

Specifying the mediating role of unknown factors of corporate governance caused by the tax gap on the relationship between the tax gap and the cost of equity

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Abstract

The purpose of this research is to quantify the unknown factors of corporate governance caused by the tax gap and to determine its mediating effect on the relationship between the tax gap and the cost of equity. The research sample includes 149 companies accepted in the Tehran Stock Exchange covering a period of seven years from March 2013 to March 2020. The results show that there is a significant relationship between the unknown factors of corporate governance and the tax gap. Therefore, the first hypothesis is confirmed and the results of the second hypothesis test show that the tax gap variable (independent variable) is not significant on the cost of equity variable in the fourth regression related to the second hypothesis, so the variable of the unknown factors of corporate governance plays a complete mediating role. In other words, the tax gap variable can only estimate the cost of equity mediated by the unknown factors of corporate governance. First, it is expected that the results of the research can develop the theoretical foundations of previous research on the tax domain. Second, the current research can provide useful information for capital market and tax legislators. Third, it can create new ideas for conducting future research in the tax field.

Keywords: Tax gap, unknown factors of corporate governance, cost of equity
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1 Introduction

Investors enter the stock market with the aim of obtaining returns and invest in the shares of companies. Therefore, in order to make investment decisions and allocate their resources, they try to identify the factors that affect their expected returns. For this purpose, investors try to estimate their expected returns by using the financial information of companies. The return that shareholders expect according to this information, in other words, the cost of equity, is considered for companies seeking capital. The cost of equity is important because it is a basis for comparing investment

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opportunities. Therefore, from a company's point of view, it is important to keep the cost of equity at a reasonable level [21].

During recent years, there have been major developments in the business environment in the global arena, which have left deep and numerous effects on the functioning and activities of companies. Among these developments, we can mention the separation of management from ownership. With the separation of ownership and management, managers manage the company as representatives of shareholders [10]. With the formation of an agency relationship, a conflict of interest between managers, shareholders and other stakeholders (including the government) is created, and it is potentially possible that managers take actions for their own interests and do not consider it necessary to consider the interests of shareholders and other stakeholders, which is called the agency problem [15]. One of the main beneficiaries of companies is the government, which provides a major part of its income sources through tax collection. Tax revenue plays a significant role in financing the government's expenses, and this enables the government to invest in the direction of prosperity, growth and economic prosperity. The major part of the taxes collected by the government comes from the performance tax of legal entities. In this regard, the government, which is one of the beneficiaries of companies, relies on the tax declarations that taxpayers prepare and submit to determine taxes [19]. Despite the government's reliance on taxpayers' declarations, in all countries, the declared tax is often not the same as the assessed tax, which is called the tax gap. The difference between the principles and rules governing accounting and financial and tax reporting causes this difference between express tax (based on accounting profit) and diagnostic tax (based on profit as the source of tax calculation) [14]. Corporate governance mechanisms affect the information that companies disclose to shareholders and other stakeholders and reduce the possibility of not fully and optimally disclosing information [12]. Corporate governance mechanisms have a direct relationship with the value created for shareholders [6]. It has a reducing effect on the company's debt cost [9] and has an inverse relationship with information asymmetry [8]. As a result, it can be expected that, while respecting the rights of all stakeholders, including the government, the tax gap will also decrease in these companies.

In previous researches, some of the factors affecting corporate governance and the tax gap have been examined, and what challenges us in this research and has not been mentioned in previous researches is the existence of conflict between managers and Beneficiaries include the government.

As one of the beneficiaries of the company, the government also seeks to maximize its benefits, i.e. diagnostic tax, and on the other hand, the company seeks to maximize its utility, i.e. tax avoidance, which is an indicator for measuring the tax gap. Therefore, the government's strategy is to create strong corporate governance and the company's strategy is to create a tax gap. By using various ways, such as managers' bonuses, in order to reduce the agency problem, shareholders effectively increase the cost of equity. In order to reduce agency risk and thus reduce the cost of equity, companies need to implement a set of internal corporate governance mechanisms. This mechanism is a set of activities that lead to ensuring transparency and fairness in the behavior of managers. In other words, internal corporate governance is willing to align the interests of investors and managers in a single direction and ensure that the company is managed in the interests of investors and shareholders as the main owners of the company. Corporate governance mechanisms reduce the agency problem in companies. The quality of these mechanisms is relative and varies from one company to another. The quality of corporate governance is assumed to exist in all stages of value creation in the company. One of the ways to create value is to reduce the cost of equity. Therefore, it is expected that corporate governance can be effective on equity [13].

According to the mentioned materials, the challenge facing the researcher in this section is whether there are unknown factors of corporate governance that are far from the reach of the researcher and remain unknown, while these unknown factors of governance a company can be effective on the tax gap. In this research, a model related to the tax gap is designed considering the factors of corporate governance, so that factors of corporate governance that are beyond the reach of the researcher can be identified, and then answer is given to question whether these unknown corporate governance factors can have a significant relationship with the tax gap, and finally it is investigated whether these unknown factors of corporate governance can play a mediating role on the relationship between the tax gap and the cost of equity.

2 Theoretical foundations and literature review

2.1 Theoretical foundations

Based on agency theory, it is assumed that managers may ignore the interests of shareholders, owners, and other stakeholders in order to maximize their utility, and endanger the interests of others in order to achieve their own interests [9]. One of the conflicts in the extra-organizational environment is the conflict of interest that exists between

managers and tax authorities (government). In the broad approaches of the company's management system, the government also plays a role as one of the main stakeholders of the company. Therefore, if the company's operations lead to profit, before any decision regarding this profit, the government's share of it must be calculated and paid under the title of tax [20]. Therefore, according to the laws and regulations, the payment of the government's share of the company's profits precedes the distribution of profits among the shareholders, and the government considers itself in a position even higher than the main shareholders of the company. Considering that paying taxes leads to a decrease in the value of the company as well as a decrease in the share of other beneficiaries including shareholders, it is natural for companies to use strategies to reduce the amount of tax payable, one of these strategies is avoiding It is a tax. In fact, this issue is due to the conflict that has arisen between the company and the government, which causes company managers to use financial reporting to create a tax gap [31].

In this regard, the government, as one of the beneficiaries of the companies, relies on the tax declarations prepared and submitted by the taxpayers to determine the tax. On the other hand, the companies and especially the companies admitted to the Tehran Stock Exchange must calculate the taxable profit and then the due tax according to the tax laws and regulations and express it in the tax declaration and submit it to the country's tax affairs organization. The tax officials must also process the taxpayer's submission declaration according to the tax laws and regulations, reflect the tax due in the assessment sheet and, upon the taxpayer's request, according to the provisions of Article 237 of the Direct Taxes Law, inform the taxpayer of the basis and legal documentation of the tax calculation. In such a situation, there may be signs in the company under investigation that affect the acceptance or rejection of the tax declaration by the tax officials [22]. These signs are the same factors of corporate governance that if its theoretical foundations acknowledge the observance of the rights of all stakeholders (which are called companies with strong corporate governance), it is expected that the taxable profit and the expressed tax which is identified according to the laws and regulations and is expressed in the tax declaration, to a large extent coincide with the taxable profit and the diagnostic and definitive tax by the tax officials, which is also determined according to the laws and regulations. Therefore, the strategies of the tax authorities regarding the trust in the accuracy of the tax declaration depend on the knowledge of the corporate governance status of the four taxpayers. Mutual relations between tax payer (company) and tax authorities (government) are analytically described as tax game. The tax game includes the strategic exchange between the company and the government, which can be considered tax avoidance, which is one of the indicators of the tax gap, as a strategic tool of the company against the government. On the other hand, the corporate governance is considered as a strategic tool of the government against the company [18, 29].

2.2 Literature review

So far, a lot of research has been done about Tehran Stock Exchange [2, 5, 17, 28]. In their research, Mohajeri et al. [23] investigated the tax expenditures of policy making and non-compliance in the value added tax system in Iran. According to their findings, the political gap and compliance are fluctuating and decreasing, and the provinces of Tehran, Khorasan Razavi, Bushehr, Fars, Alborz, Isfahan, and East Azerbaijan respectively have the highest share of the compliance gap, while the lower share of the compliance gap belongs to the provinces of Ilam, North and South Khorasan, and Kohgiluyeh and Boyer Ahmad provinces.

In their research, Yarahamdi et al. [32] studied the reasons for the gap between declared taxable income and diagnostic taxable income of non-manufacturing companies admitted to the Tehran Stock Exchange. The results of their research showed that the reasons for the difference between declared taxable income and diagnostic taxable income are non-observance of direct taxes law by taxpayers, non-observance of accounting standards by taxpayers, lack of sufficient documentation (including expenses) , tax exemptions and incentives) by taxpayers, non-application and application of circulars, instructions and tax regulations by taxpayers.

In their research, Parsa et al. [27] investigated the impact of economic sanctions and political connections on incomes and tax gap: a test of political economy theory. The results of their research showed that economic sanctions increase the tax gap and decrease tax revenues. In the conditions of economic sanctions, companies turn to the hidden economy and the underground economy in order to avoid paying taxes and keep cash in the company.

In their research, Mohebbi and Ahmadi [25] investigated the impact of corporate governance mechanisms on the cost of shareholders' rights. The findings of their research indicate the existence of a negative and significant relationship between the percentage of non-executive directors of the board of directors and the size of the company with the cost of equity capital and the absence of a significant relationship between the variables of the percentage of institutional investors and the separation of the duties of the CEO from the chairman of the board. It is the board.

In their research, Gavius et al. [13] examined whether tax avoidance increases or decreases when tax enforcement is stronger. They stated in their research that if stronger enforcement leads to greater tax compliance, we expect to

see a reduction in tax avoidance practices across all companies. As they expected, tax avoidance in firms that do not adopt CSR policies decreased in response to this exogenous change, but surprisingly, in companies who adopt the policy of social responsibility, it has been increased. They contribute to the literature by using an exogenous shock to tax enforcement to clarify whether companies that adopt CSR policies report in a responsible manner in their tax reports act acceptable in society or not.

In their research titled spatial dynamic modeling of the tax gap, Alfonso et al. [4] investigated the factors of the regional tax gap in Italy. They estimated the spatial correlation during 2001-2011 using the dynamic spatial panel model. The research results indicate the existence of a relationship between the determining factors such as internal and operational factors of geographical areas with the relative efficiency of tax avoidance.

Ferris et al. [11] investigated the impact of managerial social capital on the cost of equity of companies in 52 different countries during the years 1999 to 2012. The findings of their research showed that there is a negative and significant relationship between social capital and cost of equity.

3 Research hypotheses

1. There is a significant relationship between the unknown factors of corporate governance and the tax gap.
2. The unknown factors of corporate governance play a mediating role on the relationship between the tax gap and the cost of equity.

4 Research methodology

The study is a correlational descriptive research and regression of mixed data was used to test the hypotheses, and it is practical in terms of purpose because it is done with the purpose of applying these results in the capital market. The geographical scope of the research is the companies admitted to the Tehran Stock Exchange and the time scope is the March 2013 to 2020 March. In this research, 149 companies were considered as a statistical sample of the systematic elimination method, and to collect the required data, the information of the financial statements and the RAHAVARD NOVIN software were used. Finally, the research hypotheses were tested using EViews software.

5 Research model

This research is based on the summary of various researches, including the research of Gallemore and Labro [12] and based on this definition, which states that the rest of the designed model of the factors affecting the tax gap as unknown factors that can affect the tax gap.

First model:

$$TA_{i,t} = \alpha_0 + \beta_1 UnCG_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Size_{i,t} + \beta_4 Sale_{i,t} + \beta_5 ROA_{i,t} + \varepsilon_{i,t} \quad (5.1)$$

In the above model:

where:

TA: represents the tax gap and is used as a dependent variable in the model. This variable is obtained from the difference between expressed tax (declared) and determined tax (diagnostic, definitive or final opinions of the Supreme Tax Council), information contained in the income tax chart, explanatory notes of the basic financial statements. The priority in choosing a fixed tax is a fixed tax, and if the tax is not yet fixed, a diagnostic tax will be used [1].

UnCG: represents the unknown factors of corporate governance and is used as an independent variable in the model, to more accurately measure the design of the tax gap model to identify the variables that are far from the researcher's reach.

At first, we design the tax gap model by using the factors affecting the tax gap caused by corporate governance. In the next step, we design the final model of the tax gap by removing factors from corporate governance that have no statistically significant relationship with the tax gap, and finally the error sentence of the designed model as factors of the tax gap caused by corporate governance. We consider that they are far from the researcher's reach.

In order to obtain unknown values of corporate governance that are obtained from the design of the corporate governance model and may affect the tax gap, we must first test the following model:

$$TA_{i,t} = \alpha_0 + \beta_1 ManageA_{i,t} + \beta_2 IQ_{i,t} + \beta_3 MRew_{i,t} + \beta_4 FW_{i,t} + \beta_5 MO_{i,t} + \beta_6 CON_{i,t} + \beta_7 Cost_{i,t} + \beta_8 Board\ Size_{i,t} + \beta_9 PNEXEC_{i,t} + \beta_{10} Ag_{i,t} + \varepsilon_{i,t} \quad (5.2)$$

where:

TA: This variable is obtained from the difference between the expressed tax (declared) and the determined tax (diagnostic, definitive or final opinions of the Supreme Tax Council), the information contained in the income tax form, the explanatory notes of the basic financial statements. The priority in choosing a fixed tax is a fixed tax, and if the tax has not yet been determined, a diagnostic tax will be used [1].

ManageA: shows management ability and is calculated from the percentage of sales growth [16].

IO: Indicates institutional ownership. Institutional ownership or institutional investors refers to large investors such as banks, insurance companies, pension funds, and investment companies, and it is calculated by dividing the amount of shares held by institutional investors by the total number of issued shares. it will be counted.

MRew: indicates the remuneration of managers and is calculated using the natural logarithm of the remuneration of the CEO and the board of directors [21].

FW: Indicates family ownership. If the ownership of the company is family, code one and otherwise code zero.

MO: Indicates managerial ownership. This variable is calculated as the total percentage of shares of each member of the board of directors in the company. Managerial ownership is calculated by dividing the number of shares held by the board of directors by the total number of issued shares of the company [3].

CON: indicates the concentration of ownership and the total percentage of shares of shareholders who own more than 5% of the company's shares [24].

Cost: represents the agency cost and is calculated by dividing annual sales by total assets [26].

Board size: indicates the size of the board of directors and is calculated from the size of the members of the board of directors.

PNEXEC: indicates the independence of the board of directors, and the ratio of the number of non-executive directors to the total number of board members is used to measure the independence of the board of directors.

Ag: According to Article 4 of the Public Accounts Law of the country, a state company is an organizational unit that is formed with the permission of the law and more than 50% of its shares belong directly or indirectly to the government. In this research, a virtual variable has been placed for the variable of government dependence in such a way that if a company owns more than 50% of its shares, the value will be one and otherwise it will be zero.

ε represents the unknown factors of corporate governance, which is calculated from the relationship between the influencing factors of corporate governance on the tax gap [12].

The control variables of the research are as follows:

Lev: indicates the financial leverage,

Size: indicates the size of the company,

Sale: indicates changes in the amount of sales,

ROA: indicates the rate of return on assets.

Second model:

$$\begin{aligned} CEC_{it} &= \alpha_0 + \beta_1 TA_{it} + \beta_2 Lev_{it} + \beta_3 Size_{it} + \beta_4 Sale_{it} + \beta_5 ROA_{it} + \varepsilon_{it} \\ UnCG_{it} &= \alpha_0 + \beta_1 TA_{it} + \beta_2 Lev_{it} + \beta_3 Size_{it} + \beta_4 Sale_{it} + \beta_5 ROA_{it} + \varepsilon_{it} \\ CEC_{it} &= \alpha_0 + \beta_1 UnCG_{it} + \beta_2 Lev_{it} + \beta_3 Size_{it} + \beta_4 Sale_{it} + \beta_5 ROA_{it} + \varepsilon_{it} \\ CEC_{it\ it} &= \alpha_0 + \beta_1 TA_{it} + \beta_2 UnCG_{it} + \beta_3 Lev_{it} + \beta_4 Size_{it} + \beta_5 Sale_{it} + \beta_6 ROA_{it} + \varepsilon_{it} \end{aligned} \quad (5.3)$$

In the above model:

CEC: represents the cost of equity and is used as an independent variable in the model and is calculated using Gordon's model, which is the result of dividing next year's profit by this year's stock price plus the dividend growth rate [30].

TA: represents the tax gap and is used as an independent variable in the model.

Un CG: represents the unknown factors of corporate governance and is used as a mediator variable in the model, the control variables of the research in the model are related to the second hypothesis. It is as follows:

Lev: indicates the financial leverage

Size: indicates the size of the company

Sale: indicates the changes in the amount of sales

ROA: indicates the rate of return on assets.

6 Research findings

6.1 Descriptive statistics related to the measurement of research variables

Table 1 indicates descriptive statistics related to the measurement of research variables.

Table 1: Descriptive statistics of variables

Variable	Abbreviation	Mean	Median	Standard deviation	Maximum	Minimum	Skewness	Kurtosis
The cost of equity	CEC	0.08	0.15	2.37	9.48	-72.69	-28.00	852.55
Tax gap	TA	0.25	0.14	0.27	0.99	0.00	1.01	2.89
Unknown factors of corporate governance	Un CG	4.79E-12	-0.90	0.27	0.75	-0.40	0.98	2.89
Financial Leverage	Lev	0.57	0.57	0.19	1.56	0.03	0.25	3.79
Size of the company	Size	63.14	14.38	1.52	20.18	11.03	0.98	4.23
Changes in sales volume	Sale	0.26	0.20	0.44	6.55	-0.71	3.86	44.67
Rate of return on assets	ROA	0.11	0.10	0.13	0.62	-0.40	0.57	4.11

The most important central index is the mean, which indicates the balance point and the center of gravity of the distribution, and is a suitable index to show the centrality of the data and shows that most of the data are concentrated around this point. The median is one of the central indicators that shows the state of the society. As shown in table 1, the median of the CEC variable is equal to 0.15, which shows that half of the data are less than this value and the other half are more than this value. Dispersion parameters are, in general, a measure to determine the extent of data dispersion from each other or the extent of their dispersion relative to the mean. Among the most important dispersion parameters is the standard deviation. The value of this parameter for the ROA variable is 0.13 while it is 2.37 for the CEC variable, which shows that ROA and CEC have the lowest and highest dispersion among the variables, respectively. The degree of asymmetry of the abundance curve is called skewness. If the coefficient of skewness is zero, the society is completely symmetrical, and if the coefficient is positive, there will be a skew to the right, and if it is negative, there will be a skew to the left. For example, the skewness coefficient of the CEC variable is equal to -0.28, which means that this variable is skewed to the left and deviates from the center of symmetry by this amount. The amount of tailedness of the abundance curve to the standard normal curve is called kurtosis, if the kurtosis is around zero, the abundance curve will be balanced and normal in terms of elongation, if this value is positive, the curve is prominent and if it is negative, the curve is wide. The kurtosis of all the variables of this model is positive.

6.2 Tests related to the designed model of the tax gap caused by corporate governance

Gallemore and Labro (2015) state that: "the rest of the designed models of factors affecting the tax gap caused by corporate governance are unknown factors of corporate governance that can affect the tax gap". Therefore, in the first stage, taking into consideration the designed model of the tax gap based on corporate governance [12], the classical assumptions are tested and the results of the proposed hypotheses of this part are presented in 5.1 to obtain the error sentences related to the proposed model and consider it as a representative of the unknown factors of corporate governance.

6.3 Estimation of the model by the mixed data method

In this research, the hypotheses related to the measurement of the unknown factors of corporate governance have been tested with the help of a regression model based on mixed data after the initial test and the elimination of the factors that do not have a significant relationship with the tax gap. F- Leimer test is used to determine the type of estimation method (mixed or panel data method) and Hausman test is used to determine the type of model (random or fixed effects).

Table 2: F- Leimer test and Hausman test

F-Limer test			Hausman Test		
Statistic	Probability Value	Model	Statistic	Probability Value	Pattern Type
2.61	0.00	Panel	10.62	0.15	Random Effects

The results of these two tests, which are included in Table 2, show that the significance level of F- Limer test is less than 0.05 and Hausman’s test is greater than 0.05, hence the panel model with random effects is chosen for it.

6.4 The results of the model test related to the identification of unknown factors of corporate governance

The results of the model test according to the existence of variance heterogeneity using the generalized least square method (EGLS) are presented in Table 3.

Table 3: Hypothesis test results

$TA_{i,t} = \alpha_0 + \beta_1 ManageA_{i,t} + \beta_2 IQ_{i,t} + \beta_3 MRew_{i,t} + \beta_4 FW_{i,t} + \beta_5 MO_{i,t} + \beta_6 CON_{i,t} + \beta_7 Cost_{i,t} + \beta_8 Board\ Size_{i,t} + \beta_9 PNEXEC_{i,t} + \beta_{10} Ag_{i,t} + \epsilon_{i,t}$					
1.001	The coefficient value	Manage A			
(0.04)	Significance level	(Management ability)			
0.40	The coefficient value	IO			
(0.00)	Significance level	(Institutional ownership)			
-3.42	The coefficient value	MRev			
(0.01)	Significance level	(Managers’ reward)			
	The coefficient value	FW			
	Significance level	(Family ownership)			
-0.72	The coefficient value	MO			
(0.00)	Significance level	(Management Ownership)			
-8.11	The coefficient value	CON			Independent variable
(0.00)	Significance level	(Concentration of ownership)			
-0.12	The coefficient value	Cost			
(0.00)	Significance level	(Agency Cost)			
	The coefficient value	Board			
	Significance level	(Board size)			
	The coefficient value	PNEXEC			
	Significance level	(Independence of the board of directors)			
-1.76	The coefficient value	Ag			
(0.00)	Significance level	(Government ownership)			
0.16	The coefficient value	C			
(0.00)	Significance level	(Intercept)			
0.16	The coefficient value		F-Statistics		
(0.00)	Significance level				
0.61		Adjusted Coefficient of Determination			
1.62		Durbin Watson Statistic			

According to the results found in the above table, following Gallemore and Labro’s research [12], with the help of factors affecting corporate governance on the tax gap, we designed the tax gap model so that we can identify the unknown factors of corporate governance caused by the tax gap. Let us identify that in the initial test of the model design, we designed the final model of the tax gap by removing factors from corporate governance that do not have a statistically significant relationship with the tax gap, and finally the error sentence of the designed model as factors

of the tax gap which are caused by corporate governance and are far from the reach of the researcher, and thus we quantified the unknown factors of corporate governance caused by the tax gap.

7 The result of the test related to the research hypotheses

7.1 Estimation of the model by the mixed data method

In this research, the hypotheses have been tested with the help of regression model based on mixed data; For this reason, F- Leimer test has been used to determine the type of estimation method (mixed or panel data method) and Hausman test has been used to determine the type of model (random or fixed effects). The results of these tests are presented in Table 4.

Table 4: F- Leimer test and Hausman test

Hypothesis		F- Limer test			Hausman Test		
First Hypothesis	Statistics	Probability Value	Model	Statistic	Probability Value	Pattern Type	
	20.31	0.00	Panel	65.99	0.00	Fix Effects	
Second Hypothesis	Model	Statistics	Probability Value	Model	Statistics	Probability Value	Pattern Type
	Model 1	0.95	0.62	Mixed	—	—	—
	Model 2	20.36	0.00	Panel	61.42	0.00	Fix Effects
	Model 3	0.95	0.63	Mixed	—	—	—
	Model 4	0.99	0.50	Mixed	—	—	—

7.2 The result of the testing research models

7.2.1 The result of testing the first model

The results of testing the first model are shown in Table 5.

Table 5: Results of the first hypothesis test

Dependent variable	Independent, Mediator and control variable	Coefficient	Standard deviation	t- Statistic	Significance level
Adjusted coefficient of determination: 0.79 Watson Durbin: 1.57 F-Statistic: 8776.11 F-Statistical probability: 0.00	Un CG	-1.0007	0.001	-881.73	0.00
	Lev	0.01	0.003	4.51	0.00
	Size	-0.009	0.0005	-17.06	0.00
	Sale	-0.01	0.0006	-17.96	0.00
	ROA	0.01	0.003	4.34	0.00
	C	0.39	0.008	44.28	0.00

As the above table shows, the probability of F statistic is significant at the error level of 5% and the assumption of linearity of the model and its significance is accepted. In the above table, the coefficients of determination show that the changes in the dependent variable can be explained by the independent and control variables included in the model.

To test the non-correlation of unexpressed variances in different periods, which is one of the hypotheses of regression analysis and is called autocorrelation, the assumption is that the errors are independent from each other. If the assumption of independence of errors is rejected and errors are correlated with each other, it is not possible to use regression. Durbin-Watson's test was used to check the independence of errors. If the Durbin-Watson statistic is in the range of 1.5 to 2.5, the null hypothesis of the test (no autocorrelation between errors) is accepted, and otherwise the null hypothesis is rejected. The results of the first hypothesis test in the table above show that there is a significant relationship between the unknown factors of corporate governance and the tax gap. And with a one percent increase in the amount of unknown factors of corporate governance, the tax gap decreases by 1.0007 percent. Therefore, the first hypothesis is accepted.

7.3 The result of the second hypothesis test

The results of testing the second model can be seen in Table 6. To test the effect of the mediator variable, a set of regression models must be estimated. First, the following four regression equations should be estimated:

- Regression of the independent variable on the dependent variable.
- Regression of the independent variable on the mediator variable
- Regression of the mediator variable on the output (dependent) variable
- Regression of independent and mediator variables on the output (dependent) variable.

Table 6 shows the results of the regression. As mentioned previously, Baron and Kenny [7] method and Kenny regression is used to test the fourth regression in this research, i.e. the mediating role of the unknown factors of corporate governance on the relationship between the tax gap and the cost of equity.

The results of model 1 in Table 6 show that considering that TA variable (tax gap) has t-statistic (4.09) and significance level (0.00); therefore, there is a positive and significant relationship between tax gap and cost of equity. Therefore, model 1 is statistically accepted. The coefficient of the independent variable of the tax gap is (0.05), which shows that if the tax gap increases by one percent, the cost of equity will increase by 0.05 percent.

The results of model 2 in Table 6 show that considering that the variable TA (tax gap) has a t-statistic (-878.12) and a significance level (0.00), so there is a negative and significant relationship between the tax gap and unknown factors of corporate governance. Therefore, model 2 is statistically accepted. The coefficient of the tax gap variable is (0.99), which shows that a one percent increase in the tax gap leads to a 0.99 percent increase in the unknown factors of corporate governance caused by the tax gap, which is not available for the researcher.

Considering that the variable of unknown factors of corporate governance has a t-statistic (4.29) and a significance level of (0.00), the results of model 3 in Table 6 show that there is a positive and significant relationship between the unknown factors of corporate governance and the cost of equity. Therefore, model 3 is statistically accepted. The coefficient of unknown factors of corporate governance is (0.06), which shows that if the unknown factors of corporate governance increase by one percent, the cost of equity increases by 0.06 percent.

Table 6: Results of the first hypothesis test

	Model	Dependent variable	Independent, Mediator and control variable	Coefficient	Standard deviation	t-Statistic	Significance level
Adjusted coefficient of determination: 0.60 Watson Durbin: 1.59 F-Statistics: 318.76 F-Statistical probability: 0.00	1	CEC	TA	0.05	0.01	4.09	0.00
			Lev	0.17	0.02	6.60	0.00
			Size	-0.01	0.003	-4.75	0.00
			Sale	0.07	0.01	7.31	0.00
			ROA	1.47	0.04	32.21	0.00
			C	0.08	0.04	1.91	0.05
Adjusted coefficient of determination: 0.79 Watson Durbin: 1.57 F-Statistics: 8488.86 F-Statistical probability: 0.00	2	Un CG	TA	-0.99	0.001	-878.12	0.00
			Lev	-0.01	0.003	-5.05	0.00
			Size	0.009	0.0005	16.53	0.00
			Sale	0.01	0.0006	17.66	0.00
			ROA	-0.01	0.003	-4.86	0.00
			C	-0.38	0.008	-43.23	0.00
Adjusted coefficient of determination: 0.60 Watson Durbin: 1.58 F-Statistics: 320.07 F-Statistical probability: 0.00	3	CEC	Un CG	-0.06	0.01	-4.29	0.00
			Lev	0.17	0.02	6.89	0.00
			Size	-0.01	0.003	-4.80	0.00
			Sale	0.07	0.01	7.37	0.00
			ROA	1.47	0.04	32.21	0.00
			C	0.09	0.04	2.20	0.02
Adjusted coefficient of determination: Watson Durbin:	4	CEC	TA	0.11	0.12	0.94	0.34
			Un CG	-0.12	0.05	-2.27	0.02
			Lev	0.17	0.02	6.39	0.00

F-Statistics:	Size	-0.01	0.003	-4.61	0.00
F-Statistical probability:					
	Sale	0.07	0.01	6.87	0.00
	ROA	1.47	0.04	32.34	0.00
	C	0.12	0.05	2.31	0.02

Based on the regression method of Baron and Kenny [7] to test the hypothesis of this research (model 4) (the unknown factors of corporate governance have a mediating role on the relationship between the tax gap and the cost of equity), the following conditions must prevail:

1. The tax gap (independent variable) in the first model should have a significant relationship with the cost of equity (dependent variable).
2. The tax gap (independent variable) in the second model must have a significant relationship with the unknown factors of corporate governance (mediator variable).
3. The unknown factors of corporate governance (mediator variables) in the third model must have a significant relationship with the cost of equity (dependent variable).

The results of Table 6 indicate that the above three conditions are met. The mediating role can be complete or relative in two ways. If the relationship between the tax gap variable (independent variable) and the cost of equity variable (dependent variable) in the fourth model is lower than the first model, the variable of unknown factors of corporate governance will have a relative mediating role. That is, both the variable of tax gap and the variable of unknown factors of corporate governance can estimate the cost of equity (dependent variable). If the relationship between the tax gap variable (independent variable) and the equity cost variable in the fourth model is not significant, the variable of unknown factors of corporate governance will play a full mediating role, that is, the variable of tax gap can only affect the cost due to the unknown factors of corporate governance can estimate the cost of equity. Otherwise, the variables of unknown factors of corporate governance do not play a mediating role. Since the results in Table 6 show that the relationship between the tax gap and the cost of equity in the fourth model with regard to the mediator variable of the unknown factors of corporate governance has a t-statistic (0.94) and significance levels (34.0), it is not significant. Therefore, the unknown factors of corporate governance play a full mediating role in the relationship between the tax gap and the cost of equity. Therefore, the tax gap variable can only estimate the cost of equity due to the unknown factors of corporate governance.

8 Discussion and conclusion

According to the objectives of the research, the findings of the research can be divided into two approaches:

1. The effect of unknown factors of corporate governance on the tax gap
2. Explaining the mediating role of unknown factors of corporate governance on the relationship between the tax gap and the cost of equity take stock

Corporate governance is a response to the agency problem that arises from the separation of ownership from management. Until the 1970s, when Jensen and Meckling presented the theory of agency and conflict of interest, less attention was paid to the issue of corporate governance structure. Based on the assumptions of agency theory, there is a potential conflict between the interests of shareholders and management, and this conflict is caused by information asymmetry between shareholders and managers, which leads to agency risk. By using various ways, such as managers' bonuses, in order to reduce the agency problem, shareholders effectively increase the cost of equity. In order to reduce agency risk and thus reduce the cost of equity, companies need to implement a set of internal corporate governance mechanisms. This mechanism is a set of activities that lead to ensuring transparency and fairness in the behavior of managers. In other words, internal corporate governance is willing to align the interests of investors and managers in a single direction and ensure that the company is managed in the interests of investors and shareholders as the main owners of the company. Corporate governance mechanisms reduce the agency problem in companies. The quality of these mechanisms is relative and varies from one company to another. The quality of corporate governance is assumed to exist in all stages of value creation in the company. One of the ways to create value is to reduce the cost of equity. According to the results found in this research, in line with the existing theoretical foundations related to the research topic, there are unknown factors of corporate governance that are effective on the tax gap and can play a mediating role in the relationship between the gap tax and the cost of equity, leading to a reduction in the cost of equity.

According to the results of the research, it is suggested for the companies that are in conflict with the tax authorities on tax declarations, it is better to turn to the tax acceptance strategy to resolve the conflict with the government, because according to the results of the current research, if there is a tax gap, the benefits (annual returns) will be lower. Also, it is suggested to the tax authorities as one of the beneficiaries of the companies to increase their share and influence in the companies in order to protect their interests (diagnostic tax) and in this way reduce the amount of the tax gap.

In order to continue the current research, it is suggested that in the future researches, we will examine the impact of the difference between choosing tax gap strategies and tax acceptance, focusing on tax conflicts on the cost of equity in Tehran Stock Exchange. Also, in the studies and analysis of the tax gap, by considering and examining what constitutes potential tax revenues, we should raise the question whether the current tax system is optimal or not. In fact, in the studies conducted in tax-related researches, only the reasons for tax non-compliance in the current system have been focused. It is suggested to address the reasons for the tax gap from a political point of view so that we can propose a better tax system under the new laws and regulations.

References

- [1] M. Abbaszadeh, M. Fadaei, M. Maftunian and M. Babaei Kalarijani, *Investigating the relationship between financial transparency and tax avoidance according to the institutional ownership of companies (case study: Tehran stock exchange companies)*, *Financ. Econ. J.* **10** (2016), no. 35, 45–74.
- [2] N. Abdollah Zadeh, M. Taghavi and M. Khodaei Valahzaqhard, *A study of the impact of cash and earning persistence on stock return in the Tehran stock exchange*, *Transact. Data Anal. Soc. Sci.* **3** (2021), no. 1, 30–39.
- [3] A.M. Ahmadvand, S. Kamran Rad and R. Kamran Rad, *The relationship between managerial ownership and the performance of pharmaceutical companies*, *J. Financ. Account. Audit. Res. Paper* **3** (2011), no. 6, 161–143.
- [4] C. Alfonso, V.P. Rosaria and P. Stefano, *Spatial dynamic modelling of tax gap: the case of Italy*, *Eur. Spatial Res. Policy* **25** (2018), no. 1, 7–28.
- [5] H. Alidoost, M.R. Abbaszadeh and M. Jabbari Nooghabi, *Measuring the impact of the (2011-2012) financial crisis on the relationship between financial ratios and bank profits*, *Trans. Data Anal. Soc. Sci.* **1** (2019), no. 1, 33–42.
- [6] Y. Badavar Nahandi, R. Baradaran Hasanzadeh and G. Sharifzadeh, *Investigating the impact of management and ownership structures of corporate governance on agency costs*, *J. Financ. Account.* **6** (2012), no. 24, 143–169.
- [7] R.M. Baron and D.A. Kenny, *The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations*, *J. Person. Soc. Psych.* **51** (1986), no. 6, 1173.
- [8] R. DasGupta and S.G. Deb, *Role of corporate governance in moderating the risk-return paradox: cross country evidence*, *J. Contemp. Account. Econ.* **18** (2022), no. 2, 100313.
- [9] H. Etemadi, S. Sepasi and S. Sirghani, *Game Theory in Accounting*, Termeh Press, 2016.
- [10] E.F. Fama and M.C. Jensen, *Separation of ownership and control*, *J. Law Econ.* **26** (1983), no. 2, 301–325.
- [11] S.P. Ferris, D. Javakhadzeb and T. Rajkovicc, *The international effect of managerial social capital on the cost of equity*, *J. Bank. Finance* **64** (2017), 69–84.
- [12] J. Gallemore and E. Labro, *The importance of the internal information environment for tax avoidance*, *J. Account. Econ.* **60** (2015), no. 1, 149–167.
- [13] I. Gavius, G. Livne and E. Chen, *Does tax avoidance increase or decrease when tax enforcement is stronger? Evidence using CSR heterogeneity perspective*, *Int. Rev. Financ. Anal.* **84** (2022), 102325.
- [14] B. Ghaderi, M. Kafami and F. Karimi Hessari, *Investigating the impact of financial and non-financial factors affecting the tax gap*, *Account. Manag. Persp.* (2017), no. 2, 1–16.
- [15] I. Haider Shakri, J. Yong and E. Xiang, *Does compliance with corporate governance increase profitability? Evidence from an emerging economy: Pakistan*, *Glob. Finance J.* **53** (2022), 100716.
- [16] M. Hasani Alghar and M. Marfoo, *Investigating management ability on profit sharing policy*, *Experim. Account. Res.* **6** (2017), no. 23, 103–139.

- [17] N. Jafari Azarki and M.M. Noorbakhsh Langrudi, *The impact of interest rate changes on stock returns of private banks accepted in Tehran stock exchange*, Trans. Data Anal. Soc. Sci. **2** (2020), no. 1, 1–9.
- [18] S. Khajavi and M. Kiamhar, *Tax avoidance modeling using accounting information*, J. Account. Knowledge **7** (2015), no. 25, 79–100.
- [19] M. Khorramabadi, S. Lashgarara and N. Pourgholamreza, *Investigating the role of corporate governance quality on the relationship between corporate social responsibility and tax avoidance*, Budget Finance Strategic Res. J. **3** (2022), no. 1, 97–125.
- [20] S. Marjit, S. Mishra and S. Mitra, *Tax evasion by tax deferral: Sham litigation with an informal credit market*, Eur. J. Political Econ. **69** (2021), 102008.
- [21] S. Mashayekh and N. Mahmoudian, *Investigating the impact of board of directors and CEO remuneration, principles of corporate governance and company characteristics on tax management*, New Res. Quart. Account. Audit. **1** (2016), no. 2, 9–36.
- [22] I. Mirzaei and G.R. Farsadamanollahi, *Identifying factors affecting the optimal tax governance in Iran*, Sci. Res. Quarterly J. Account. Manag. Audit. **11** (2022), no. 4 (consecutive 44), 297–308.
- [23] P. Mohajeri, A. Nasiri Aghdam and F. Mirjalili, *Policy-making tax expenditures and non-compliance in value added tax system in Iran: a regional analysis during 2009-2014*, Sci. Quart. J. Appl. Econ. Stud. Iran **11** (2022), no. 41, 171–201.
- [24] Z. Mohammad Azadi and E. Mohammadi, *Institutional ownership, concentration of ownership and auditing fees*, Audit Knowledge **15** (2015), no. 60.
- [25] E. Mohebbi and H. Ahmadi, *The effect of corporate governance mechanisms on the cost of equity capital*, Int. Conf. New Res. Manag. Econ. Account. Non-governmental organizations and centers, 2015.
- [26] M. Moradi, M. Saidi and H. Rezaei, *Investigating the effect of the size and independence of the board of directors on the agency costs of companies listed on the Tehran stock exchange*, Experim. Account. Res. **1** (2013), no. 2, 53–35.
- [27] O.A. Parsa, M. Mehrkam and F. Hosni-Moghadam, *The effect of economic sanctions and political connections on incomes and tax gap: a test of political economy theory*, Res. J. Tax. **48** (2019), no. consecutive 96, 83–107.
- [28] P. Parvizi, G.A. Sabouri and N. Iman Khan, *Investigating the effect of network marketing on customer's satisfaction in manufacturing companies accepted in Tehran stock exchange*, Trans. Data Anal. Soc. Sci. **1** (2019), no. 1, 1–9.
- [29] M. Pickhardt and A. Prinz, *Behavioral dynamics of tax evasion– a survey*, J. Econ. Psych. **40** (2014), 1–19.
- [30] O. Pourhydari, M. Amininia and M.H. Fadavi, *Investigating the effect of tax avoidance on the cost of common stock capital, considering growth opportunities and institutional ownership*, Plan. Budget. Quart. **19** (2014), no. 3, 173–190.
- [31] A. Raikov, *Decreasing tax evasion by artificial intelligence*, FAC PapersOnLine **54** (2021), no. 13, 172–177.
- [32] H. Yarahamdi, M. Taherinia, I. Gioki and Q.E. Taleb-Niya, *The reasons for the gap between declared taxable income and diagnostic taxable income of non-manufacturing companies accepted in the Tehran stock exchange*, Invest. Knowledge **10** (2021), no. 40, 72–107.