

# Economic analysis of tax installment forgiveness using game theory approach: The case of Iran

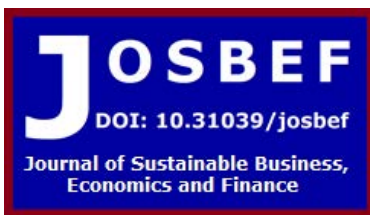
Zahra Khalilzadeh Silabi<sup>1</sup>, Sattar Salimian<sup>2</sup>, Iraj Shahriyari<sup>3</sup>,  
Hossein Pishani Yazdi<sup>3</sup>, Salah Salimian<sup>3,4</sup>

<sup>1</sup>*Faculté de Droit Economie and Gestion, Orleans University, France*

<sup>2</sup>*Department of Economics, Kharazmi University, Iran*

<sup>3</sup>*Iranian National Tax Admission Organization (LTU), Tehran, Iran*

<sup>4</sup>*Department of Economics, Urmia University, Tehran, Iran*



Received 15 August 2022  
Revised 07 September 2022  
Accepted 29 September 2022

Citation: Silabi, Z. K., Salimian, S., Shahriyari, I., Yazdi, H. P. & Salimian S. (2022). Economic analysis of tax installment forgiveness using game theory approach: The case of Iran. *Journal of Sustainable Business, Economics and Finance*, 1(3), 1-15. <http://doi.org/10.31039/josbef.2022.3.1.24>



**Copyright:** © 2022 by the authors.  
This article is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

corresponding author:  
[salahsalimian@yahoo.com](mailto:salahsalimian@yahoo.com)

## Abstract

One of the most important income economic policy instruments for all countries is taxes. On time receipt of taxes for countries is very vital and the basis of government planning for all projects and especially their budgeting. In Iran, taxpayers have been penalty for delaying the payment of taxes and paying them in installments. In this study, the interaction between the tax affairs organization and taxpayers in the installment penalty and its forgiveness was examined through game theory and the Nash equilibrium was derived from the inverted inference of a dynamic game with complete information between the two players mentioned. The results of the Nash equilibrium of the designed game indicate that in case of repeated forgiveness, the installment penalty regular taxpayers also pay their diagnostic tax in installments this means that the installment penalty does not have the necessary efficiency. In other words, the system of installment penalty and eventually its forgiveness will turn regular taxpayers into irregular taxpayers. In this regard, suggestion to the tax affairs organization that to achieve your goals non-payment penalty within the deadline without forgiveness performance or instead of mentioned penalty for irregular taxpayer used for rewarding system from regular taxpayers.

**Keywords:** Game Theory, Tax Affairs Organization, Taxpayers, Installment Penalty, Backward Induction Nash Equilibrium.

**JEL Classification Codes:** C70, K34, D58.

## 1. Introduction

In most parts of the world, a large portion of government revenue comes from taxes, the amount of which depends on the level of economic development and economic structure of those countries. A look at this important source of revenue for the countries shows that the higher is the contribution of taxes to the government expenditures, the more the adverse economic effects are prevented (Shahrokhi et al., 2015). The higher rate of voluntary tax payment in a financial system improves the status of financial indicators, and the increase in the payment rates will lead to decrease of the tax gap, which leads to a move towards financial justice (Hasas Yeganeh et al. 2019).

Before dealing with the main issue, it should be mentioned that this research is about investigating the issue of forgiveness of tax crimes according to the conditions and laws of direct taxes governing the Iranian tax system. In recent years in Iran, the government's change of revenue resources to taxation made it necessary to identify the barriers affecting the process of tax collection and empower the tax system. Tax evasion and tax avoidance are among the main challenges and obstacles in tax collection process in most countries. Tax evasion is in fact the intentional and illegal avoidance of paying mandatory taxes to the government by declaring less income, profits or gains than the amounts actually earned (Becker, 1968). On the other hand, tax avoidance is any legal method used by a taxpayer to minimize the amount of income tax owed or in fact to get around the law. In other words, tax avoidance is to take benefit of tax system of the country to reduce the tax owned (Dyrenge et al., 2010). It can also be said that tax avoidance in its broadest sense is all the arrangements for reducing, eliminating or postponing tax debt and in fact using the gaps and weaknesses of the tax system to reduce taxes, without violating the rules and regulations. (Freedman, 2004). On the other hand, tax installments (except under certain conditions) are a form of tax avoidance.

Baker's theory of deterrence states that obedience largely depends on the level of tax investigation and punishment (Alabede et al., 2011). In Iran, due to the lack of transparency and inability of the tax system to correctly identify the income of companies and individuals, the amount of book tax is generally low; nevertheless, a significant part of the same book tax is not collected and even if it is collected, the principle of benefit will not be observed in it;

i.e., the cost of tax collection is higher than the amount of tax collected (Hasas Yeganeh et al., 2019).

One of the tools enacted by the legislature to deal with tax evaders is the failure to pay penalty. In the new legislation, the law on direct taxes and criminalization of tax crimes is explained in Article 274 and in 7 clauses and 2 notes. Tax crimes have many negative effects on the economy and lead to non-supply of the government revenue needed for social spending (Emami, 2008).

In addition, the legislature has defined tax installments in Article 167 of the Law on Direct Taxes and stated the installment manner as: "For the taxpayers who fail to pay their tax debt, either the principal or the penalty, the Ministry of Economic Affairs and Finance or the State Tax Administration can install the relevant debt for a maximum period of three years from the date of notification of the final tax."

This article is organized in five sections. After the introduction, in the second part, literature review is presented. In the third part, the game theory and the fourth part game modeling presented in two sub-sections, and in the fifth and final part, conclusions and suggestions are given.

## **2. Literature Review**

Today, the economic and financial autonomy of the countries will be achieved through dynamic and efficient tax system; therefore, designing an optimal tax system is an important issue in economic theories' point of view. In recent years, due to change in the government's approach concerning the sources of revenue towards taxes, the need to identify effective barriers to the tax collection process and empowering the tax system is undeniable. One of the main barriers in achieving the goals of National Tax Administration, which is tax compliance (at the lowest cost), is the difference in the declared tax of taxpayers in the tax return and the due tax announced by the tax assessors. This underlying challenge leads to increased costs, longer collection process, and certainty of tax files. Certainly, identification and resolving the deficiencies and factors that cause this difference will reduce the cost of tax collection and provide resources to the government in a timely manner and at the same time as of submitting tax return. Definitely, the best case scenario for tax administration, (and of course governments) is to pay taxes at the self-assessment stage, as the higher is the voluntary tax rate

in a tax system, the better will be tax indicators and the lower will be the tax gap, which leads to a move towards tax justice (Hasas Yeganeh et al., 2019).

The two main factors of tax evasion and tax avoidance are considered as the major challenges and obstacles in the tax collection process in most countries. Tax evasion is illegal escape from tax payment and often requires taxpayers to deliberately underrepresent their actual assets to the tax authorities in order to reduce their tax liability, usually through unreal report of their taxable assets such as income, profit, or earnings less than the actual amount. (Becker, 1968). It should be noted that both tax evasion and tax avoidance can be considered as a form of tax incapacity (Wenzel, 2002).

Tax planning strategies which utilize complex group structures to reduce a company's tax burden without violating tax laws may be morally reprehensible or highly questionable, as these methods are not illegal (Wilson, 2009; Lisowski, 2010). According to agency theory, one of the motivations for profit management is to reduce tax liabilities and payments by minimizing the effective tax rate. Tax strategies reduce the effective tax rate either through short-term and opportunistic goals, or with the aim of reducing taxes in the long run and creating value for the company (Vaez et al., 2018). Finally, it should be reminded that Tax Administration seeks to achieve a situation in which taxpayers declare and pay their actual tax amount at the stage of declaration (tax return) and in this way prevent the extension of the tax collection process (assessment, objection, reinvestigation and etc.), which takes long time and is costly for the organization and reduces the value of taxpayers' money overtime.

Following, number of literature (there is a limited number of studies on tax penalty) on failure to pay penalty will be reviewed:

Shahrokhi et al. (2015), in a study examined the impact of tax penalties on increasing tax collection in the VAT system. To this end, they selected and analyzed a sample of 122 large taxpayers in Kerman province from 2008 to 2012. Their results indicated a positive and significant relationship between the crimes related to non-registration, non-issuance of invoices, non-submission of declarations, non-submission of documents, non-submission of books and failure or delay to pay penalty or non-payment of debt and tax debt.

Cerqueti & Copier (2016) studied the relation between corruption and tax evasion in the environmental policymaking. To this end, they designed a game of incomplete information,

in which the government could have a strategy of its choice in two ways. The results indicated that in a highly motivated country, the motivational channel is more effective than obedience.

Karamkhani et al. (2016) studied the effectiveness of failure to pay penalty in preventing tax evasion in VAT system among taxpayers in Ilam province. They analyzed a sample of 280 cases of natural and legal entities (approximately equal number) using a descriptive approach and documentary method and Pearson correlation coefficient. Their results showed that the application of failure to pay penalty will prevent tax evasion in the VAT system in Ilam province.

Neifar (2018) modeled the game and tax evasion with three players: tax officials, shareholders and managers. The results showed that the difference in the tax evasion penalty rate between shareholders and directors is probably related to the tax evasion bonus rate awarded by shareholders to managers. Therefore, the rate of penalty for tax evasion practices should not always be higher for managers than for shareholders.

Chica et al. (2021) presented an evolutionary game to understand the dynamics of consumption tax fraud. They claimed that the tax paid by each player depends on the amount of tax paid (more or less) and the likelihood of subjective inspection by tax officials. Finally, they showed that increase in the likelihood of subjective auditing is more efficient for low-volume trades than for high-volume trades. Moreover, the results of their studies indicated that social rewards for those who cooperate in tax payment and alternative penalties for those who evade taxes could be effective policies, although its success depends on the distribution of audit probability for different types of transactions (small or large).

Shahriyari et al. (2022) in a research entitled modeling, checking Nash equilibrium and determining the optimal rate of tax penalty in the game between taxpayers and the tax administration investigated the important and effective factors in the topic of taxes and fines and other related issues. Their results show that the Nash equilibrium in the designed game occurs where taxpayers declare their declared tax less than the diagnostic tax and careful handling by tax affairs organization. In the next step, the equilibrium is somewhere that taxpayers continued their protest until the step of the Court of Justice (the dominant strategy) and tax affairs organization agrees with them (the dominant strategy). Also, the optimal fine

rate for the tax affairs organization was determined until taxpayers do not continue their protest to buy time and devalue the amount paid and agree at the initial stage 238.

Studies have shown that most of studies on taxations focus on tax evasion. On the other hand, concerning the focus of this study (which is on failure to pay and specifically installment of penalties), almost all studies (except for a few cases) have addressed this issue from a legal and judicial point of view. Furthermore, some of the mentioned studies have deal with this issue from the perspective of accounting and how failure to pay penalty relates to prevention of tax evasion and similar issues. So far, this issue has not been investigated from the game theory approach (between national tax administration and taxpayers), therefore, taking benefit of these important cases and obtaining Nash equilibrium points constitute the innovation of this research.

### **3. Game Theory**

Game theory has evolved due to continuous efforts of many social scientists, especially (economics) and pure sciences (mathematics and statistics) and is one of the most important achievements of human knowledge serving various human, natural, technical and pure sciences. It uses mathematical models to analyze the methods of cooperation or competition of rational and intelligent beings and tries to model the mathematical behavior governing a strategic situation (conflict of interest) (Owen, 2012). A person's success in game theory depends on the strategies chosen by others. The ultimate goal of this knowledge is to find the optimal strategy for players (Shahbazi & Salimian, 2017).

Game theory modeling has become commonplace in economics and is still advancing to the extent that thinkers in other sciences are realizing its importance and ability and using it to explain policies and provide solutions (Gibbons, 1997). Games have many dimensions and can be divided into four categories of static games of complete information, dynamic games of complete information, static games of incomplete information, dynamic games of incomplete information. In this research, dynamic games of complete information have been used. In this type of game, players make decisions consecutively, and the outcome of the players for each strategy is in form of general information of which all players are fully aware. The equilibrium solution in dynamic games of complete information is Subgame Perfect Nash Equilibrium (SPE), which by eliminating balances based on promise or threat, enhances Nash

equilibrium (Shy, 1995).

In finite dynamic games of complete information, the complete Nash equilibrium set of the sub-game is the same Nash equilibrium obtained from backward induction process. The procedure for backward induction Nash equilibrium is as follows:

1. Start from the end of the game tree and identify the Nash equilibria for each of the final sub-games (i.e., those sub-games in which there are no other sub-game).
2. Select a Nash equilibrium in each of these final sub-games and obtain a broad summary of the game so that when players use these equilibrium strategies, these final sub-games replace the consequences.
3. Repeat steps 1 and 2 for the summarized game until every move in  $G_N$  game is determined. This set of moves in various  $G_N$  game datasets forms the SPE strategy suite.
4. If no step of this process encounters multiple equilibria, then this profile of strategies, SPE is unique; If multiple equilibria are encountered, a complete set of SPEs can be identified by repeating this method for each possible equilibrium in the sub-games (Mas-Colell et al., 1995).

## 4. Game Modeling

### 4.1. Installment Penalty Relief of National Tax Administration

As mentioned earlier, National Tax Administration imposes installment penalty on taxpayers who intend to pay their due book tax in several installments. This penalty is usually paid in one installment (the last installment after payments) and is a function of various parameters. A game can be designed for this confrontation between the tax administration and taxpayers who intend to pay their book tax in installments. In this regard, first the assumptions and then the variables used are expressed.

**The assumptions of the model:** The governing assumptions are as follow:

- The purpose of the Tax Administration is to institutionalize tax payment in accordance with the laws and as lump sum payment. In other words, for the tax administration, it is preferable to receive due book tax in the first stage and as lump sum rather than installment with penalty.

- Taxpayers are aware of the installment penalty relief as it occurred in previous years.
- Taxpayers for whom the installment has been made will pay the principal tax and the installment penalty upon its determination.
- In case the taxpayers pay the installment on time, they will be subject to a 100% relief of the installment penalty.

### **Variables of the model**

*I* and *NI*, indicate the application of installment penalty and non-application of installment penalty by the tax administration, respectively.

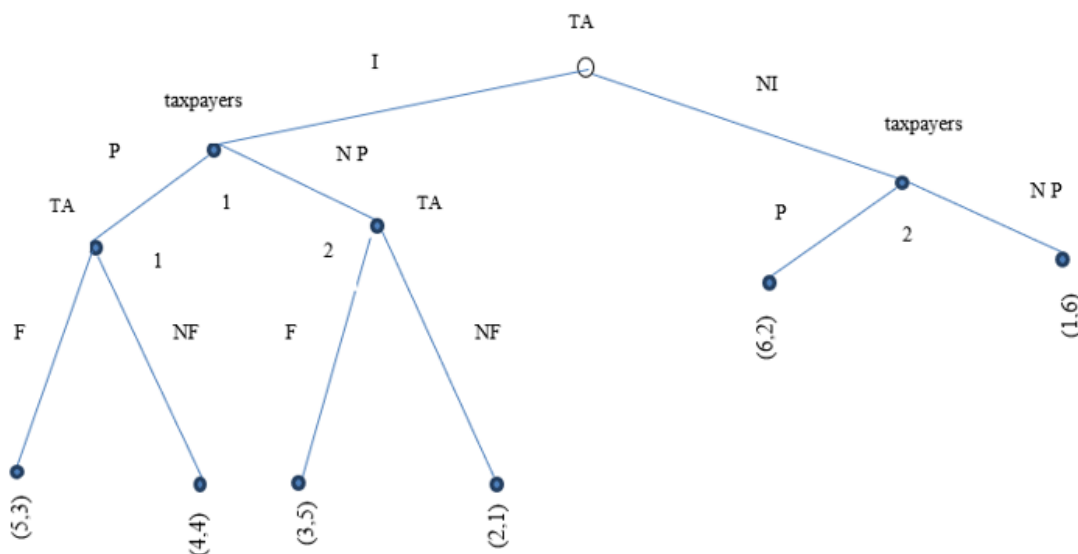
*P* and *NP*, indicate the payment and non-payment of installment by the taxpayers, respectively.

*F* and *NF*, indicate the forgiveness and non-forgiveness of installment penalty by the traffic police.

### **Expanded form of the game**

The game will start when the tax administration has two options to advance: a. To apply the installment penalty for non-payment of all taxes at once and within the deadline, (I). 2) Do not apply installment penalty for non-payment of the whole tax at once and within the deadline (NI). In the next step, the taxpayer can have two choices: 1) To pay the book tax at once and on time and therefore not to be subject to an installment penalty (P). 2) Install the tax principle and therefore not to be subject to the installment penalty (NP). In the last stage, the tax administration can have two approaches to collecting installment penalty in case of imposing an installment penalty in the first stage. 1) Forgive the installment penalty of the taxpayers (F). 2) Do not forgive the installment penalty of the taxpayers and collect it (NF). Therefore, the broad form or the expanded form of the game between the tax administration and the taxpayers will be in form of Figure 1.





**Figure 1.**

The expanded form of the game between tax administration and taxpayers in installment penalty

In the expanded game between tax administration and taxpayers in figure 1, the priorities of the players should be ranked to obtain the outcomes of each strategy. The best option for the tax administration is to collect tax from taxpayers as lump sum without any pressure (installment penalty) (as in this way it can achieve its objective without any extra cost); however, this is the best option for the taxpayers. The outcome of this choice for the tax administration is considered by number 6 and for taxpayer by 1. The next best consequence for the tax administration is to set the installment penalty and then forgive it in the next stage; but the taxpayers pay their installment penalty on time (due to the legal approval process of the installment penalty, the desirability of the tax administration is reduced to some extent). The consequence of this selection for the tax administration is displayed with the number 5. The next consequence for the tax administration is that it sets the installment penalty and does not forgive it, but the taxpayers pay their installment penalty on time. In this case, consequence 4 is considered for the tax administration. The next consequence for the tax administration is when in the first stage it imposes the installment penalty, but the taxpayer does not pay the principal tax first and postpone it until the tax administration forgives the installment penalty. In this case, consequence 3 is considered for the tax administration. The consequence of the tax administration if it imposes an installment penalty in the first stage and the taxpayer does

not pay the principal tax and the tax administration does not forgive it in the last stage, is considered by number to 2. As in this case, the tax administration will resort to pressure due to non-receipt of the tax principle by the taxpayers, which leads to dissatisfaction as well as delay in the payment of the tax principle and its penalty by the taxpayers. The last and worst consequence of the tax administration will occur when it does not impose an installment penalty in the first stage and the taxpayers also do not pay the principal tax. In this case, the tax administration does not even achieve its tax principle; therefore, its consequence is less than the previous consequences and considered as equal to 1.

On the other hand, the best path for the taxpayer is when he does not pay the principal and the tax administration does not apply the installment penalty; since in this case, the taxpayer will postpone the tax payment without any extra charge or any concern. The consequence of this concern is considered as 6 for the taxpayer. The next best consequence for the taxpayer is when the tax administration first set the installment penalty and the taxpayer does not pay the principal tax and the tax administration forgive it in the final stage. In this state, as the taxpayer should pay the principal tax within the determined deadline to benefit from installment penalty relief. The consequence of this is less than the previous state and therefore, number 5 is considered for it. The next consequence is when the tax administration first sets the installment penalty, the taxpayer pays the tax, and the tax administration does not forgive the installment penalty even at the last stage. As far as the taxpayer pays the principal tax, the consequence will be less than previous states; therefore number 4 is considered. When the tax administration first determines the installment penalty, the taxpayer pays the principal tax and is exempted from installment penalty and the tax administrator forgives the installment penalty in the third stage, the consequence is taken as 3. This consequence is lower than previous consequence as the taxpayer could postpone payment for a limited period (until installment penalty relief) and therefore not pay the penalty while he did not do it. The consequence for the taxpayer, when the tax administration does not apply the installment penalty in the first stage, but the taxpayer pays the tax is 2. The lower consequence of this path than the previous one is that in this case, the taxpayer could have delayed his payment for a longer period of time than before, but he did not do so. The worst way for a taxpayer is when the tax authority sets the installment fine in the first stage, the taxpayer does not pay the tax in the next stage and the tax administration does not forgive the installment fine which forces the

taxpayer to pay the principal tax and the installment fine; therefore, the taxpayer will have the highest payment in this path and has the lowest outcome (number 1).

To explain the above explanation within the game theory, first the strategies of each player, then the combination of strategies and then the ranking of the consequences of combining strategies are stated.

The consequences of the game for the tax administration and taxpayers can be logically ranked as follows:

$$U_{TO}(IFF, PP) = U_{TO}(IFNF, PP) = U_{TO}(IFF, PNP) = U_{TO}(IFNF, PNP) = 5$$

$$U_{TO}(INFF, PP) = U_{TO}(INFNF, PP) = U_{TO}(INFF, PNP) = U_{TO}(INFNF, PNP)$$

$$U_{TO}(INFNF, NPP) = U_{TO}(IFNF, NPNP) = U_{TO}(INFNF, NPNP) = U_{TO}(IFNF, NPP) = 2$$

$$U_{TO}(IFF, NPNP) = U_{TO}(INFF, NPNP) = U_{TO}(IFF, NPP) = U_{TO}(INFF, NPP) = 3$$

$$U_{TO}(NIFF, YY) = U_{TO}(NINFF, PP) = U_{TO}(NINFNF, PP) = U_{TO}(NIFF, NPP) = U_{TO}(NIFF, NPP) =$$

$$U_{TO}(NIFNF, NPP) = U_{TO}(NINFF, NPP) = U_{TO}(NINFNF, NPP) = 6$$

$$U_{TO}(NIFF, PNP) = U_{TO}(NINFF, PNP) = U_{TO}(NINFNF, PNP) = U_{TO}(NIFF, NPNP) = U_{TO}(NIFF, NPNP) =$$

$$U_{TO}(NIFNF, NPNP) = U_{TO}(NINFF, NPNP) = (NININI, NPNP) = 1$$

$$U_{TP}(IFF, PP) = U_{TP}(IFNF, PP) = U_{TP}(IFF, PNP) = U_{TP}(IFNF, PNP) = 5$$

$$U_{TP}(INFF, PP) = U_{TP}(INFNF, PP) = U_{TP}(INFF, PNP) = U_{TP}(INFNF, PNP)$$

$$U_{TP}(INFNF, NPP) = U_{TP}(IFNF, NPNP) = U_{TP}(INFNF, NPNP) = U_{TP}(IFNF, NPP) = 3$$

$$U_{TP}(IFF, NPNP) = U_{TP}(INFF, NPNP) = U_{TP}(IFF, NPP) = U_{TP}(INFF, NPP) = 2$$

$$U_{TP}(NIFF, PP) = U_{TP}(NINFF, PP) = U_{TP}(NINFNF, PP) = U_{TP}(NIFF, NPP) = U_{TP}(NIFF, NPP) =$$

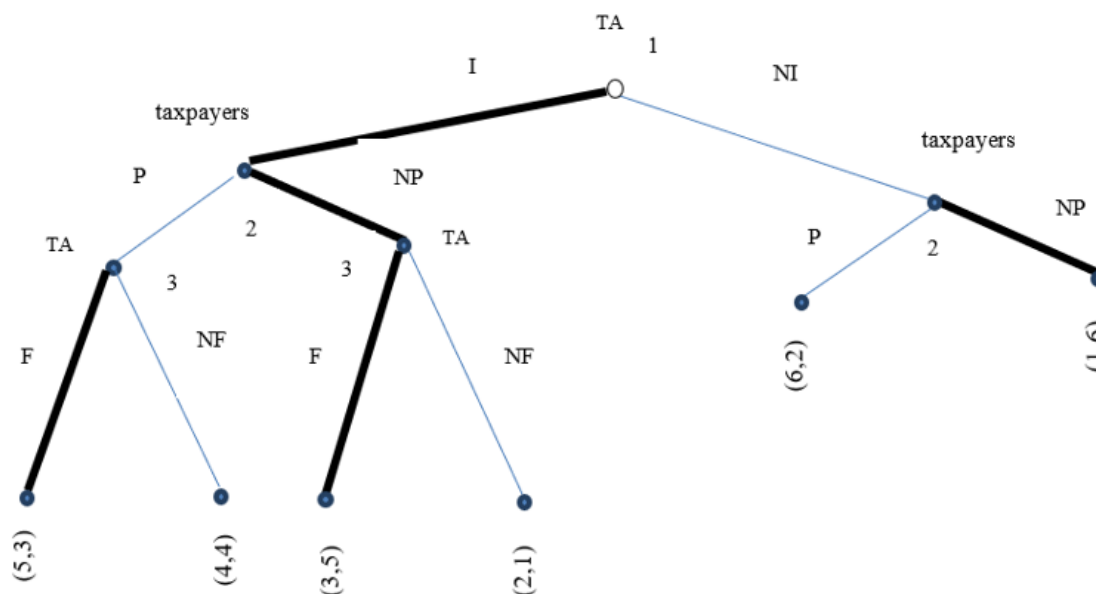
$$U_{TP}(NIFNF, NPP) = U_{TP}(NINFF, NPP) = U_{TP}(NINFNF, NPP) = 6$$

$$U_{TO}(NIFF, PNP) = U_{TO}(NINFF, PNP) = U_{TO}(NINFNF, PNP) = U_{TO}(NIFF, NPNP) = U_{TO}(NIFF, NPNP) =$$

$$U_{TO}(NIFNF, NPNP) = U_{TO}(NINFF, NPNP) = (NINFNF, NPNP) = 1$$

The game is a dynamic one of complete information, the solution of which is SPE equilibrium; however, as stated in the research method, in finite dynamic games of complete information (such as this game), the subgame perfect Nash equilibrium is the same as Nash equilibrium obtained from the backward induction process (Mas-Colell et al., 2016). To find

the backward induction process, in the expanded form of the game, we start with the final node that corresponds to the individual information set of the tax administration. The tax administration selects the node that has the highest consequence; we show the corresponding branch with a bold line. As shown in Figure 2, the tax administration will choose installment penalty relief in both the right and left nodes. In the second node, the taxpayer decides to install payment in both the right and left nodes of the expanded shape. When we get to the first node, the tax administration decides to choose installments.



**Figure 2.**

The equilibrium path in the expanded form of the game between tax administration and taxpayers in installment penalty

The full path which is indicative of backward induction equilibrium Nash shows that in three-stage game between tax administration and taxpayer, first the tax administration declares the installment penalty and then the taxpayer decides on non-payment of the principle of the tax and finally, the tax administration forgive the installment penalty.

#### 4.2. Analysis of Nash Equilibrium

The equilibrium of the game between the tax administration and the taxpayer in the three-stage game mentioned in the previous subsection shows that in equilibrium, the taxpayer chooses not to pay his principal in one lump sum (rather, in installments), as in the next stage,

the tax administration will forgive the installment penalty. This means that the conditions of the game, the existence of installment penalty and its forgiveness by the tax administration, payment of the tax by the taxpayer in the first stage will have less consequences for him. In other words, by designing the game in this way, a regular taxpayer who pays his taxes on time will get less consequences than an irregular taxpayer who does not pay his taxes on time (lump sum). In addition, this kind of penalty and forgiveness will cause regular taxpayers (taxpayers who will pay their taxes on time in one lump sum) become irregular taxpayers (taxpayers who do not pay their taxes on time and pay it in installments).

In short, the condition of the game, the existence of installment penalty and its forgiveness by the tax administration, the game equilibrium shows that the irregular taxpayers will be encouraged, and regular taxpayers will be punished, and this will cause regular taxpayers to become irregular taxpayers.

## **5. Conclusion and Recommendations**

It is reminded again that this research is about examining the issue of forgiveness of tax crimes according to the conditions and direct laws taxes of Iranian tax system. In this study, a three-stage dynamic game of complete information was designed between the tax administration and taxpayer in installment penalty and relief states. In this three-stage game, in the first stage, the tax administration decides whether or not to impose an installment penalty for taxpayers who pay their taxes in installments. In the second stage, the taxpayer chooses whether or not to pay the tax principal on time (or installs it. In the third stage, the tax authority must choose whether to forgive the installment penalty or keep it in force. In this game, Nash equilibrium strategy is the backward induction that in the first stage, the tax administration imposes an installment penalty for taxpayers who pay in installments. In the second stage, the taxpayer pays the tax in installments, and in the third stage, the tax administration forgives the installment penalty. The obtained backward deduction Nash equilibrium suggests that this method of enforcing and imposing installment penalty makes taxpayers pay their tax principal in installments in the hope of a future relief of installment penalty. Furthermore, this method of applying and then forgiving the installment fine is in a way offering rewards to irregular taxpayers and punishing regular taxpayers. Hence, the mentioned installment penalty system will cause regular taxpayer to become irregular taxpayer.

The tax administration is recommended to enforce more serious regulations. In addition, it can present rewards to the regular taxpayers instead of taking installment penalty from irregular taxpayers.

## References

- Becker, G. S. (1968). *Crime and punishment: An economic approach*. In: Fielding, N.G., Clarke, A., Witt, R. (Eds.) *The Economic Dimensions of Crime*. Palgrave Macmillan, London. [https://doi.org/10.1007/978-1-349-62853-7\\_2](https://doi.org/10.1007/978-1-349-62853-7_2)
- Cerqueti, R., & Coppier, R. (2016). Corruption, evasion and environmental policy: A game theory approach. *IMA Journal of Management Mathematics*, 27(2), 235-253. <https://doi.org/10.1093/imaman/dpu019>
- Chica, M., Hernández, J. M., Manrique-de-Lara-Penate, C., & Chiong, R. (2021). An evolutionary game model for understanding fraud in consumption taxes [research frontier]. *IEEE Computational Intelligence Magazine*, 16(2), 62-76. <https://doi.org/10.1109/MCI.2021.3061878>.
- Emami, Mohammad. (2008). *General Financial Law*. Mizaan Press, Tehran.
- Freedman, J. (2004). Defining taxpayer responsibility: In support of a general anti avoidance principle. *British Tax Review*, 2004(4), 332–357. <https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=900043>
- Gibbons, R. (1997). An introduction to applicable game theory. *Journal of Economic Perspective*, 11(1), 127-149. <https://doi.org/10.1257/jep.11.1.127>
- Hasas Yeganeh, Y., Ebrahimi Sarveolia, M., Alasvand, F., & Delavar, A. (2019). Importance of Factors Influencing Intention-to-pay Tax from the Perspective of Taxpayers: (Case Study: Taxpayers of Iranian National Tax Admission Organization-Tehran). *Journal of Management Accounting and Auditing Knowledge*, 8(29), 203-214.
- Karamkhani, J., Veismoradi, A., & Alimadad, Z. (2016). Evaluation of the efficiency of tax fines in the prevention of tax evasion in the system of VAT among taxpayers in Ilam Province. *Journal of Governmental Accounting*, 2(2), 25-36. <https://dorl.net/dor/20.1001.1.24234613.1395.2.2.3.1>
- Lisowsky, P. (2010). Seeking shelter: Empirically modeling tax shelters using financial statement information. *The Accounting Review*, 85(5), 1693–1720. <https://doi.org/10.2308/accr.2010.85.5.1693>
- Mas-Colell, A., Whinston, M. D. & Green, J. R. (1995). *Microeconomic Theory*. Oxford University Press.
- Neifar, S. (2018). Towards a three-player game modelization of corporate tax evasion. *Journal of Accounting, Ethics and Public Policy*, 19(3), 351-376. <https://ssrn.com/abstract=3220624>
- Alabede, J. O., Zainol Ariffin, Z. Bt., & Md. Idris, K. (2011). Does ethnicity matter in individual taxpayer compliance behavior?: Empirical evidence from Nigeria. *Economics and Finance Review*, 1(8), 18-30. <https://www.academia.edu/1424992/>

Silabi, Z. K., Salimian, S., Shahriyari, I., Yazdi, H. P. & Salimian S. (2022). Economic analysis of tax installment forgiveness using game theory approach: The case of Iran. *Journal of Sustainable Business, Economics and Finance*, 1(3), 1-15. <http://doi.org/10.31039/josbef.2022.1.3.24>

Owen, G. (2012). Game theory. *Encyclopedia of Applied Ethics*, 391-398. <https://doi.org/10.1016/B978-0-12-373932-2.00178-2>

Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2010). The effects of executives on corporate tax avoidance. *The Accounting Review*, 85(4), 1163-1189. <https://doi.org/10.2308/accr.2010.85.4.1163>

Shahbazi, K., & Salimian, S. (2017). Expansion of location theories of firms and products' consistency using triangular distribution approach. *Iranian Economic Review*, 21(3), 497-518. <https://dx.doi.org/10.22059/ier.2017.62937>

Shahriyari, I., Salimian, S., PishaniYazdi, Hossein., & Forouzes, Hamid. (2022). Modeling, survey the nash equilibrium and optimal tax fine rate determine in the game of taxpayers and tax affairs organization. *Quarterly Journal of Fiscal and Economic Policies*, 10(38).

Shahrokhi, MH., Taebi, AH., & Barkam, Y. (2015). The impact of tax offenses on increasing tax collection in the value added tax system: Case study of large taxpayers in Kerman Province. *Iranian Conference on Fiscal and Tax Policies*, 9, 1269-1300. <https://www.sid.ir/paper/893485/fa>

Shy, O. (1995). *Industrial Organization: Theory and Applications*. MIT Press.

Vaez, S. A., Daresh, F., Basirat, M., & Kaeb Amir, A. (2018). Evaluating tax persistence and future tax risk of firms by emphasizing on ownership type. *Tax Journal*, 26 (40), 187-206. <http://taxjournal.ir/article-1-1596-en.html>

Wenzel, M. (2002). The impact of outcome orientation and justice concerns on tax compliance. *Journal of Applied Psychology*, 87(4), 629-645. <https://doi.org/10.1037/0021-9010.87.4.629>

Wilson, R. J. (2009). An examination of corporate tax shelter participants. *The Accounting Review*, 84(3), 969–999. <https://doi.org/10.2308/accr.2009.84.3.969>