

EURASIAN JOURNAL OF ECONOMICS AND FINANCE

www.eurasianpublications.com

TAX EVASION IN BOSNIA AND HERZEGOVINA: PERCEPTION FROM TAXPAYERS AND TAX INSPECTORS

Saudin Terzic 

Corresponding Author: Indirect Taxation Authority, Bosnia & Herzegovina
Email: saudin.terzic@uino.gov.ba

Miro Dzakula

University of Mostar & Indirect Taxation Authority, Bosnia & Herzegovina
Email: miro.dzakula@uino.gov.ba

Elvir Muminovic

University of Business Studies & Indirect Taxation Authority, Bosnia & Herzegovina
Email: elvir.muminovic@uino.gov.ba

Received: January 17, 2020

Accepted: February 19, 2020

Abstract

Tax evasion is more of a disciplinary problem, produced by numerous, big and turbulent changes. The growing problems with tax evasion are present all over the world and they require a global solution of the problem. Although tax evasion is a global phenomenon, this is also the issue that most developed countries in the world are dealing with, there are significant differences between individual countries, all depending on the legal order, the entire social system and it is depending from country to country, and this is especially evident among transitioning countries. The problem of tax evasion is particularly acute in Bosnia and Herzegovina (hereinafter BiH). The main research result indicates that tax evasion has multiplicative effects; by reducing tax evasion, the situation in public finances improves substantially. This article discusses tax evasion in BiH and the perception of taxpayers and tax inspectors towards tax evasion. In this line, this article presents the theoretical analysis of the phenomenon of tax evasion (which is not a goal in itself), including the empirical analysis factors that have the greatest influence on tax evasion by using logistic regression modeling method. The paper checks the main hypothesis by identifying the factors that affect tax evasion and by determining their significance and impact, it is possible to construct logit model for determining factors of tax evasion in BiH.

Keywords: Tax Evasion, Tax Rates and Penalties, Tax Burden and Taxation System, Corruption, Tax Moral and Culture, Bosnia and Herzegovina

JEL Classifications: H26, H2, H20, D73

1. Introduction

Modern business is characterized by numerous, big and turbulent changes, increasing liberalization and globalization, increased taxpayer mobility, growth and accelerated development of regulatory standards, and in this domain, the issue of tax evasion gains a special dimension and becomes very important (Terzic and Dzakula, 2019). The functioning of the tax system and taxation in one economy is of crucial importance to overall financial stability. Tax evasion is a worldwide phenomenon. The problem is especially acute in transition and developing economies, since they do not have an appropriate infrastructure in place to collect taxes (McGee and Tyler, 2006). Tax evasion is widespread phenomenon and continues to be a problem for many countries (Tsakumis *et al.* 2007; Nur-tegin, 2008). Tax evasion has long been recognized as a serious social malady. The extent of this problem is staggering. Tax evasion is a universal phenomenon that takes place in all societies and economic system including both developed and developing countries (Chau and Leung, 2009). Tax evasion diverts resources to unproductive activities such as establishing financial subsidiaries to cover up evasion (Slemrod, 2007).

The universal definition of tax evasion (Eng. tax evasion; Fr. fraude fiscale; Ger. steuerhinterziehung) and a unique attitude about the single notion of phenomena does not exist. Tax Evasion is widely studied by Allingham and Sandmo (1972), McGee and Tyler (2006), Tsakumis *et al.* (2007), Kirchler (2007), Russo (2010), Alm (2011), Pickhardt and Prinz (2013) and many others. It is also important to emphasize the centrality of tax evasion to the most fundamental issues in public economics. Indeed, evasion is important for many reasons. The most obvious is that it reduces tax collections, thereby affecting taxes that compliant taxpayers face and public services that citizens receive. Beyond these revenue losses, evasion creates misallocations in resource use when individuals alter their behavior to cheat on their taxes, such as in their choices of hours to work, occupations to enter, and investments to undertake (Alm, 2011).

The awareness of the danger in the real economic life of a society, which is accompanied by a tax evasion, has increased, as the difficulties encountered in one place can be easily outspread to other countries, turning the national problem into an interstate one. Tax evasion is a very specific problem permeated through different theoretical areas and characterized by the following facts:

- It is at least partially unknown - If we were 100% sure that the entire tax was chargeable, the tax administration's job would be simple.
- It changes over time – As the subjective and objective factors affecting the tax evasion are changing.
- It can be managed - It is possible to assess the level and the tax evasion rate and undertake some measures for controlling, orientation and reduction.

Management of any phenomenon and concept requires knowledge of the determinants of that phenomenon. Certainly, one of the key problems is the familiarization with the phenomenon. The familiarization with the phenomenon will provide a useful starting point for the formulation of policy. Tax evasion involves our everyday life (Russo, 2010). Is tax evasion a hot topic in economics and social sciences (Kirchler, 2007)? The tax evasion is influenced by its interconnectedness and determinedness of numerous and diverse factors. We sometimes can unintentionally ignore the other significant factors that could lead to a misunderstanding of the problem. Therefore, each factor that affects tax evasion must not be ignored.

There are many factors that influence and encourage tax evasion, and there is interaction between some factors and they can be structural problems of one country. Tax evasion factors are interconnected and complementary in all countries because the countries and societies are fundamentally different from the point of view of the economic system and degree of development, different legislative, tax framework or historical development. Most countries try to influence the factors, but as this can have significant consequences, such decision should not be taken without careful research. The reason is that it is rather difficult to

shed light on such a complex phenomenon like tax evasion and compliance (Pickhardt and Prinz, 2013).

One of the main tasks of the country is to regulate economic activities through legal action, legally, to record and tax it, but there is always a greater or smaller amount of economically taxable activities that have not been recorded and therefore there is a need for them to be specifically studied, monitored and to assess their scope and extent. The question arises and the dilemmas are also present, how to connect with the research and determine the factors that have the greatest influence on tax evasion, which factors are more susceptible to the influence of others, which factors contribute and which should be considered and which can be regulated? Solutions cannot be generalized, because each area requires special considerations and specific solutions, and this is a permanent and universal topic. Numerous factors are influencing with their interconnectedness on tax evasion. They are, by their nature, very dynamic, fluid and extremely interdependent, and it is therefore difficult to analyze them empirically.

In BiH, as a transitioning country, tax evasion is one of the main problems that slows down, if not preventing, reaching the desired level of social, political and economic goal, it can act destabilizing and it seems difficult, almost impossible to control that process. In the current crisis situation, both society and organizations should be strongly interested in looking at the existing forms and widespreadness as well as finding ways to effectively fight the tax evasion. Although it is understood that tax evasion is a very important and complex phenomenon, and that it is the major disruption to the economic growth and development, scientifically, just at the level of exceptions, factors, flows, outspread and effects of the tax evasion are examined. In our modern social institutions and these rare researches are not sufficiently complex, they involve a small number of aspects of this phenomenon and represent the moment of the snapshot of the situation, i.e., there is no longitudinal perception of trends in practice with the taxpayers themselves and tax authorities.

We can say that it is necessary to manage this phenomenon with the accent on collecting timely and quality information and making research, because without good and fast collection, processing and use of information, progress is not possible in fighting against tax evasion. The aim of this research is to analyze and investigate the nature and activity of tax evasion factors in BiH and to find out which factors influence and encourage on tax evasion, because there is interaction between individual factors. The aim and orientation of this work is to provide empirically based assessments of tax evasion factors. Efforts to revitalize these issues can help to create models for the prevention and successful realization of measures and activities to prevent and suppress tax evasion.

The paper is organized as follows. Section 2 presents analysis and identification of determinants tax evasion. Section 3 overviews the description of the sample and empirical data and methodology whereas Section 4 gives analysis and presentation of research results on attitudes of respondents towards tax evasion in Bosnia and Herzegovina. Section 5 concludes the paper with recommendations.

2. Analysis and identifying the factor of the tax evasion

Numerous eminent economists and authors have dealt with the research of the problem of tax evasion in the framework of professional activities related to the prevention, detection, investigation and solving of the growing problem. Based on standards, recommendations in publications, they do not analyze only models of tax evasion, but also the correlation with factors. Identifying and analyzing the tax evasion factors in a country is very difficult, as it requires considerable amount of specific information that are not sometimes available. By considering and analyzing the factors that influence on the tax evasion, it is first necessary to consider all the factors and only then to develop and apply available and usable instruments for the purpose of taking measures and successful realization on the prevention and suppression of tax evasion.

The first major comprehensive review on tax payer's behavior concerning the tax evasion in literature was given by Jackson and Milliron (1986), who have established 14 most

important determinants of tax evasion. Those determinants include: age, gender, education and occupation, status (demographic determinants) income level, source of income, marginal tax rate, sanctions, penalties and possibility of being caught (economic determinants) and the complexity and fairness of tax system, tax administration activity, ethics and tax morale (behavioral determinants). Factors that have been examined the deterrence model include: complexity of the tax system, level of revenue information services, withholding and information reporting, preparer responsibilities and penalties, probability of receiving audit coverage, progressive and actual level of tax rates and penalties for non-compliance (Devos, 2014). When these determinants are clearly and systematically identified through empirical analysis, certain answers can be drawn, enabling the economic policy makers to formulate an economic strategy for minimizing harmful effects of tax evasion (Richardson, 2006). Allingham and Sandmo (1972) are the first ones who established the theoretical basis for research on tax evasion, based on the traditional economic model. They have introduced the theoretical model, and what affects taxpayers to avoid paying the tax obligations and found a positive relationship between tax rates and tax evasion. However, it is dependent on particular assumptions of risk aversion and the punishment for evading. Economists tend to see (construct) tax evasion as a technical problem; social scientists (including psychologists) as a social problem (Kirchler, 2007). The relevance of social norms is generally supported in empirical studies on tax evasion (Kirchler, 2007).

Indeed, it is still necessary to try to give the answers to many basic questions and explanations of the phenomenon of tax evasion, and these issues require many additional research. Do higher tax rate and penalties encourage or discourage the level of compliance with tax regulations? How effective are sanctions and penalties? By increasing the level of penalties, probability of detection, effective criminal protection and effective sanctions related to tax evasion, it can lead to a reduction in the occurrence of tax frauds, a reduction in the volume of irregularities and market distortions, which should result with an increase in revenue collection. Penalties should be such that it is not "worthwhile" for no one to get involved into tax evasion. The majority of studies which have examined sanctions as a compliance variable have either attempted to manipulate the penalty level in an experimental setting, or have used the actual penalty rates in the particular tax system being investigated (Devos, 2014). Allingham and Sandmo (1972) found out that increasing the level of the penalty reduces the level of tax evasion and because of that, the taxpayer will reduce the avoidance of presenting income and will report his/her actual income. With regard to the perception of just sanctions, it might be expected that citizens do not hold a general attitude about what is appropriate punishment, but rather consider the causes of evasion when deciding on the punishment (Kirchler, 2007). Although a substantial level of research has been conducted on tax rates, it is still unclear how this variable impacts upon taxpayer compliance (Devos, 2014). On the other hand, Nur-tegin (2008) suggests that the degree of business tax evasion is not likely to be lessened by lower tax rates.

In the focus of theoretical and empirical analysis of the effects of taxation, the question arises as to whether the tax burden and the tax system are optimal, whether they affect tax evasion and whether their correction may achieve the target level of tax revenues in a more effective way?

Due to the fact that taxpayers see the tax relatively as burden, tax evasion increases if the tax burden or tax pressure is higher, i.e., the state would compensate for the lost revenues not collected from the tax evaders, most often resorting to the increase in tax rates. High tax burden often implies different distortions in the economic behavior of taxpayers. By creating a simple tax system, with no permanent change, which is implemented consistently and efficiently, carefully designed for taxpayers in an effort to reduce the burden on taxpayers, which allows electronic interaction with taxpayers and without the obligation to submit documents in paper form, can lead to a reduction of tax evasion, even where is a failure to pay taxes in a "pandemic" swing. Acceptance of the fact by the tax administration that taxpayer control is not always the true or the only way of removing a lack of discipline from a taxpayer and that discipline can be enhanced by some more effective approach where the accent is placed on each case individually "from the base to the top", and in other ways can lead to reduction of tax evasion. Increasing complexity would certainly appear to have a more undesirable effect upon

tax compliance, and further research utilizing this variable needs to be undertaken (Devos, 2014). Therefore, the taxpayer and tax authority interaction is at the core of the taxation game. Not surprisingly, it attracted by far the most attention of research in economics as well as in psychology (Pickhardt and Prinz, 2013).

Corruption is a systematic problem, and in order to prevent it within the institution, anticorruption activities must become an integral part of governance, i.e., they should be integrated into other decision-making processes and their implementation. Every reform process, and especially the anticorruption, is a complex and demanding process, accompanied by various obstacles, such as: lack of political will, failure to fulfill internationally accepted obligations, insufficient autonomy and competence of implementing subjects, insufficient engagement of implementing subjects, lack of financial resources, systematics and coordination, lack of public support and unreasonable expectation for quick effects in the fight against corruption. Corruption undermines and endangers fundamental values of social relations, impedes economic development and equitable market competition, jeopardizes the rule of law, democracy and human rights, destroys morals, represents a deviation of basic social principles and endangers the stability, efficiency and economic advancement of the state, undermines good governance, equity and social justice, enables the growth of organized crime and terrorism, jeopardizes the stability of democratic institutions and the moral foundations of society. Corruption is associated with low salaries of tax inspectors and causes serious problems in establishing an effective tax system (Kirchler, 2007). One of the most significant consequences of corruption can be the loss of confidence of taxpayers in the work of tax officials. If tax officials are susceptible to corruption, taxpayers have a greater possibility of tax evasion. Nur-tegin (2008) finds that fighting corruption is more important in deterring tax evasion than conventional measures.

Numerous domestic and foreign researches have been ranking Bosnia and Herzegovina to the ranks of European countries with the highest degree of corruption for years, while noting that there are socially most dangerous forms of corruption in B&H, which have tremendous consequences for the overall socio-economic development of the country. The lack of political will, clear strategic frameworks and mechanism for the implementation of anticorruption policies is a feature of the entire post-conflict period in B&H.

Tax morale and culture by fulfilling tax obligations is difficult to measure because it depends from the perception of taxpayers themselves. In the tax literature, the concept of tax morale is frequently not explicitly defined, and operationalization and measurement in empirical work are rather heterogeneous (Kirchler, 2007). The satisfaction of taxpayers in relation to the state and how money collected from taxes is being spent and what is the effect of paying tax obligations, can greatly affect the level of tax morality and culture of taxpayers. Each taxpayer should have a moral attitude and an undeniable relationship toward deviant occurrences and must be aware that he or she, sooner or later, takes over the consequences of disrespecting professional norms and rights. By pointing to the need to increase the level of tax morality and culture, a positive attitude can be created for taxpayers in fulfilling their tax obligations.

Culture is considered to be a powerful environmental factor that affects the taxpayer's compliance. Different social norms and ethical values will create different incentives for tax compliance (Chau and Leung, 2009). The concept of culture is defined in the literature in different ways. Most definitions emphasize that this is a psychological process that stimulates and directs behavior. As far as the psychological process is concerned, culture cannot be directly perceived, but "substitute" indicators such as satisfaction or dissatisfaction are used. The determinants of culture can stimulate, both from the environment, and from the person himself, i.e., can have an extrinsic (external) or intricate (internal) character. Having this in mind, it is necessary to examine practically the way of acting on tax evasion. McGee and Tyler (2006) stress that tax evasion is more unacceptable behavior for female taxpayers than for male taxpayers. In Bosnia and Herzegovina, an opinion has been formed that it is morally to avoid public revenues and the feeling of the taxpayer that the payment of taxes does not make any difference against the service, conditioning to a certain extent the avoidance of tax obligations.

However, there were not so many studies in B&H about the tax evasion and its reflections on the humans and/or companies behavior and vice versa, i.e. about link between

tax evasion and socio-economic environment. McGee *et al.* (2009) surveyed students at the University of Sarajevo in Bosnia and results indicate that the majority of respondents do not believe that tax evasion is ethical. The survey consisted of eighteen (18) statements. Using a seven-point Likert scale, respondents were asked to place the appropriate number in the space provided to indicate the extent of their agreement or disagreement with each statement (McGee *et al.* 2009). However, authors believe ethical attitude toward tax evasion is more complicated than that. The strongest arguments justifying tax evasion occur in cases where the government was perceived as being corrupt or when the tax system was seen as unfair or when tax funds were spent on projects that the respondent does not approve of (McGee *et al.* 2009). The basic conclusion would be that we have learned a lot in the last 40 years but there are still major gaps in our understanding. Indeed, we are still trying to answer many basic questions on measuring, explaining, and controlling evasion, questions that require much additional research (Alm, 2011).

In this sense, highlighting the existing key factors of tax evasion or researching the fact that there are others equally or even more important, *de facto*, confirms the complexity, relevance and actuality of this issue.

3. Description of the sample, empirical data and methodology

According to Jain and Srivastava (2013), the survey is a way to achieve self-reporting facts about the ideas, behavior, opinions and assertions characteristic of a particular population. For that reason, the present study is a quantitative research approach in which a cross-sectional process was used to collect data only at one point in time. The data are collected using standard instruments and instruments that will be constructed only for the purposes of this research, as this is an example of the Tax Administration of Sweden (STA), which, via questionnaires, examine the perception of citizens and taxpayers about the outspread of tax evasion. The questions in the surveys are formulated as statements to which the respondent agrees or disagrees, on a five digit scale. There is also an option to respond with "no opinion" (STA, 2014). Kirchler and Berger (1998) investigated the reported compliance of finance officers, self-employed people and entrepreneurial taxpayers in a study conducted in Austria as dependent on socio-demographic characteristics, justice perceptions and moral standards (Kirchler, 2007).

The survey was conducted between September 2015 and June 2016, and at the end of June 2016 the target sample (N: 300) was collected when the data collection process was completed and access to the processed primary data was processed. In order to achieve the set goal, empirical research will focus on data collection both by taxpayers and tax administration employees. In accordance with the subject and the problem of research and the aims of empirical research in the sample on which two research groups or sub-groups have been investigated: 200 taxpayers (66.7%) and 100 tax inspectors (33.3%), whose attitudes, within further analysis and interpretation of data obtained by primary research, are comparable. By phase of field research, two groups of taxpayers are interviewed, by the nature of the "contradictory parties", the directors of companies or other responsible persons (Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District of Bosnia and Herzegovina) who have intensive contacts with the tax administrations and employees in professional organizations (tax inspectors Indirect Taxation Authority BiH, tax inspectors Federation BiH, tax inspectors Republika Srpska and tax inspectors Brcko District BiH). According to the number of respondents, the group of indirect taxpayers and ITA tax inspectors was the most represented. For the purpose of conducting the research, a comprehensive questionnaire was produced, representative and appropriate, which constitutes a strong initiative for further investigation of the phenomenon of tax evasion (Terzic and Dzakula, 2019).

The survey questionnaire used to collect primary data consists of several sets and over 50 questions. Structured and unstructured questions with a scale for general attitude tests towards occurrence of tax evasion in the country and society have been used for measuring, Scale for "measuring" the general (un)satisfaction with things and phenomena on tax evasion and the Scale for testing attitudes towards priorities for decreasing and determining the

occurrence of tax evasion. Set of questions included issues in connection with the attitude of respondents and the degree to which they agree with tax evasion, how satisfied they are with occurrences that are affecting tax evasion and what they consider to be an important priority in removing obstacles. The question was also raised about the rate of tax evasion in Bosnia and Herzegovina (in percentages), of total tax revenues. In this study, the data collected were analyzed using the Statistical Package for Social Sciences (SPSS).

Based on acquired theoretical and empirical findings on the characteristics of tax evasion, the hypothesis of this paper is: H_1 . By identifying the factors that influence tax evasion, with the determination of significance and strength, it is possible to construct a model of determination in order to prevent and reduce tax evasion. In the context of auxiliary hypotheses, we define the following independent variables in the model:

H_{1a} : Tax rates and fines - average of question 1.5. (Fines/sanctions for tax evasion are disproportionate and inefficient and need to be far more severe) and question 1.1. Taxpayers who have not committed tax evasion are rare.

H_{1b} : Tax burden and taxation system - average of question 3.11. (Tax burden rate), question 3.7. (Tax laws and rules are too complicated), question 5.3. (Modification and improvement of tax regulations) and question 5.1. Improvement of control system and collection of taxes.

H_{1c} : The corruption rate - the average of question 1.2. (People holding "high positions" do not abide to the norms in a society), 1.4. (Only people who are not directly responsible for the suppression of tax evasion are those who are talking negatively about it) and question 1.6. Tax evasion is, in most cases, unprovable.

H_{1d} : Tax morale and culture - average of question 1.1. (Tax evasion represents the greatest brake of society development), question 1.3. (Tax Evasion is equally present in all countries), question 1.7. (Tax evasion is one of the most important indicators of the collapse of system value), question 1.12. (Tax Evasion is traditionally characteristic of our mentality), question 3.1. (By overall attitude of society to tax evasion), question 3.2. (By the level to which the public opinion on tax evasion has been developed), question 3.4. (Ethical Standards of Employees), question 3.9. (General culture about the need to pay taxes), question 5.2. Building moral norms on the need to pay taxes and questions 5.5. Social benefits and security regulation.

4. Analysis and presentation of research results on attitudes of respondents towards tax evasion

The aim of this study is to examine determinants that affect tax evasion in BiH. The dependent variable in this study is a tax evasion expressed as an ordinal variable, ranking (in the context of the rate and outspread of tax evasion), while the independent variables would include the level of tax rate and penalties, tax burden and tax system, tax administration organization, level of corruption, taxation moral and national culture. Each of these independent variables has its share in the detection of tax evasion.

Given the measurement unit, tax evasion as a variable is metric, however, in the questionnaires there are some answers provided through intervals and can be observed as an ordinal. The tax evasion rate is divided into intervals in the questionnaire: <10%, 10%-19%, 20%-29%, 30%-49% and >50%, what is the amount of tax evasion in BiH (as a percentage) of total tax revenue?

Table 1. Case processing summary, tax evasion rang

	N	Marginal Percentage
1,00	4	1.3%
2,00	45	15.0%
3,00	103	34.3%
4,00	91	30.3%
5,00	57	19.0%
Valid	300	100.0%

Source: Authors' analysis from questionnaire

The largest share of respondents (about 50%) is the one who believe that tax evasion is present at a level higher than 40% of total tax revenues, while 34.33% of respondents place the level of tax evasion in the interval of 20-29%. In the sub-samples also, the situation is very similar, and there is no statistically significant difference in the attitudes of the subjects between the sub-samples. Differences in individual attitudes can be caused and prompted by a defensive mechanism depending on the interest group the individual belongs to (Table 2).

Table 2. The tax evasion rate in BiH in percentage of total tax revenues, Sub-samples Tax payers/Inspectors

Sub-samples			Frequency	Percent	Valid Percent	Cumulative Percent
Tax payers	Valid	< 10%	4	2.0	2.0	2.0
		> 50%	39	19.5	19.5	21.5
		10%-19%	28	14.0	14.0	35.5
		20%-29%	65	32.5	32.5	68.0
		30%-49%	64	32.0	32.0	100.0
		Total	200	100.0	100.0	
Tax inspectors	Valid	> 50%	18	18.0	18.0	18.0
		10%-19%	17	17.0	17.0	35.0
		20%-29%	38	38.0	38.0	73.0
		30%-49%	27	27.0	27.0	100.0
		Total	100	100.0	100.0	

Source: Authors' analysis from questionnaire

Based on acquired theoretical and empirical findings on the characteristics of tax evasion, research has put subjective and objective factors on tax evasion at the center of the discussion and explained that this relationship manifests in reality in depth and width, in the sense that the research included key factors. The quality of the regression model obtained is seen through the coefficient of determination or correlation coefficient. As the absolute value of this coefficient is closer to 1, the model is better. The corrected coefficient of determination is interpreted, since it is done with the middle pattern.

By analyzing the rank correlation coefficient between the level of tax evasion variable as ordinal variable and variables of what is the attitude towards tax evasion, the satisfaction of respondents and the priorities in eliminating the obstacles for fighting against tax evasion (bolded correlation coefficients in Attachment 1.) are obtained from statements that are statistically significant and positive. It is apparent from the enclosed that, according to the level of the significant rank correlation coefficients, we can produce a ranking list of statements expressing the attitude towards tax evasion, satisfaction of respondents and priorities in eliminating the obstacles for fighting against tax evasion in the context of their impact on the level of tax evasion (Terzic, 2017). According to Terzic (2017), it was taken the rate of tax evasion, expressed as a breaking variable (middle interval), as a dependent variable and previously described four independent variables, to determine the mode of dependence between observed variables. The form of the relationship was determined using a regression model.

Table 3. Correlation matrix for rank correlation coefficients between the level of tax evasion variable as ordinal variable and independent variables

Spearman's rho		Tax evasion rank
Tax rate and fines	Correlation coefficient	0.344
	P value	0.000
Tax burden and taxation system	Correlation coefficient	0.171
	P value	0.003
The corruption rate	Correlation coefficient	0.131
	P value	0.023
Tax morale and culture	Correlation coefficient	0.151
	P value	0.009

Source: Appendix 1

Since P is less than 0.05, there is a significant relationship or interdependence between the original variable and subject variables. All rank correlation coefficients in the correlation matrix in Table 3 are statistically significant and positive, which justifies the creation of a determination model with the dependent and independent variables described above. Binary (or binomial) logistic regression is a form of regression which is used when the dependent is a dichotomy and the independents are of any type (Devos, 2014). Logistic regression arises from a logistic transformation. Logistic regression does not require any specific form of distribution of independent variables, and this is its significant advantage. In the classification process, logistic regression, as well as discriminatory analysis, provides a basis for the classification of not only the sample used to evaluate the model, but also for any other observations that can have values for all independent variables.

By multinational logistic regression, the dependent variable is an ordinal type and can have more than two modalities. Its interpretation is identical to the interpretation of the regression coefficient in a multiple regression analysis. It provides a basis for the classification of, not only the sample used to evaluate the model, but also for any other observations that can have values for all independent variables. If we take the tax evasion rate expressed as an ordinal variable (rank) for the dependent variable and previously described four independent variables, we will estimate the ordered logistic model (Table 4).

Table 4. Logit model with four independent variables

	Estimate	S. E.	Wald stat.	P value
Tax rate and fines	0.724	0.152	22.852	0.000
Tax burden and taxation system	0.295	0.166	3.176	0.075
The corruption rate	-0.021	0.178	0.014	0.907
Tax morale and culture	0.430	0.266	2.610	0.106

Source: Appendix 2

The Wald test provides the value statistic for each predictor. Wald statistic, as part of the evaluation of the logit regression model, is a test used to test the significance of an independent variable and an accompanying coefficient. Its interpretation is identical to the interpretation of the t value used to test independent variable and the regression coefficient in a multiple regression analysis.

Table 5. Model summary Pseudo R-Square

Cox and Snell	0.134	Nagelkerke	0.143	McFadden	0.052
---------------	-------	------------	-------	----------	-------

Pseudo R² (Cox and Snell) expresses the quality of the model, as a coefficient of determination by the multiple regression model. Pseudo R² (Cox and Snell) = 0.134 (Table 5.). The Model Summary in Table 5 above also provides information about the usefulness of the model. In particular, the Cox and Snell R-Square and the Nagelkerke R-Square provide an indication of the amount of variation in the dependent variable explained by the model (i.e., from a minimum value of 0 to a maximum of approximately 1).

Table 6. Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	1338,822	1128	0,000
Deviance	769,354	1128	1,000

Hi-square value for "goodness of fit" =1338.8 (Table 6), p value goodness of fit" =0.000 > 0.05 the determination coefficient is significant and model is acceptable.

From the above mentioned and presented data, it can be stated that the hypothesis is confirmed: H₁: The level of the tax rate and the penalty has a significant effect on the tax evasion and it can be concluded that the model is acceptable, but only one of the four independent variables is significant. The tax evasion rate expressed as an ordinal variable (rank) is the dependent variable and four independent variables, the level of the tax rate and

penalty, the tax burden and the taxation system, the level of corruption, tax morale and culture, the rating of the ordered logistic model is just one of four independent variables that are significant "level of tax rate and penalty". By analyzing the results of the field research, according to the respondents' views, it can be concluded that the tax rate and the level of penalty are the key determinants of the tax evasion rate.

The intensification of penal policy would contribute to the suppression and more effective confrontation of all forms of tax evasion. Increasing the level of penalties through the amendments to the criminal legislation in BiH should lead to a reduction in the appearance of forms of tax evasion and fines in the misdemeanor procedure will be expressed in the level that exceeds the level of tax evasion that would result in an increase in collection of revenues and a significant reduction in tax fraud and evasion. Tightening up on the penal policy would contribute to the suppression and more efficient fight against all types of tax evasion. Penalties must be such to discourage taxpayers from making tax evasion and fraud, because if the punishment is far less than the benefit that a tax fraud prevails, the punishment has no purpose. The high tax rate in BiH adversely affects the tax evasion. The higher the tax deduction, the more likely is that taxpayers will opt for a tax evasion, because they expect they will not be caught, or believe that if they are caught, the sanction will not be high, that any possible consequences imposed by the court through a court judgment will be compensated for by the profit made from executing of tax fraud.

The absence of an appropriate penalty framework and an optimal tax rate can have a number of adverse consequences, primarily with taxpayers, and therefore requires rapid intervention and a multifunctional approach in tackling the problem of tax evasion.

5. Conclusion and recommendations

Results show that all estimated effects are in accordance with theory and the previous empirical literature.

So far, research in the field of tax evasion has not been conducted in BiH in this way, or in such scope. This work is an attempt to analyze tax evasion from the poorly illuminated side so far, especially considering that the proposed model, which is simple in its algorithm, can create a condition for improving the current situation by establishing a modern approach to fight tax evasion, for fiscal authorities in BiH. The scope of the performed research was limited by the need and purpose of verifying the hypothesis set, so that the proposed model should be considered only as a framework. The research carried out in this work justifies, demonstrates and opens up space for new research questions regarding tax evasion. It can be noted that in the future, research can be extended to other countries in order to obtain a cross-cultural aspect of tax evasion and to conduct even deeper analysis of all tax evasion factors, and to revise the questionnaire and the entire instrument of research. Continuation of the research on this topic would significantly encourage thinking about all factors of tax evasion.

Potential topics of new scientific research are:

- identification of other factors that can improve the model of determination in order to prevent and reduce tax evasion. Advantages and disadvantages of the model and what is the prognosis of their development,
- access to taxpayers by the Tax Administration to reduce tax evasion. (Ethical treatment in the 21st century),
- new strategies and alternative methods in the fight against tax evasion, strategic planning and development of strategic plans (through taxpayers' surveys in order to identify the perceptions of taxpayers),
- using new knowledge, technology and providing taxpayers-oriented services to improve access to the fight against tax evasion (new communication channels: websites, Facebook, Twitter, You Tube, etc.).

This paper has several limitations related to the data used in the research. As with any other research, the use of relevant literature, official statistical sources and empirical research

has indicated that this research has its possible limitations. Moreover, since participation in experiments is voluntary, a selection bias cannot be excluded. Field experiments are expensive; however, to find tax policy instruments implementable with more certainty concerning their effectiveness, such experiments seem indispensable (Pickhardt and Prinz, 2013).

The first limitation and most importantly is that the accuracy of the collected data through the questionnaire depends primarily on whether the respondents understood the questions and whether they answered it honestly. The questionnaire as an instrument of research points to the possibility of a subjective assessment of the actual situation (the subjectivism of the respondents), i.e., the presentation of the actual situation as nicer or worse, than it is indeed and the inability to verify the credibility of the answer. Regardless of the fact that it is indicated to respondents that the questioning is anonymous and that they do not sign on the questionnaire, or to enter any data other than those requested, it is possible that the respondents did not understand the questions well and that the data they gave are incorrect.

The second limitation refers to the scope and design of the research itself, which was limited by the need and purpose of verifying the set hypothesis. In this survey, data were collected from 300 respondents, 200 taxpayers and 100 tax inspectors, so that a conclusion could not be drawn based on a wider scope of research. The third limitation, the research is related to the lack of similar research in our area, so the discussion is related to the research of those countries that have many years of experience in the field of tax evasion, primarily the countries of the European Union. Additionally, the lack is both "reading" and interpreting the results obtained. This phase of research is not without the influence of pre-emptiness, in this case the researchers. The problem may also be the subjectivity of the assessments of the respondents participating in the survey, as the questionnaire is filled out by a key person of a taxpayer, the manager of a business entity or other responsible person in a legal entity whose attitudes can be fierce or destructive due to possible own difficulties, as well as a rating of employees in professional authorities, the tax administrations "who are not satisfied with their labor-legal status" within the organization itself.

Although each of these weaknesses has particular causes, the characteristics of the most of the research in BiH are to be implemented without financial assistance, which consequently produces the necessity of making a compromise in the way research is conducted. For example, inviting respondents to participate in the research very often provokes suspicion of respondents regarding the ultimate use of data or possible misuse. Given the limitations, however, with a high degree of reliability, it can be ascertained that the results reflect the existing situation in a credible and fairly realistic.

References

- Allingham, M. G., and Sandmo, A., 1972. Income tax evasion: A theoretical analysis. *Journal of Public Economic*, 1, pp. 323–338. [https://doi.org/10.1016/0047-2727\(72\)90010-2](https://doi.org/10.1016/0047-2727(72)90010-2)
- Alm, J., 2011. Measuring, explaining, and controlling tax evasion: lessons from theory, experiments, and field studies. *International Tax and Public Finance*, 19(1), pp. 54–77. <https://doi.org/10.1007/s10797-011-9171-2>
- Chau, G., and Leung, P., 2009. A critical review of Fischer's tax compliance model: A research synthesis. *Journal of Accounting and Taxation*, 1(2), pp. 34-40.
- Devos, K., 2014. *Factors influencing individual taxpayer compliance behavior*. Dordrecht: Springer Science+Business Media Dordrecht. <https://doi.org/10.1007/978-94-007-7476-6>
- Jackson, B. R., and Milliron, V. C., 1986. Tax compliance research: Findings, problems and prospects. *Journal of Accounting Literature*, 5, pp. 125–165.
- Jain, N., and Srivastava, V., 2013. Data mining techniques: a survey paper. *IJRET: International Journal of Research in Engineering and Technology*, 2(11), pp. 1163-2319.
- Kirchler, E., 2007. *The economic psychology of tax behavior*. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511628238>

- Kirchler, E., and Berger, M. M., 1998. Macht die Gelegenheit den Dich? Einstellungen zu Steuern und Tendenzen zur Steuerhinterziehung [Is opportunity making the thiel? Attitudes towards taxes and tendency towards tax evasion]. *Jahrbuch der Abstz und Verbrauchsforschung*, 98(4), pp. 439-462.
- McGee, W. R., and Tyler, M., 2006. *Tax evasion and ethics: A demographic study of 33 countries*. Andreas School of Business Working Paper, Barry University, Miami. <https://doi.org/10.2139/ssrn.940505>
- McGee, R., Basic, M., and Tyler, M., 2009. Tax evasion in Bosnia. *Journal of Balkan and Near Eastern Studies*, 11(2), pp. 197-207. <https://doi.org/10.1080/19448950902921085>
- Nur-tegin, K. D., 2008. Determinants of business tax compliance. *The B.E. Journal of Economic Analysis and Policy* 8(1), pp. 1-28. <https://doi.org/10.2202/1935-1682.1683>
- Pickhardt, M., and Prinz, A., 2013. Behavioral dynamics of tax evasion - A survey. *Journal of Economic Psychology*, 1, pp. 1-19. <https://doi.org/10.1016/j.joep.2013.08.006>
- Richardson, G., 2006. Determinants of tax evasion: A cross-country investigation. *Journal of International Accounting, Auditing and Taxation*, 15, pp. 150–169. <https://doi.org/10.1016/j.intaccaudtax.2006.08.005>
- Russo, F. F., 2010. *Tax evasion and community effects in Italy*. CSEF Centre for Studies in Economics and Finance Working paper no. 254.
- Slemrod, J., 2007. Cheating ourselves: The economics of tax evasion. *Journal of Economic Perspectives*, 21(1), pp. 25-48. <https://doi.org/10.1257/jep.21.1.25>
- STA, Swedish Tax Agency, 2014. *The development of tax gap in Sweden 2007-2012*. Stockholm: Skatteverket.
- Terzic, S., 2017. Model for determining subjective and objective factors of tax evasion. *Notitia-Journal for Sustainable Development*, 3, p. 49-60. <https://doi.org/10.32676/n.3.5>
- Terzic, S., and Dzakula, M., 2019. Effects of tax evasion and tax policy on economic and social environment: The case of Bosnia and Herzegovina. *Applied Economics and Finance* 6(2). pp. 43-55. <https://doi.org/10.11114/aef.v6i2.3836>
- Tsakumis, G., Curatola, A., and Porcano, T., 2007. The relation between national cultural dimensions and tax evasion. *Journal of International Accounting Auditing and Taxation*, 16(2). pp. 1-27. <https://doi.org/10.1016/j.intaccaudtax.2007.06.004>

Appendix 1. Correlation matrix for rank correlation coefficients between the level of tax evasion variable as an ordinal variable and variables that are expressing the attitude towards tax evasion, the satisfaction of respondents and priorities in removing obstacles for fighting against tax evasion

Spearman's rho		Tax evasion
1.1. Tax evasion is the largest break in the development of a society	Correlation coefficient	0.286
	P value	0
1.2. People holding "high positions" do not abide to the norms in a society	Correlation coefficient	0.161
	P value	0.005
1.3. Tax Evasion is equally present in all countries	Correlation coefficient	0.066
	P value	0.252
1.4. Only people who are not directly responsible for the suppression of tax evasion are those who are talking negatively about it	Correlation coefficient	0.126
	P value	0.029
1.5. Fines/sanctions for tax evasion are disproportionate and ineffective and they should be far more severe	Correlation coefficient	0.245
	P value	0
1.6. Tax evasion is, in most cases, unprovable	Correlation coefficient	-0.007
	P value	0.898
1.7. Tax evasion is one of the most important indicators of the collapse of system value	Correlation coefficient	0.131
	P value	0.023
1.8. Low level of personal income affects the level of tax evasion	Correlation coefficient	-0.021
	P value	0.722
1.9. Tax evasion is common occurrence for countries in transition	Correlation coefficient	-0.044
	P value	0.447
1.10. Media exaggerate when pointing out to harmful effect of tax evasion	Correlation coefficient	-0.064
	P value	0.271
1.11. Taxpayers who have not committed tax evasion are rare	Correlation coefficient	0.27
	P value	0
1.12. Tax Evasion is traditionally characteristic of our mentality	Correlation coefficient	0.093
	P value	0.107
1.13. Poor education is the reason for tax evasion	Correlation coefficient	-0.006
	P value	0.922
3.1. By overall attitude of society to tax evasion	Correlation coefficient	-0.002
	P value	0.973
3.2. By the level to which the public opinion on tax evasion has been developed	Correlation coefficient	-0.005
	P value	0.93
3.3. By work and organization of tax administrations (UINO – Indirect taxation authority; PU RS – Tax administration of RS ; PU FBH – Tax administration of FBH; PU BDBH – Tax administration of Brčko district BH)	Correlation coefficient	-0.083
	P value	0.15
3.4. By ethical standards of employees	Correlation coefficient	0.026
	P value	0.659
3.5. By possibility of obtaining information on the work of responsible persons	Correlation coefficient	-0.06
	P value	0.298
3.6. By own professional development	Correlation coefficient	-0.019
	P value	0.748
3.7. Tax laws are too complicated	Correlation coefficient	0.019
	P value	0.742
3.8. By general economic situation and terms to provide the existence by work	Correlation coefficient	-0.032
	P value	0.583
3.9. By general culture of need to pay taxes	Correlation coefficient	-0.025
	P value	0.663
3.10. Collected taxes are being irrationally used by a state	Correlation coefficient	-0.09
	P value	0.12
3.11. Tax burden level	Correlation coefficient	0.083
	P value	0.152
5.1. Improvement of control system and tax collection	Correlation coefficient	0.181
	P value	0.002
5.2. Building up the moral standards of the need to pay taxes	Correlation coefficient	0.108
	P value	0.061
5.3. Modification and improvement of tax regulations	Correlation coefficient	0.189
	P value	0.001
5.4. Improvement of economic working conditions	Correlation coefficient	0.168
	P value	0.004
5.5. Social benefits and security regulation	Correlation coefficient	0.169
	P value	0.003
5.6. Regulation of the informal sector	Correlation coefficient	0.191
	P value	0.001

Source: Authors' analysis from questionnaire

Appendix 2. Parameter estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Uppr. Bound
Threshold	[tax evasion rang = 1.00]	0.276	0.954	0.084	1	0.772	-1.594	2.146
	[tax evasion rang = 2.00]	3.020	0.840	12.926	1	0.000	1.374	4.667
	[tax evasion rang = 3.00]	4.829	0.862	31.375	1	0.000	3.139	6.519
	[tax evasion rang = 4.00]	6.404	0.897	51.019	1	0.000	4.646	8.161
Location	nv1	0.724	0.152	22.852	1	0.000	0.427	1.021
	nv2	0.295	0.166	3.176	1	0.075	-0.029	0.620
	nv3	-0.021	0.178	0.014	1	0.907	-0.370	0.328
	nv4	0.430	0.266	2.610	1	0.106	-0.092	0.952

Source: Authors' analysis from questionnaire