



Original Research

## **Firm Value, Tax Evasion, Tax Planning Opportunity and Financial Crisis of Firms**

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### ABSTRACT

The purpose of this research is to investigate the reasons for tax evasion in companies, which uses two independent variables (financial constraints and tax planning opportunities) and two dependent variables (firm value and tax evasion by tax difference method) in the form of 13 models. The 11 indicators have been considered for the variable of financial constraints of companies, and the model is implemented for all these indicators. The research was conducted in the 5-year period from 2015 to 2019 in the Tehran Stock Exchange, and Eviews software was used to analyse the data and fit them for 3 research hypotheses. The results of the research show that the opportunity for tax planning has a negative effect on the value of the company, and the increase in the opportunity for tax planning and subsequently tax evasion causes a decrease in the value of the company. Also, the research results showed that there is a significant relationship between tax planning opportunity and tax evasion (by tax differences method) of companies, while there is no positive relationship between financial constraints and tax evasion (by tax difference method) in companies that have tax planning opportunities.

## **1 Introduction**

In recent years, corporate tax evasion has been noticed by companies due to the cost imposed on the company. Companies with different characteristics, including companies with financial restrictions, evade taxes [22, 24, 25]. Through tax planning activities, i.e. taking structured measures to reduce the tax burden by using existing provisions to increase after-tax profits, which will affect the increase in company value regardless of the level of compliance of companies. Second, from the perspective of agency theory, through tax planning, activities can facilitate managerial opportunities to take opportunistic actions by manipulating profits or putting inappropriate and less transparent resources into the execution of the company's operations, so that tax planning has a negative impact on value [9, 16, 20, 23]. Some motivations and some incentives cause companies to act on high levels of tax avoidance,

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such as: stock compensation and financial restrictions that force managers to seek more profit or improve cash flow by improving the tax efficiency of companies [8,12,14,19, 22]. Much of the country's real income goes to waste due to lack of investigation by taxpayers or the tax administration. Further analysis of corporate tax avoidance is needed, which may be theoretical or empirical. However, many studies can only be seen in theory, as companies do not want to risk data sharing due to lack of data. Another reason is that tax evasion is difficult to detect analytically [5]. However, previous studies have shown that corporate characteristics have a significant impact on tax evasion at the micro [8, 24, 25] and macro level [3, 10]. According to this explanation, tax evasion by companies is a permissible attempt because it only takes advantage of things that are not regulated by law. According to Pradnyana [36], companies should develop tax planning more carefully. This is done to ensure that the company's tax avoidance practices do not amount to tax evasion, which is a financial crime. According to Apsari and Setivan [6], tax planning is an effort authorized by taxpayers. One of the tax planning strategies is tax avoidance. Tax avoidance is allowed because tax savings can only be achieved by using things that are not regulated (abuses). Tax avoidance is a tool and an initial management step used to minimize the amount of tax a company has to pay. Tax evasion attempts by companies can increase or decrease the value of the company [39]. Kurniasih et al. [30] showed that the tax planning opportunity can be realized by charging personal expenses as operating expenses to reduce profits. Prasetyo [37] states that the value of the company describes the level of trust of investors in a company, the higher the value of the company describes the successful shareholders. At the same time, the low value of the company causes the company to be perceived as underperforming, so investors are reluctant to invest in the company. In fact, tax evasion activities can reduce the value of the company because the company provides false financial information, thereby destroying investor confidence in the company [33]. Considering the presented materials, the main issue in this research is whether the opportunity of tax planning increases the value of companies? This issue is also investigated that is there a significant relationship between tax planning opportunity and financial constraints to tax evasion (by the method of tax differences) of companies.

## 2 Literature Review

One of the important theories put forth in the field of tax evasion is the "eyeballing theory" proposed by Kahneman and Torsky. In this theory, the parameters of individual choices obtained from empirical evidence are used. The considerations in the perspective theory will allow us to consider the perspective theory in the principles of formulating tax rules because the perspective theory provides a strong support for the behavior of taxpayers. According to the above explanations, the theoretical support of this treatise is based on perspective theory. In this treatise, based on this theory, according to the research of Kim, McGuire, Sawy and Wilson at 2017, the predicted effective tax rate of companies for the last 5 years is calculated based on the common factors of tax evasion, and from the distance between the effective tax rate Actual and expected effective tax rates are used as indicators of tax planning opportunities. Since the effective tax rate is expected to show the classification-based tax evasion according to the investment structure of a company, the tax planning opportunity shows the opportunities to improve the tax efficiency. A positive tax planning opportunity indicates that the company has significant potential to improve tax efficiency. Similarly, a negative tax planning opportunity means that the firm has little room to advance the use of tax evasion. According to the argument that tax planning motivation and opportunity jointly determine the level of tax evasion, it is expected that there is a positive relationship between financial constraints and tax evasion and it is

stronger (weaker) for companies with higher (lower) tax planning opportunity. Tax evasion occurs when a taxpayer deliberately fails to meet tax obligations by not filing a tax return, misrepresenting income, or paying less than actual taxes despite being able to overspend or pay taxes [17]. Tax evasion is considered an illegal activity that breaks the law and pays taxes [7]. This is an illegal, intentional allocation to reduce tax liabilities [12]. Tax evasion in the informal economy is also known as the black, underground or underground economy [3, 21]. Tax evasion has been a hot research topic in both developed and developing countries [25]. But most are about individuals. Most previous research on tax evasion focused on theoretical analysis from the perspective of individuals and based on the study of [1], and some specific studies did not consider firms [3],[9]. While most empirical studies have focused primarily on personal income tax evasion, empirical studies on profit tax evasion have only recently begun [3, 4, 17]. As businesses play an important role in a country's GDP as well as the economy, investigating corporate tax evasion becomes more important. According to [23], tax evasion affects GDP in more than 50% of countries, especially low-income countries. When businesses evade taxes, most of a country's tax revenue is wasted. This study is an attempt to measure what factors influence business evasion and how many companies evade taxes per country. Overall social and economic development largely depends on the ability to collect taxes. Corporate tax evasion creates a large fiscal gap in government revenue, one of the main causes of underdevelopment in the country. This is seen as a significant loss of government revenue, putting pressure on governments to provide uninterrupted public services [15].

Therefore, raising taxpayer revenues has become a challenge for both governments and tax authorities. The marginal net profit of corporate income declines due to financial developments and economic downturns. Lower levels of financial development allow for greater tax evasion and a larger underground economy. These initiatives lead to wasted or inefficient use of resources. Poor credit reporting systems and low bank branch penetration also increase tax evasion [6, 8]. It is unfortunate that there is a lack of research on corporate tax evasion, especially considering that corporations pay the majority of taxes and are responsible for the majority of tax evasion in many countries [11, 18].

Lumir et al. [17] argues that although there is a significant gap, there is a continuing need for international and cross-border research on tax evasion, research on the nature of business at the global level is still insufficient. Therefore, the purpose of this study is to bridge the gap by introducing empirical findings on business characteristics and international and global tax evasion. In previous research conducted by Kurniasih [30], it was found that return on assets has a significant effect on tax evasion. Several phenomena related to tax evasion and company value include a decrease in the company's stock price, which can occur with several things happening inside the company. Although tax evasion is seen as a beneficial action, especially for companies, at the same time, tax evasion also carries various risks. One of the theories related to this phenomenon, agency theory, argues that tax evasion is an activity that can facilitate opportunistic management behaviors such as profit manipulation and can make capital owners and creditors vulnerable. This means that the government must take measures to prevent tax evasion as well as enforce the law to collect income tax. Maharani et al. [33] in a research they conducted for Indonesian stock exchange companies between 2014 and 2018 showed that the opportunity for tax planning affects the value and financial performance of the company. Christiawan et al. [16] found that tax avoidance has a negative effect on company value, while tax evasion has a positive effect on financial performance, and financial performance can mediate tax evasion on company value. In addition, research conducted by Herdianto and Ardianto [22] showed that tax evasion outcomes have an impact on firm value. Institutional ownership cannot moderate and agency costs

cannot be an intervening variable in the relationship between tax evasion and firm value. The research conducted by Prasetyo [37] examined the impact of tax evasion on company value and information transparency as a moderating variable. In this research, the method of multiple linear regression analysis was used, considering that tax evasion does not affect the value of the company, information transparency can moderate the relationship between tax avoidance and the value of the company. Christianto et al. [29], investigated the impact of tax planning and tax evasion on company value with financial performance as an intervening variable. This study uses multiple linear regression analysis and path analysis, and the results showed that tax planning opportunity has an impact on tax evasion, while the return on assets has a positive effect on tax evasion and the opportunity for tax planning has a positive effect on the return on assets. Jonathan and Tandian [25], investigated the effect of tax avoidance on firm value with profitability as a moderating variable. In this research, the multiple linear regression analysis method is used, which shows that the results of tax evasion do not affect the value of the company, while profitability has a positive effect on the value of the company. Nur-tegin [34], the effect of corporate social responsibility on company value with management ownership percentage as a moderating variable (an empirical study of companies listed on the Jakarta Stock Exchange). In this research, the multiple linear regression analysis method was used, the results of which simultaneously show that the effect of corporate social responsibility, percentage of management ownership, and the interaction between corporate social responsibility and percentage of management ownership on the value of the company are significant. Kurniasih et al. [30], the effect of return on assets, leverage, corporate governance, firm size and financial loss compensation on tax evasion. *Economic Studies Bulletin*. In this research, the multiple linear regression analysis method has been used, and the results of leverage and corporate governance have no significant effect on tax evasion. Tauke [39] investigated the effect of financial performance on the value of companies listed on the Indonesian Stock Exchange in 2015-2012. This study uses the multiple linear regression analysis method, the result of which is that company size has a significant negative effect on company value, capital structure and profitability have a positive and significant effect on company value, and liquidity does not have a significant effect on company value. Jamei [24] investigated tax evasion and corporate governance mechanisms through evidence from the Tehran Stock Exchange. Using multiple linear regression analysis, this research concluded that there is no significant relationship between the number of board members, the proportion of non-executive members, institutional ownership and tax avoidance. Also, there is no significant relationship between managerial ownership and tax evasion. Dyreng et al. [17] investigated the effects of managers on corporate tax evasion in America. This study uses the multiple linear regression analysis method and with individual executive results that play an important role in determining the level of corporate tax avoidance, it seems that securities managers are an important factor in corporate tax evasion. Chen et al. [15] examine tax evasion and firm value: Evidence from China. Using multiple linear regression analysis, with different results from developed countries, they showed that tax evasion does not always increase the value of operations. Katz et al. [27] examine tax evasion and future profitability in Colombia. This study uses a capability analysis method whose results are consistent with the negative consequences of tax evasion (e.g. rent extraction) that, on average, the main components of current profitability: profit margin, asset utilization and operating debt leverage, lead to Profitability will decrease in the future. A tax delinquent company is not a tax delinquent. In addition, the results showed that the negative effects of lower margins are stronger and more stable than the effects of inefficient asset utilization and operational debt leverage. In this research, by examining the effect of tax evasion incentives when managers have more tax

planning opportunities, motivational action-tax avoidance opportunity and identification of companies with financial constraints and tax avoidance of companies with this constraint have been investigated and their distance has been investigated. The difference between the actual effective tax rate of a company and the forecast effective tax rate is also mentioned as a tax planning opportunity. Therefore, the hypothesis is representing:

H1: There is a significant relationship between tax planning opportunity and firm value of companies.

H2: There is a significant relationship between tax planning opportunity and tax evasion (by the method of tax differences) of companies.

H3: There is a significant relationship between financial constraints and tax evasion (by the method of tax differences) of companies.

### 3 Prediction and Examination of Financial Constraints and Tax Planning Opportunity

In terms of reasoning, this research was deductive-inductive and in terms of data collection method, it was a descriptive regression research based on real information included in the financial statements of companies. It is also developmental in terms of purpose.

First, the tax planning opportunity was measured and its moderating effect was estimated on the relationship between over taxation and financial constraints. Then, the use of tax differences by companies (with the opportunity of tax planning) was investigated and thirdly, the concepts of tax evasion based on structure and based on classification were introduced. In the end, the financial period was calculated and used in the multivariable regression model to test the hypotheses of the independent and dependent variables for the companies in question. In order to fit the research model, Eviews statistical software was used and in order to determine the significance of the relationship between the independent variables and the dependent variable, the t-test was used at the 5% error level (95% confidence level).

The Chow test was used to measure the panel data method and Hausman test was used to choose between fixed or random effects models. In order to determine the degree of correlation between independent and dependent variables as well as the coefficient of determination ( $R^2$ ), the Breusch–Godfrey test was used to assess the validity of some of the modelling assumptions inherent in applying regression-like models and the Hadri test to examine the null hypothesis of stationarity in the panel. The information required by the companies has been collected from their financial statements as well as the use of the "Rahavard Novin" software. Finally, 104 companies were selected as sample companies. In order to present the research model, the research variables are calculated in the following order:

#### 3.1 Measuring the Tax Planning Opportunity Variable

According to Kim et al. [14], a company's cash effective tax rate (CETR) is based on company characteristics including: the size of a company, return on assets (ROA), financial leverage (LEV), net operating loss (NOL), changes in net operating loss ( $\Delta$ NOL), export income, Property, Plant, and Equipment or Capital intensity (PP&E), equity income, research and development expenses (R&D) and the Market to Book (MTB) ) will be evaluated. In this study, the effective rate of cash tax is used to calculate all these variables from the average of a 5-year period (t-1 to t-5) as follows (equation 1):

$$CETR_{t-5,t-1} = \theta_0 + \theta_1 Size_{avg(t-5,t-1)} + \theta_2 ROA_{avg(t-5,t-1)} + \theta_3 LEV_{avg(t-5,t-1)} + \theta_4 NOL_{avg(t-5,t-1)} + \theta_5 \Delta NOL_{avg(t-5,t-1)} + \theta_6 Foreign_{avg(t-5,t-1)} + \theta_7 PP\&E_{avg(t-5,t-1)} + \theta_8 Equity_{avg(t-5,t-1)} + \theta_9 R\&D_{avg(t-5,t-1)} + \theta_{10} MTB_{avg(t-5,t-1)} + \varepsilon \quad (1)$$

which can be written as follows (equation 2):

$$CETR_{t-5,t-1} = \frac{TXPD_{t-5,t-1}}{PI_{t-5,t-1} - SPI_{t-5,t-1}} \quad (2)$$

In this regard, TXPD is firm's tax paid and PI refers to the profitability index and SPI is the number of standard deviations by which the observed anomaly deviates from the long-term mean. The measure of tax planning opportunity (TPO) in year t is the difference between the actual cash effective tax rate and the predicted effective tax rate from five years before year t, then coefficients ( $\theta_0$  to  $\theta_{10}$ ) are calculated from the estimate of equation (1). A higher tax planning opportunity indicates a higher level of avoidance. It may be written as follows (equation 3):

$$TPO_t = CETR_{t-5,t-1} - ETR_{t-5,t-1} \quad (3)$$

According to the method of Edwards et al. [13], this article also uses the effective cash tax rate (Cash ETR) as a measure of tax avoidance (equation 4).

$$CETR1t = \frac{TXPD_{t-5,t-1}}{(PI - SPI)_t} \quad (4)$$

In this equation, both TXPD and (PI-SPI) variables must be positive.

The following relationship is used to test the first research hypothesis (Equation 5):

$$FirmValue_{i,t} = \theta_0 + \theta_1 TPO_{i,t} + \theta_2 SIZE_{i,t} + \theta_3 ROA_{i,t} + \theta_4 MTB_{i,t} + \theta_5 R\&D_{i,t} + \theta_6 \Delta Intangible_{i,t} + \theta_7 \Delta Equity Earnings_{i,t} + \theta_8 NOL_{i,t} + \theta_9 \Delta NOL_{i,t} + \theta_{10} \Delta Leverage_{i,t} + \theta_{11} \Delta PP\&E_{i,t} + \theta_{12} \Delta Foreign - income_{i,t} + \Sigma Indusrty FE + \Sigma Year FE + \varepsilon \quad (5)$$

The financial constraints are calculated as follows (Equation 6):

$$HP\ index = -0.737 \times Size + 0.043 \times Size^2 - 0.40 \times Age \quad (6)$$

(Pierce and Hadlock, 2010)

Whited Wu index (WW-index) is calculated based on operating cash flow ratio, profit sharing ratio, long-term debt leverage, company size, sales growth and industry average sales growth (Equation 7).

$$WW\ index = -0.091 \times (IB + DP / AT) - 0.062 \times Dividend\ Paying\ Indicator + 0.021 \times DLTT/AT - 0.004 \times \ln(AT) + 0.102 \times Avg\ industry\ sale\ growth - 0.035 \times sale\ growth \quad (7)$$

The KZ-Index (Kaplan-Zingales Index) is a relative measure of reliance on external financing. Companies with a higher KZ-Index score are more likely to face difficulties as financial conditions become more difficult, as they may have difficulty financing their current operations (Equation 8).

$$KZ\ index = -1.00 \times (IB + DP / Lag\ PPENT) + 0.28 \times (AT + PRCCF \times CSHO - CEQ - TXDB / AT) + 3.13 \times (DLTT + DLC / DLTT + DLC + SEQ) - 39.36 \times (DVC + DVP / Lag\ PPENT) - 1.31 \times (CHE / Lag\ PPENT) \tag{8}$$

The Altman Z score is calculated based on profitability, working capital, sales, retained earnings and debt-to-equity ratio (Equation 9).

$$ZScore = -1 \times \{3.3 \times (PI + XINT / AT) + 1.2 \times (WCAP / AT) + (Sales / AT) + 1.4 \times (RE / AT) + 0.6 \times (CSHO \times PRCF / LT)\} \tag{9}$$

Payable debt ratio is calculated by measuring cash flow to pay current debts (Equation 10).

$$DSR_t = (DLC_t + XINT_t) / EBITDA_t \tag{10}$$

According to Edwards et al. [13], another method for calculating corporate tax evasion is to use Book-Tax Differences (BTD). BTD is derived from the difference between the Net Income Before Taxes (NIBT) and the taxable income (TI) divided by the lagged total assets (TA) (Equation 11).

$$Total\ BTD_{i,t} = \frac{PI_{i,t} - (TXFED + TXFO) / 22.5\%}{Lagged\ Total\ Assets} \tag{11}$$

Then, to test the first and second and third hypotheses of the research, the main regression model (Equation 12) is presented:

$$BTD_{i,t} = \theta_0 + \theta_1 TPO_{i,t} + \theta_2 Constraint(Dividend\ Dummy - HP\ index - WW\ index - Kz\ index - Zscore - DSR)_{i,t} + \theta_3 TPO \times Constraint_{i,t} + \theta_4 SIZE_{i,t} + \theta_5 ROA_{i,t} + \theta_6 MTB_{i,t} + \theta_7 R\&\ D_{i,t} + \theta_8 \Delta Intangible_{i,t} + \theta_9 \Delta Equity\ Earnings_{i,t} + \theta_{10} NOL_{i,t} + \theta_{11} \Delta NOL_{i,t} + \theta_{12} \Delta Leverage_{i,t} + \theta_{13} \Delta PP\& E_{i,t} + \theta_{14} \Delta Foreign\ income_{i,t} + \Sigma Indusrty\ FE + \Sigma Year\ FE + \epsilon \tag{12}$$

In international stock markets, there have always been some years that are considered as bad stock market dates. For the international arena, we can refer to the years 2006 and 2008, when major financial crises occurred for companies.

In Iran, in 2014, due to the excessive optimism of companies regarding the nuclear agreement, and in 2018, due to the increase in the exchange rate, the above phenomenon occurred on the profitability of export-oriented companies, and it is natural that with the drop in the price of the dollar, the profitability outlook of these companies will become negative. In this study, 2014 and earlier are coded, as well as the long-term liabilities of the entire year of the research companies are quartered to 12 to examine the changes in their long-term liabilities (and as a result, to identify companies that are likely to evade taxes) (Equation 13).

$$CETR_{t-5,t-1} = \theta_0 + \theta_1 Treated_{i,t} + \theta_2 Post_{i,t} + \theta_3 Treated \times Post_{i,t} + \theta_4 TPO_{i,t} + \theta_5 SIZE_{i,t} + \theta_6 ROA_{i,t} + \theta_7 MTB_{i,t} + \theta_8 R\&\ D_{i,t} + \theta_9 \Delta Intangible_{i,t} + \theta_{10} \Delta Equity\ Earnings_{i,t} + \theta_{11} \Delta NOL_{i,t} + \theta_{12} \Delta ChNOL_{i,t} + \theta_{13} \Delta Leverage_{i,t} + \theta_{14} \Delta PP\& E_{i,t} + \theta_{15} \Delta Foreign\ income_{i,t} + \Sigma Indusrty\ FE + \Sigma Year\ FE + \epsilon \tag{13}$$

To measure the financial crisis of companies in this research, following the research of Cohen and Wordlow, we consider an index year as a break point. With this method, the year 2013 and before is

coded, and also the long-term liabilities of the research companies for the whole year are quartered in order to check the changes in their long-term liabilities according to equation (12) and as a result identify the companies that have the possibility of tax evasion. It is expected that companies with financial crisis (presence in the top quartile of long-term debt) will have more tax evasion in the next period, and this effect is more evident for companies with TPO. Where treated takes a value of one for companies in the top quartile of long-term debt and a value of zero otherwise. Post variable also accepts one for companies before 2013 and zero otherwise.

#### 4 Results and Discussion

First, the descriptive statistics of the variables, including the average, standard deviation, etc., separately for the variables and separately for each year, are presented below:

**Table 1:** Descriptive Statistics of Variables

standard deviation	maximum	minimum	median	mean	Variables
0.945	8.663	-8.761	0.069	0.084	CETR
1.415	20.183	11.116	14.289	14.459	SIZE
0.121	0.603	-0.404	0.096	0.113	ROA
0.189	1.269	0.060	0.577	0.579	LEV
0.170	0.933	0.013	0.209	0.248	PP&E
1061.2	6762.1	-2516.2	439.3	787.4	Equity Income
4.195	36.382	0.180	1.480	2.928	MTB
0.381	1	0	1	0.824	DVP
126.88	1313.4	-295.2	3.567	19.619	DSR
0.384	4.548	-5.814	0.142	0.125	ETR
0.962	-5.672	-11.843	-9.887	-9.781	HP
0.053	0.423	-0.171	-0.083	-0.075	WW
3.819	3.980	-18.904	-0.136	-1.181	KZ
1.006	6.589	-1.461	1.644	1.735	Z
0.472	1	0	0	0.333	post
0.499	1	0	0	0.458	Treated
2.430	15.90	-58.11	12.55	-0.051	TPO

In the following, the evaluation of the results of the basic tests including Chow, Hausman, Breusch–Pagan, Lagrange coefficients and Breusch-Godfrey/Wooldridge and then, main research model will be discussed (Table 2).

**Table (a):** Chow and Hausman Tests Results

Chow test		Hausman test	
statistics	P - value	statistics	P - value
1.873	0.000	27.03	0.000

Considering that the significance of Chow's test is less than 0.05, therefore, the null hypothesis of the test is rejected and the use of a panel model with fixed effects is more preferable. Also, due to the fact that Hausman's test statistic is less than 0.05, as a result, using the model with fixed effects is more



preferable than the model with random effects. Now we try to fit the panel model with fixed effects.

**Table 2:** The Final Model of the First and Second Hypotheses

Variables	Coefficient estimation	The standard error	Statistics	p Value
Models constant	-0/0261	0/1516	-0/1722	0/8633
Tax planning opportunity	-0/0320	0/0083	-3/8685	0/0001
size of the company	-0/0303	0/0083	-3/6448	0/0003
Financial performance of the company	0/0617	0/0166	3/7231	0/0002
Book market value of H.S.S	-0/0033	0/0084	-0/3981	0/6907
Research and development costs	-0/0662	0/0216	-3/0621	0/0023
Changes in intangible assets	-0/0181	0/0098	-1/8507	0/0645
Changes in equity interest	-0/0001	0/0003	-0/3415	0/7328
Operating loss	-0/0368	0/0355	-1/0367	0/3001
Changes in operating loss	0/0218	0/0101	2/1586	0/0311
Financial leverage changes	0/0617	0/0166	3/7231	0/0002
Changes in property, machinery and equipment	-0/0450	0/0170	-2/6500	0/0090
Changes in export sales	-2/1990	0/3560	-6/1730	0/0000

According to the table, the coefficient of determination shows that 61% of the changes in the dependent variable are explained by the independent variables. The significance of the model is less than 0.05, which shows the significance of the research model. The Watson camera statistic is also 1.62, which, if it is between 1.5 and 2.5, indicates the lack of autocorrelation between the error residuals, which is the same in this model. As can be seen in Figure (5), the coefficients of origin, tax planning opportunity, company size, financial performance of the company, market to book value of H.S.S., research and development cost, changes in intangible assets, changes in owner's profit, operating loss, changes in operational losses, changes in financial leverage, changes in property, machinery, equipment, and changes in export sales are respectively -0.0261, -0.0320, -0.0303, -0.0617, -0.0033, and -0.0662, -0.0181, -0.0001, -0.368, 0.0218, 0.171, -0.045 and -2.199, for which the significant levels are 0.8633, 0.0001, 0.0003 respectively. 0/0, 0.0002, 0.6907, 0.0023, 0.0645, 0.7328, 0.3001, 0.0311, 0.00, 0.009 and 0.00, which as a result between the tax planning opportunity, Company size, company financial performance, research and development cost, operating loss changes, financial leverage changes, property changes, equipment machinery and export sales changes have a significant relationship with company value. According to the negative coefficient of the tax planning opportunity variable, the more the tax planning opportunity increases, the lower the value of the company. But according to the positive coefficient of the company's financial performance variable, the more the company's financial performance increases, the more the company's value increases, and the first and second hypotheses of the research are accepted.

To test the second and third hypotheses, the research is carried out in the following order. First, to determine the use of panel data versus pooled data, we use Chow's or F-Limer's test (Table 3).

The result of Chow test shows that the null hypothesis is rejected for the first models and the data related to these models follow the panel method. After defining the panel data approach, it is necessary to examine whether the panel model used should have fixed effects or random effects. Therefore, the Hausman test was used and it shows that the null hypothesis is rejected and the method of estimating the variables of these models is the panel method with fixed effects. Likewise, the ability to integrate the effects of time shows that in the first model, there is no ability to integrate the effect of time in all indicators of financial constraints of companies (Table 4).

**Table 3:** The Chow and Hausman Test Results

Type of restriction	Models	The Chow test		The Hausman test	
		statistics	P - value	statistics	P - value
DVP	The first model	93.429	<0.001	435.83	<0.001
HP		90.873	<0.001	1560.4	<0.001
WW		88.501	<0.001	720.25	<0.001
KZ		83.67	<0.001	491.69	<0.001
Z		94.946	<0.001	567.67	<0.001
DSR		92.292	<0.001	428.68	<0.001

**Table 4:** The Results of the Integration Coefficients Test (Lagrange Coefficients Test)

Type of restriction	Models	Integration test	statistics	p Value
DVP	The first model	Integration of temporal effects	5.234	<0.001
HP			7.918	<0.001
WW			5.893	<0.001
KZ			6.624	<0.001
Z			5.757	<0.001
DSR			5.973	<0.001

In panel data, among the classical assumptions, the heterogeneity of variance and serial autocorrelation tests are generally more important. In this research, Breusch–Pagan test is used to check the heterogeneity of variance and Breusch-Godfrey/ Wooldridge test is used to check the lack of serial autocorrelation. The significance level of Breusch–Pagan test for all models is lower than the 5% error level. As a result, the null hypothesis is rejected and so there is heterogeneity of variance. (Table 5).

**Table 5:** Breusch-Godfrey/Wooldridge and Breusch–Pagan Test Results

Limitation indices	Models	Breusch-Godfrey/ Wooldridge test		Breusch–Pagan test	
		statistics	P - value	statistics	P - value
DVP	The first model	20.843	<0.001	234.9	<0.001
HP		11.383	<0.001	287.93	<0.001
WW		29.885	<0.001	199.82	<0.001
KZ		21.378	<0.001	240.44	<0.001
Z		12.83	<0.001	241.24	<0.001
DSR		20.618	<0.001	233.87	<0.001

Also, it can be seen that the significance level of the Godfrey- Wooldridge test was lower than the 5% error level, which indicates that there is serial autocorrelation between the errors of the model. In order to estimate the variables of the model more appropriately, the method of the generalized least squares approach has been used in the final estimation of the models. In this way, the final model is fitted for each of the indicators of financial constraints of the companies separately and the results of the model are evaluated.

**Table 6:** Chow and Hausman tests results

Chow test		Hausman test	
statistics	P - value	statistics	P - value
1.425	0.0336	29.599	0.0032

In this section, the test of the fourth and fifth hypotheses of the research is discussed, and below, the results of the Chow, Hausman, Breusch-Pagan, Lagrange coefficients and Breusch-Godfrey/Wooldridge tests and the main research model are discussed (Table 6).

The result of Chow test shows that the null hypothesis of this test is rejected for the first models and the data related to these models follow the panel method. After defining the panel data approach, it is necessary to examine whether the panel model used should have fixed effects or random effects. For this purpose, the Hausman test is used and the results indicate that the null hypothesis is rejected. The estimation of the variables of these models is through the panel method with fixed effects. In the following, the ability to integrate time effects is examined. The results of the integration coefficients test show that in the first model, there is no time integration in all indicators of financial constraints of companies (Table 7).

**Table 7:** The results of the integration coefficients test (Lagrange coefficients test)

Integration coefficients test	statistics	P – value
The time integration effects	1.785	0.0031

Then, it will be necessary to test the classical assumptions about the model. In panel data, among the classical assumptions, the heterogeneity of variance and serial autocorrelation tests are generally more important. In order to check the heterogeneity of variance, Breusch Pagan test is used, and to check the lack of serial autocorrelation, the Breusch-Godfrey/Wooldridge test is used.

The significance level of Breusch -Pagan test for all models is lower than the 5% error level. As a result, the null hypothesis is rejected and there is heterogeneity of variance. The significance level of the Godfrey-Wooldridge test is lower than the 5%, which indicates that there is serial autocorrelation between the model errors (Table 8).

**Table 8:** Breusch-Godfrey/ Wooldridge and Breusch–Pagan tests results

Breusch-Godfrey/ Wooldridge test		Breusch–Pagan test	
statistics	P - value	statistics	P – value
28.825	<0.001	22.352	0.0337

**Table 9:** The final model of the second and third hypotheses

Variables	Coefficient estimation	The standard error	Statistics	p Value
Models constant	4/202	1/777	2.365	0.018
High long-term debt	-0/023	0.262	-0.08	0.929
The time shock of 2014	0.102	0.167	0.609	0.542
Tax planning opportunity	<0.001	<0.001	0.720	0.471
Size of the company	-0.081	0.074	-1.100	0.271
Return of assets	2.428	1/148	2.116	0.034
Market value to book value of equity	-0.013	0.018	-0.721	0.470
Intangible assets	<0.001	<0.001	2.292	0.021
Profit belonging to ordinary shareholders	-0.032	0.104	-0.317	0.751
Financial Leverage	0.523	0.275	1.898	0.057
Property, machinery and equipment	0.672	0.522	1.288	0.197
Export sales	-0-0106	0.0028	-3.744	<0.001
The interaction of high long-term debt and the 2014 time shock	0.032	0.358	0.090	0.026

There are three methods to eliminate variance heterogeneity and serial autocorrelation of errors: the generalized least squares method, the Prais–Winsten estimation and the Newey–West estimator. In

this research, the generalized least squares approach is used for the final estimation in order to estimate the variables of the model more appropriately.

According to the above table, it can be seen that the significant level of the time shock variable of 2014 (0.524) is higher than the 5% error level. As a result, the relevant variable is not significant and indicates that the companies with financial crisis did not have more tax evasion in the next period. Considering that the significance level of the interaction variable of long-term debt and time shock of 2014 (0.928) is higher than the 5%. As a result, the relevant variable is not significant and indicates that the companies that have a financial crisis and in the next period, have more tax evasion. Consequently, there is no more opportunity for tax planning.

## 5 Conclusions

Considering the need to collect taxes from natural persons and especially legal entities in the current situation (the impossibility of selling oil and relying more than expected on tax revenues in the country's budget), in this research, how companies that are financially constrained in some way evade taxes paid. So far, there is no research that helps different people in identifying and collecting taxes from companies with financial constraints that evade taxes. The results of this research helped to identify the companies that have tax evasion and due to their financial limitations, they do not provide their real incomes and ultimately their stated taxes. The results of the research regarding the first hypothesis of the research showed that the opportunity of tax planning has an impact on the value of the company and this impact is inverse and negative. This is in the sense that if companies use the opportunity of tax planning, it represents tax evasion of the company [6] and it conveys bad news about this issue to investors and shareholders because tax evasion can involve the company in legal disputes and criminalize it (Cristiano et al., 2018) which is also caused by the penalties defined in the law to prevent tax evasion. Because according to the Islamic Penal Code, tax evasion is one of the first-degree crimes and managers of tax evading companies are sentenced to imprisonment, which is Article (274) of the Criminal Code. also confirms this. The results of this hypothesis are in accordance with Maharani et al. [33] The second hypothesis states that the financial limits of the company according to the six indicators of Voluntary Disclosures Program (VDP), HP, WW, KZ, Z and direct seller's representative (DSR) have a significant relationship with tax evasion. According to the results of the analysis, this hypothesis is not accepted. Because, financial restrictions do not affect tax evasion of companies and tax evasion of companies is not affected by their financial restrictions. It seems that these results indicate the punishments defined in the law to prevent tax evasion. It seems that if the new method of calculating tax evasion is used, the companies that have the opportunity to plan taxes will do tax evasion in the same period. These results were obtained by using the book-tax differences (BTDs) and the existence of deferred tax included in the calculations, and if appropriate conditions arise, the companies have attempted tax evasion. This hypothesis states that "companies with financial crisis have more tax evasion in the next period". According to the results of the analysis, this hypothesis is not accepted. This means that if a company is facing a financial crisis and taking into account the fact that it has a lot of long-term debt (high quarter of long-term debt) and should pay the debt in the future period, it will not do tax evasion. The third hypothesis of this research states that "in companies that have a financial crisis and have more tax evasion in the next period, there is more opportunity for tax planning". According to the results of the analysis, this hypothesis is not accepted. This finding shows that companies with financial crisis do not intend to pay debts with tax evasion caused by creating tax planning opportunities. The assumption of the researchers was based on the fact that the companies suffering from the financial crisis, in order to increase liquidity and create more suitable payment

conditions regarding the debts that create the crisis conditions, do tax evasion and provide the means to reduce the financial crisis.

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