the amount of audit fee.
2. There is a significant relationship between the firm debt ratios and the amount of audit fee.
3. There is a significant relationship between inherent risk and the amount of audit fee.
4. There is a significant relationship between type of auditor and the amount of audit fee.

Methodology

This study in terms of aim is among the applied researches and in terms of method is a correlation research. In this study, first via the theoretical and library studies the subject literature and background of study are considered. Then the required data of this study is gathered through the published financial statements by firms and reports along with financial statements which are developed via the research management site (www.rdis.ir) and Islamic studies of the Stock Exchange, CDs available in the Stockmarket and the relevant software. In the next step, the univariate regression and the test to compare two statistical populations means was used to examine the variables and finally themultivariable regression model is used in this study to assess the impact of intended variables on audit fee.

Data Collection Methods

The required data of this study are assembled via the published financial statements of companies and reports along with financial statements that are gathered through the Tehran Stock Exchange site, CDs andsoftware containing financial information of companies accepted in the available Stock Exchange in market.

Statistical Population and Sampling Method

Statistical population of this study consists of all accepted companies in Tehran Stock Exchange. Sample firms have been selectedamong the statistical

population firms that have the following conditions:

1. Do not belong to the investment andbank type.

2. The information associated withthe required variablesbe disclosed incompanies financial statements to perform the research.

*Location domain:*The location domain of this study is theaccepted companies in Tehran Stock Exchange.

*Time domain:*The time domain of this study encompasses the years 2000 to 2007.

Data Analysis Methods

To test the intended hypotheses, two regression methods(simple or univariate regression and multivariate regression) and the comparison test of two statistical populations' meanshave been used. Simple regression method, in absence of other independent variables, indicates the effect of each independent variable on the dependent variable, but multivariate regression investigates the effect of all independent variables at the same time (due to the interactions between the independent variables) with the dependent variable.The Student t-test is used to test the meaningfulness of hypotheses and finally complementary tests to assess the validity and reliability of the regression results will be applied. This study seeks to demonstrate the effective factors on determination of audit fee.

First Hypothesis

• There is no significant relationship between firm size and the amount of audit fee.H0: B=0

• There is a significant relationship between firm size and the amount of audit fee.H1: B≠0

Second Hypothesis

• There is no significant relationship between the firm debt ratiosand the amount of audit fee. H0: B=0

• There is a significant relationship between the firm debt ratiosand the amount of audit fee. H1: B≠0

Third Hypothesis

• There is no significant relationship between inherent risk and the amount of audit fee. H0: B=0

• There is a significant relationship between inherent risk and the amount of audit fee. H1: B≠0

Fourth Hypothesis

• There is no significant relationship between type of auditorand the amount of audit fee.B≠0

• There is a significant relationship between type of auditorand the amount of audit fee. H1: B≠0

The regression model to test the above hypotheses is as follows:

$$Lnfi = \alpha + \beta 1 lnAi + \beta 2 lev + \beta 3 inh + \beta 4 Auditor + Industryi,t + Yeari + €I,t$$

In the above regression model:

Lnfi: logarithm of audit fees

lnAi: logarithm of firm size which is the total assets.

Industryi, t: industry code for firm *i* for year *t*,

Yeari: year variable for firm*i*

Lev = debt ratio which includes the ratio of total debt to total assets

Inh = inherent risk that includes the ratio of goods inventory to total assets

Auditor = Type of auditor that includes the number1 to the audit organization and number 0 to non-audit organization

€ I, t: period error in year*t* for firm *i,*

α*:*Latitudefrom the source (constant amount)

β*:* regression coefficient

Research variables

Each study has a number of independent and dependent Variables. The present study has four hypotheses and four models. Subsequently, independent variables, dependent variables and control variables are separately presented for each of the models.

Dependent variable: audit fees

Independent variable: The independent variable ofthe first hypothesis contains the total asset, the independent variable of the second hypothesis is the ratio of debts to total assets, the independent variable of the third hypothesis is the inherent risk which contains the ratio of goods inventory to total assets and the fourth hypothesis variable is the type of auditor that contains audit organization and private audit firms.

Control variables is used in order to control thechange in amount ofaudit fees during the research period and also the difference in the amount of audit fees between the various industries of synthetic variables (0.1) year (year) and industry (ind).

Sample Distribution

Sample distribution based on the industry

In this study, 220 different industries have been examined. Machinery industry and equipments with 22 numbers of cases constitutes 1% of the total sample and animal husbandryindustries, wood products, petroleum products, radio, multi-threaded, computer, coal and leather products with only 1 case constitutes the 0.004% of the total sample.

The annual distribution of sample

This shows the statistical sample distribution during the temporal period (2000-2007). Based on the obtained data, the selected sample is evenly distributed between various years of investigated period of this study.

According to data obtained from most of the samples associated with year 2004, with 35 samples constitutes the 0.159% of total sample size and year 2000 with 22 cases constitutes only 1% of thetotal sample.

Descriptive statistics

Table 1 shows the descriptive statistic of the variables used in this study. The statistics of mean, median, standard deviation and minimum and maximum of values are given for each variable.

Table 1. Descriptive statistics for sample companies

Variables	Number	Minimum	Maximum	Median	Mean	SD
assests	1373	450	27140360	150394,000	429536,84	1291778,9
Auditor	1373	0	1	.00	1,00	.493
inh	1373	68	3156712	30271,50	7796,37	172334,16
lev	1373	321	1309640	96871,000	2749,22	784450,19
fees	1373	2	3800	135,000	198,25	299,633

The mean of audit fee is 198.25 million rials which represents changes of audit fee in sample companies. The mean of debt ratio is equal to 2749.22 million rials, mean of the inherent risk 7796.37 million rials and mean of the total assets is 429536.84 million rials.

Fees: The audit fee paid to audit institutions.

Assets: Total Assets that represents the firm size.

Lev: the debt ratio which consists of the ratio of debts to total assets

Inh: inherent risk which consists of the ratio of goods inventory to total assets

Auditor: Auditor type, including the number 1 for the audit organization and 0 for non-auditingorganization.

Correlation Matrix

The purpose of investigating the correlation matrix is to providing an initial picture of the relationship between the intended variables and initial evidencesconcerning the correlation between the independent variables in this study. The correlation matrix between the variables used in this study is presented in Table 2.

As can be seen, the correlation coefficient rate between audit fee (ln fee) and auditor type (Auditor)is equal to0.182,which in statistical term was in significant level of 1%. In other words, firms that are audited by audit organizationspaid more audit fee.

The correlation coefficient between audit fee (ln fee) and firm size (ln Ass) is equal to 0.500 which was in significant level of 1% and this means that the larger firm size is the more audit fees.

Table 2. Pearson correlation coefficient among the variables

	lnfee	type	lev	Inh	lnAss
Lnfee	1				
Auditor	.182** (.000)	1			
Lev	.032* .135))	.009 (.380)	1		
Inh	-.048* .049))	.082 .002))	.057 .025))	1	
LnAss	.500** (.000)	.28 .166))	.054 (.030)	-.181 (.000)	**1**

*P is significant at 0.05 ** P is significant at 0.001

The correlation coefficient between audit fee (ln fee)and audit inherent risk (inh) is equal to 0.048 which was in significant level of 5% and this means that the higher inherent risk is the more audit fee.

The correlation coefficient between audit fee (ln fee)and debt ratio (lev) is equal to 0.032 which was in significant level of 5%and this means that the more debt ratio is the more audit fee.

Data Analysis

The univariate analysis is usedin order to obtain basic information regarding how relationship between the variablesand then the multivariate analysis is used to examine this relationship.

Univariate Analysis

This section compares the audit fee at different levels of the desired variables. Therefore, at first, companies are dividedinto three categories ofbig, medium and smalland then began to compare the mean difference of audit fee at different levels of the desired variables.

Table 3. t- test difference

Small	Average	Large	company Variable
-169/252 *	123/21	021/287- *	lnAss
-234/55 *	-234/44 *	234/228- *	**lev**
-432/545 *	-432/333 *	123/189- *	**inh**
576/95	-259/098 *	187/254- *	auditor

*P is significant at 0.05.

Lnass= According to Table 3, and comparison of audit feesat three level of firm size, it can be seen that only the difference in the mean of the audit fee amount,among greater level is significant and importantin statistical term (at the error level of α= =5%).Thereforeby considering other factors constant and based on the results of univariate analysis, it can be said that by increasing the firm size, the amount of audit fee will be increased.

Lev = Table 3 shows that the firms with higher levels of debt ratio, alsohave the more audit fee(significant at level of 5%). Therefore by considering other factors constantand based on the univariate analysis results, it can be said that by increasing the debt ratio, the amount of audit fee increases, too.

Inh = Table 3 indicates that companies with higher level of inherent risk, alsohave the more audit fee (significant at level of 5%). So, byconstant consideration of other factors and based on the univariate analysis results, itcan be said thatby increasing the inherent risk,the amount of audit fee will be increased.

Auditor = Table 4 indicates that companies with higher level ofinherent risk, alsohave the more audit fee (significant at level of 5%). So, byconstant consideration of other factors and based on the univariate analysis results, itcan be said thatby increasing the inherent risk,the amount of audit fee will be increased.

Table 4.t-test and Fisher test

t-test					Fisher test				
Level of confidence		Standard error of measurement	Mean difference	P	df	t	P	F	The result for all periods
Maximum	Minimum								
-.18806	-.36934	.04621	-.2787	0.000	1369	-6,032	.15	5,919	The result by supposing the equality of variance
-.18717	-.37023	.04665	-.2787	0.000	1188,258	-5,974			The result by supposing the inequality of variance

In summary, the results obtained from the univariate analysis show that the firms that pay higher fee, have greater size and higher inherent risk and debt ratio and also companies that are audited by the audit organization, pay moreaudit fee.But it should be noted that these results have been determined regardless of the interaction of these factors on audit fee. Audit fee also may be influenced by industry type, year, complexity, profitability and financial yearend. Therefore, in multivariate analysis the impact of all these factors will be investigated simultaneously.

Multivariate analysis

As it was expressed, the multivariate regression model is usedto analyze the impact of independent variables on audit fees.

The hypotheses study results with regard to the multivariate regression model

*H1:*There is a significant relationship between firm size and audit fee.

According to the Table 5, the coefficient of firm size variable in the model is positive and significant in level of 5% and this means that the companies with larger size

pay more auditfee. Therefore, the null hypothesis H0 is rejected and hypothesis H1 is accepted. Namely, there is a positive relationship between firm size and audit fee.

*H2:*There is a significant relationship between debt ratio and audit fee. According to the Table 5, the coefficient of debt ratio variable in the model is positive and significant in level of 5% and this means that the companies withhigher debt ratio pay more auditfee. Therefore, the null hypothesis H0 is rejected and hypothesis H1 is accepted. Namely, there is a positive relationship betweenthe debt ratio and audit fee.

*H3:*There is a significant relationship between inherent risk and the amount of audit fee.

According to the Table 5, the coefficient of inherent risk variable in the model is positive and significant in level of 5% and this means that the companies withhigher inherent risk pay more auditfee. Therefore, the null hypothesis H0 is rejected and hypothesis H1 is accepted. Namely, there is a positive relationship between inherent risk and audit fee.

*H4:*There is a significant relationship between type of auditor and the amount of audit fee.

According to the Table 5, the coefficient ofauditortype variable in the model is positive and with regard to thestatistics 6.86, F is significant in level of 5% and this means that the companies that are audited by audit organization pay more audit fee. Therefore, the null hypothesis H0 is rejected and hypothesis H1 is accepted. Namely, there is a positive relationship between theauditortype and audit fee.

The Dummy Variableis usedto control the changes in audit fee in the different industry, as well as their changes in this study years.Also audit fee changes have been studieddue to other causes, such as profitability and the complexity and financial season end.

Since during the using of Dummy Variables, the number (n-1) variablefrom the total Dummy Variables is entered to the regression model, so in this research the machinery industry and equipments(IND1) is selected as the basic industry and year 2000is chosen as the base year, which are not included in the regression model.

The results of these Control Variables in Table 6 indicates that except the 15 industries (industries related to food industry except the sugar (IND7), the automotive products industry (IND8) medical devices industry (IND9), communication devices industry(IND10), electrical devices industry (IND11), cement industry (IND13), the radio industry (IND14), multidisciplinary industry (IND15), other minerals industry (IND16), ceramic and tile industry (IND17), sugar industry (IND20), transportation industry (IND22), the computer industry (IND23), other transportation devices industry (IND28), the coefficients of all variables were positive and significant and this indicates that the audit fee in these industries is more than the basic industry (machinery industry and equipments) (IND1).

Table 5. The results of regression analysis

Independent variable	B	T	P-value
Fixed rate	3545/225	4/54	0/000
lnAss	0001218/0	0/56	0/034
lev	256/6775	1/243	0/011
inh	243/3560	4/34	0/001
auditor	873/5540	2/43	0/029
LND2	1218/344	2/34*	0/029
LND3	4550/221	0/23*	0/034
LND4	1146/244	0/98	0/098
LND5	2719/488	4/098	0/145
LND6	5540/873	4/345	0/05
LND7	1111/133-	2/23*	0/104
LND8	5025/188	1/243	0/523
LND9	4416/311	3/34	0/562
LND10	2366/166	2/67	0/256
LND11	2667/223	3/332*	0/63
LND12	1822/344	2/43	0/005
LND13	6775/256	2/657	0/234
LND14	945/328	4/34	0/354
LND15	5432/59	4/12	0/603
LND16	6357/539	1/001	0/643
LND17	3560/243	1/43*	0/42
LND18	754/345	4/76	0/021
LND19	256/45	3/33	0/043
LND20	3425/345	2/43	0/82
LND21	7655/110	3/88*	0/066
LND22	3469/65	2/65	0/643
LND23	3562/236	4/15	0/870
LND24	5658/343	3/23	0/053
LND25	6544/543	3/45*	0/022
LND26	543/662	1/67	0/12
LND27	6574/243	2/03	0/023
IND28	872/98	3/45	0/65
Year80	8767/254	3/67*	0/025
Year81	875/343	2/04*	0/036
Year82	098/190	1/98	0/042
Year83	654/327	3/54*	0/202
Year84	2550/221	5/65*	0/46
Year85	879/128	1/33*	0/0154
Year86	675/435	4/2*	0/025
ADJ.R=0/4418			
F_test=6/12			
N=220			

Table 6. Correlation coefficient of independent variables

Independent variable	VIF
Lnass	1.185
Lev	1.111
Inh	1.079
Auditor	1.173

Also, the results of the control variables in Table 6show that the coefficients of all variables except for the years 2004 and 2004 were positive and significant and this indicates the increase trend in amount of audit fee during the period of 2000 to 2007.

Study of correlation between independent variables

This section examines the correlation status between the independent variables in the regression models.The existence of correlations between the independent variables in the regression model may lead to incorrect estimates of the sign and significance level of the regression coefficients, unrealistic estimates ofR2 and unreliable significant tests of T and F and therefore raise erroneous conclusions from the relationship between the dependent and independent variables (Kachrati, 2003).

The statistical techniqueof Variance Information Factor(VIF) is usedto examine the correlation between the independent variables.The test results (VIF) are presented in Table 8.If the VIF regression model be less than 10, indicates the weak correlation between the independent variables (Balsali *et al*, 1980, Heir, Anderson, Tathem and Black, 1998). Therefore with regard to the VIF of independent variables existed in the regression modelswere less than 2 in this study, it can be concluded thatthere is nota high correlation between the independent variables existed in this study.

Results and Discussion

In this research whichexamines the effectivefactors on audit fee in Iran, the following hypotheses were tested:

First hypothesis: There is significant relationship between firm size and audit fee.

The results obtained from this hypothesistesting indicate significant and positive relationship between firm size and audit fee ofaccepted companies in Tehran Stock Exchange.This means that the larger the firm size is the more audit fee.

Second hypothesis: There is significant relationship between debt ratio and audit fee. Theobtained results of this hypothesistesting indicate significant and positive relationship between the debt ratioand audit fee ofaccepted companies in Tehran Stock Exchange.This means that the larger the debt ratio is the more audit fee.

Third Hypothesis: There is a significant relationship between inherent risk and audit fee.

The results of this hypothesis testing show positive and significant relationship between the inherent risk and audit fee ofaccepted companies in Tehran Stock Exchange. Namely, the more inherent risk is the more audit fee.

Fourth Hypothesis: There is a significant relationship between the auditor type and audit fee.

The results of this hypothesis testing show positive and significant relationship between the auditor type and audit fee ofaccepted companies in Tehran Stock Exchange. This means that the companies that are audited by audit organization pay more audit fee.Audit organization as a public entity in the providing services market, work acceptance and determination of the professional services fee enjoys thesafety margin which is inspired by the governmental structureand its coercive selection,through this organization, like the four largest accounting firm in the world which is conducted based on the some studies,has morphology in professional services feein the international arenatoward other competitors,gains more fee in the market of audit services fees in Iran than the competitors. Thus, there is a type of monopoly in the provision and pricing of services by audit organization.

Suggestions for further research

Some topics for future researches include the following:

- The effect of type and quality of audit work, type and efficiency of internal control systems on audit fee can be examined.
- The impact of how ownership on audit feecan be examined.
- The relationship between audit fee and its effective factors can be examined in the non-linear form.
- The effect of auditor change and existence of initial auditing issue on audit fee can be examined.
- The effect of time delay of audit report on audit feecan be examined.

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