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Modeling the Exemption Rate of Article 84 and Determining the Note in Article 100 of the Direct Taxes Act

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Abstract

The note in Article 100 and the payroll-tax exemption in Article 84 of the Direct Taxes Act are among the tax incentives the Iranian National Tax Administration (INTA) has considered to encourage taxpayers and wage earners to pay taxes. This article has presented a game between the INTA and taxpayers (and wage earners) to model and analyze the results. It is assumed that the taxpayers are uniformly distributed in the interval [0 , 1] and the utility functions are defined for the players. Finally, an inverse approach was used to determine the note in Article 100 and the relationship between these two variables to specify the payroll exemption rate (Article 84). According to the hypothetical data of 2022, the results showed a payroll-tax exemption was almost twice the amount announced by the INTA in 2022. Also, regarding the note of Article 100, the more indifferent the taxpayer is in the initial points of the interval, then the share of the first group will be smaller and the share of the third group will be larger, and vice versa. Considering the position of indifferent taxpayer, which is at the beginning of the distribution of taxpayers, it can be concluded that the amount of exemption provided by the government is much lower than its actual amount. Considering the nature of this research, government, Islamic Council and Iranian National Tax Administration should benefit from the results to use important and influential variables on the investigated subjects to provide a general rule for each period and year while familiarizing taxpayers with these variables and enabling them to adapt their expectations accordingly.

Highlights

- This study using game theory determination of the note in Article 100 and the payroll-tax exemption in Article 84 of the Direct Taxes Act.
- Payroll-tax exemption was almost twice the amount announced by the INTA.
- Regarding the note of Article 100, the more indifferent the taxpayer is in the initial points of the interval, then the share of the smaller taxpayers will be smaller and the share of the almost larger taxpayers will be larger, and vice versa.

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1. Introduction

Tax is one of the main sources of income for governments in all developed and recently developing countries. Long-term reliance on oil revenues and the decrease in the price of oil as the main source of income have led to the government's failure to implement the desired programs to advance the economy, leading to instability in Iran's economic indicators. Thus, the share of tax revenue has increased compared to the previous year in the annual preparation of the budget bill, ultimately replacing oil revenues with tax revenues. Payroll tax is among the different types of tax sources, which has an almost 10% share in Iran's economy, and any changes in its rate can have different effects on economic variables (Chehreghani & Ansari, 2022). Optimal government and taxation are pillars of economic systems in the public sector economy and contribute to citizen satisfaction. (Dadgar et al., 2013).

At the beginning of the 21st century, developments in the field of management and good governance were formed as the basis for reforming the behavior of public sector agents and led to the revision of the basic laws of countries. One of these axes was related to constitutional reforms in the theory of political economy based on the theoretical basis on government and optimal taxation. Finally, under the influence of these warnings about the inefficiency of public administration and the creation of scientific review packages, between 1974 and 1987, about 80 constitutions were revised in different countries of the world (Epstein, 2011). An investigation into this important source of income for countries highlights that adverse economic effects can be prevented through a higher share of taxes in providing government expenses (Salimian et al., 2023). It is also worth noting that regardless of the tax rate and even if this rate is low, some economic factors still tend to evade taxes or pay less tax than they actually have to pay (Salimian & Sobhanian, 2023).

The note in Article 100 of the Direct Taxes Law is considered by the Tax Affairs Organization every year for business owners and some occupational groups, and its ceiling is different every year from the previous years. It should be mentioned that the note in Article 100 is to encourage business owners (small taxpayers who are exempted from submitting documents and financial books and registering tax declaration) and also investigating their cases for the Tax Administration requires the use of a large number of their employees with the time is too much. Also, considering the high volume of employees in Iran's government organizations, it is very important to pay attention to Article 84 to consider the amount of tax-exempt salary and its rates. At the same time, taking into account the inflationary conditions in Iran's economy as well as the poverty line in the country, the exempt rate should be determined according to these basic variables and maintain the purchasing power for the employees. Thus, identifying the inadequacies and shortcomings in the formulation and implementation of these laws, along with their redefinition, will facilitate the path of economic growth and the realization of the country's economic goals. Also, choosing the tax base and the appropriate corresponding rate can be among the main measures of the tax system as the driver of economic development (Shahnoosh Forushani & Rajabzadeh, 2022).

One of the most important disadvantages and shortcomings in the Iranian tax system is the ambiguity in the laws and tax rates for different periods, which are not proportionate to economic conditions such as inflation rates, etc., and there is no specific and scientific basis for determining them (Makian e al., 2018). Applying personal opinions or in other words, non-scientific opinions based on the evidence of previous years and other deficiencies mentioned in the process of tax collection, as well as not paying enough attention to the effective parameters in accordance with the economic conditions, especially in the two debates raised (Note in Article 100 and Article 84), is very broad and includes a large range of people in the society. Also, considering the high volume of employees in Iran's government organizations, it is very important to pay attention to Article 84 to consider the amount of tax-exempt salary and its rates. At the same time, taking into account the inflationary conditions in Iran's economy as well as the poverty line in the country, the exempt rate should be determined according to these basic variables and maintain the purchasing power for the employees.

This article is organized into 5 sections. After the introduction, the literature review and research background in with two sub-section presented in the second section, game theory is presented in the third section, followed by the game modeling in the fourth section. The fifth and final section is allocated to conclusions and suggestions.

2. Literature review and Research background

In this section, first, Article 84 of the Direct Taxes Act and then the Note to Article 100 and their relationship are discussed, followed by the background of the research.

2.1 Article 84 of the Direct Taxes Act and the Note to Article 100

According to Article 82 of the Direct Taxes Act, the income (whether cash or otherwise) that a natural person puts in the service of another (whether natural or judicial) against his/her working power regarding employment in Iran for either a period or a completed service is liable to salary tax. According to Article 83 of the Direct Taxes Act, taxable salary income consists of the salary (fixed emolument or wage, or basic salary) and fringe benefits paid in connection with the employment, whether on a recurring or non-recurring basis, before subtraction of deductions, but less the tax exemptions provisioned in this Act. It should be noted that up to a certain amount of salary and benefits received is included in the exemption and the excess is subject to salary tax at the rates specified by the Tax Administration. The amount of annual salary income allowance, which is derived from one or more sources, shall be determined by the state annual public budget laws (Article 84 of the Direct Taxes Act). Also, according to Article 85 of the Direct Taxes Act, the salary income of employees of both the public and private sectors, exceeding the aforesaid amount envisaged under Article 84 shall be subject to tax at an annual rate of 10% up to an amount of seven times the annual allowance, but the amounts in excess shall be subject to a tax rate of 20% (INTA, 2016:53-54).

Table 1 shows monthly salary tax for 2022 subject to Article 84 of the Direct Taxes Act.

Table 1. ***Monthly salary tax for 2022 subject to Article 84 of the Direct Taxes Act***

No.	Salary amount from	Salary amount to	Tax rate
1	1	56.000.000	10%
2	56.000.001	150.000.000	10%
3	150.000.001	250.000.000	20%
4	250.000.001	350.000.000	20%
5	350.000.001	350.000.001	Based on surplus

Source: *Iranian National Tax Administration (INTA)*[1]

On the other hand, according to the note in Article 100, if the total annual sales of the business owners amount to one hundred times the annual exemption, they shall be exempted from filing a tax return. According to the budget bill of 2022, the maximum of the note in Article 100 is equal to 67.200.000.000 Rials for taxpayers of natural persons of the first, second, and third groups. Of course, this tax incentive is only provided by uploading the fixed tax form to the electronic service portal of the INTA. Those subject to the note in Article 100 of the Direct Taxes Act will be exempted from keeping or filing documents subject to this Act and submitting tax returns. According to the first condition, the total sales of goods and services in 2021 must be at most one hundred times the tax exemption limit (67.200.000.000 Rials) to deserve the benefits of the note in Article 100 of the Direct Taxes Act for 2022. Taxpayers subject to the note in Article 100 must have determined and paid their taxes for the previous year in the form of fixed and final taxes, or the tax assessment notice issued by the INTA is acceptable to the taxpayer. Also, the tax return registration under the note in Article 100 and the request to use this note must be submitted in the relevant system and sent to the INTA by the end of the tax return registration deadline.

2.2. Research background

In the following, some research examining the subject under investigation through the game theory approach will be discussed:

[1] For example, a person who earns 20,000,000 Tomans per month is exempt from paying taxes up to 5,600,000 Tomans, the gap between 5,600,001 and 15,000,000 Tomans is calculated at a rate of 10%, and the gap between 15,000,001 and 20,000,000 Tomans is calculated at a rate of 15%.

Table 2. Research background

Researcher(s)	Year	Research title	The main results
Dadgar & Ghafari	2008	The analysis of the impact of income tax on income distribution in Iran	The optimal payroll tax rates for the years of the third development plan were 25.18, 28.28, 12.5, 12.5, and 12.5, respectively.
Anton	2014	The effect of payroll taxes on employment and wages under high labor informality	The most important results show that the reduction in payroll taxes will lead to higher wages for formal workers by 4.8 to 4.9 percent. The impact of these reforms on employment will also be between 0.3 and 0.5 percent and incremental.
Egebark & Kaunitzb	2018	Payroll Taxes and Youth Labor Demand	A reduction of payroll-taxes has a significantly positive and small effect on the employment and a significantly negative and small effect on the wage level.
Benzarti & Harjuc	2021	Can Payroll Tax Cuts Help Firms During Recessions?	The payroll tax cuts had limited effects on firm-level employment and balance-sheet outcomes during economic downturns.
Chehreghani & Ansari	2022	Investigating the impact of payroll tax on the economic growth of Iran	Increased payroll tax rates have a negative and small effect on Iran's economic growth. Besides, the policy of increasing the payroll tax rate along with increased government revenues will increase the price of production factors and decrease the employment of the labor force.
Zhan et al.	2025	Tax incentives and household consumption: Evidence from the personal income tax reform	The elevation of disposable income is the channel of the personal income tax reforms stimulate household consumption that consumption-stimulating effects of the policy are more pronounced among low- and middle-income households and self-employed households.
Ohno et al.	2025	Effect of income-increasing deduction in personal income tax on the burden reduction and income redistribution: Evidence from Japan	For higher income groups, the effect of increasing income from deductions is more effective in reducing the tax burden and income-increasing deductions affect the burden reduction and redistribution effects.

Source: *Researcher's findings*

According to the literature review, few studies have been conducted on salary taxes**.** In addition, no research has been carried out so far to model the exemption rate of Article 84 and the note in Article 100 in the context of Iran.

It is also noteworthy that the viewpoint of theorists and policymakers in this field has been solely effective in presenting the salary-tax exemption subject to Article 84 and the note in Article 100 and the three groups involved in the note in Article 100. Thus, the economic conditions and the effect of various economic variables have led to annual changes in these factors, inconsistent with the expectations of the economic factors. The new theories admit that in some cases, despite the taxation by governments, the welfare situation not only does not improve but also worsens. Therefore, it can be said that it is not only tax collection that is important, but its proportional rate is very practical and important in both tax collection and tax exemption (Buchanan, 1967 & 2003). Hence, the current research seeks to extract the salary-tax exemption rates using real-world data and game modeling between the involved players (the INTA and the workforce and taxpayers subject to Note 100). Finally, as discussed earlier, the laws related to these important tax sources can be amended and a scientific approach can be used to determine them.

3. Game Theory

One of the most key concepts and assumptions in neoclassical economics is the maximization of benefits based on rational decisions that economic agents make (under the influence of the behavior of other agents) (Ormazabal, 2005). Game theory is one of the most important tools for modeling and logically resolving situations and conflicts (conflict of interests) based on the assumption of rationality that arise between these factors, in which a number (more than one) of players interact with each other and the utility of each of them is affected by the behavior or choice of another (Osborne, 2004; Carpenter & Robbett, 2022). It is noteworthy that in the mutual selection of economic factors according to their preferences, the game theory may produce outcomes that were not intended by any of the factors (Owen, 2012).

Many thinkers in various fields have acknowledged that the design of game theory has had an impact on science similar to the discovery of the double DNA spirals, and have referred to this important discovery and theory as "the theory that can explain everything" (Varoufakis, 2008). The main goal of game theory is to give an attitude and a viewpoint based on which players should act wisely and think deeply before taking action and then choose an action in line with their interests. In a game where the number of players (agents) competing against each other is limited, game theory can be much more useful and applicable because in this case, the behavior of each player has a significant impact on the payoff of the other players. Ultimately, game theory helps each player find and choose their optimal strategy (Shahbazi & Salimian, 2017). The equilibrium resulting from this type of game is called Nash equilibrium in which:

$$u_i(\sigma_i, \sigma_{-i}) \geq u_i(\sigma_i', \sigma_{-i}) \tag{1}$$

In other words, the strategy of player is to be the best reaction to selected performance of other competitors (Mas-Colell et al., 1995).

4. Game Modeling

Before dealing with the game, it is worth noting that this article has realistically assumed that Article 84 (the amount of salary-tax exemption) and the note in Article 100 are a function of inflation, housing rent, business lease, salary increase percentage, liquidity growth percentage, and debit and credit difference of the taxpayer's account. These assumptions make the presented model quite realistic considering different types of taxpayers. According to Article 84, twelve times the minimum salary is exempt from tax. In general, the income of the INTA is provided from two sources, including the taxpayers under inquiry and other taxpayers (note in Article 100).

$$I_{TO} = I_{\text{investigation}} + I_{note\ 100} \quad (2)$$

In the definition of the note in Article 100, the Iranian National Tax Administration may partially exempt certain businesses or some groups among them from their obligations such as keeping records and documents envisaged in this Act or filing tax returns, providing that their annual sales of goods and services amounts maximally to ten times the annual exemption provisioned in Article 84 of the present Act, Therefore, these two can be obtained from each other. The applicable taxes of such taxpayers shall be determined and collected by the Iranian National Tax Administration in the form of fixed and final taxes for the tax year in question. Of course, the approval of this note shall not prevent the processing of tax returns submitted in due time. Besides, as approved by competent authorities, the measure has increased from ten to a hundred times. The taxpayer's sales are calculated based on the information available in the Iranian National Tax Administration's systems in the form of 1. First-party sales, 2. Second-party purchases, 3. Deposits through means of payments (Paragraph M, Note 12 of the Budget Act of 2020), 4. Taxpayer's declared sales, and 5. Sales calculation based on the provisional payment of taxes. In 2020, if the taxpayer's sales were ≤48 billion Rials, it was possible to send the form under the note in Article 100. In 2022, this value increased to 67 billion two hundred million Rials.

This article primarily aims to determine these values for taxpayers regarding the use of the note in Article 100 (exemption from keeping documents and filing tax returns) and the minimum salary-tax exemption (Article 84). These two issues, which are related as discussed in the previous section, are among the main issues of the INTA to deal with employees under Article 84 and taxpayers under the note in Article 100 as fairly as possible. The evidence shows the dissatisfaction of both groups of employees and taxpayers with these rates at the time of their implementation, leading to significant frustration (especially among taxpayers) at the time of implementation. Therefore, these figures will be fairly defined in the following, taking into account the real assumptions discussed at the beginning of the section and a game with the mentioned conditions between the INTA and the taxpayers. Finally, an inverse approach was used, along with determining the note in Article 100 and the relationship between these two variables, to specify the payroll exemption rate (Article 84). The game modeling among the INTA and taxpayers will be discussed in the following:

Assume that taxpayers are uniformly distributed in the interval [0, 1]. The income function of the INTA is determined as follows:

$$I_{TO} = \begin{cases} t\big(e + q(R - e)\big) - r & \text{in case of investigation} \\ te - \theta & \text{non} - \text{investigation and acceptance of taxpayers}'returns \\ A_1 + A_2 + A_3 & \text{non} - \text{investigation and use of note in Article 100} \end{cases} \quad (3)$$

Where, t, e, and q are the tax rate, the taxpayers' declared tax, and the quality of the assessment group, respectively. R represents the actual tax, r is the assessment costs, and θ indicates the amount that the INTA could have obtained through the taxpayers' case investigation, but did not do so. It is assumed that θ is less than te. A_1, A_2, and A_3 are also three groups of fixed taxpayers subject to the note in Article 100. According to the INTA rules and for the year 2020, the first, second, and third groups are subject to sales of up to 10 billion, between 10 and 30 billion, and between 30 and 48 billion Rials, respectively. As mentioned, this article primarily seeks to determine these three groups and the exemption rate of Article 84. Suppose three groups A_1, A_2, and A_3 according to the figure below (Figure 1). Figure 1 shows the distribution of all taxpayers in the interval [a, b].

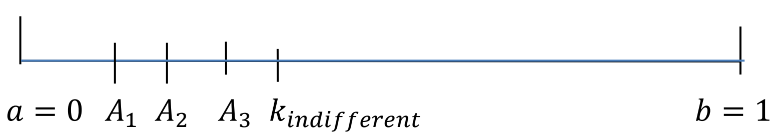


Figure 1. Distribution of taxpayers and three groups subject to the note in Article 100
Source: *Researcher's findings*

$\hat{k}_{indifferent}$ shows the indifferent taxpayers, for whom it does not matter whether to submit a tax return or undergo assessments by the INTA. In other words, these taxpayers are at a point where the same tax is paid based on the note in Article 100 and under the assessments of the INTA. This point is very important because it shows that the taxpayers on the left side will be subject to the note in Article 100, and the taxpayers on the right side will be subject to investigations by the INTA. Based on the above explanation, the following equation can be presented:

$$e^* = \frac{tqR - r + \theta}{tq} \quad (4)$$

This point shows the taxpayers' declared values, revealing no difference for the INTA in the assessment/lack of assessment and acceptance of the note in Article 100. Considering that the INTA announces its credit and collection in advance for itself and in approving the next year's budget, let's assume that the credit and collection of the INTA for the next (any other) year is equal to π. Since this value is calculated according to both types of taxes received from taxpayers (taxpayers under investigation and taxpayers subject to Note 100), we have:

$$\int_0^k (te-\theta)dT + \int_k^1 (t(e+q(T-e))-r)dT = \pi \tag{5}$$

Since our main goal is to determine the amount of the note in Article 100 and the share of different groups:

$$\int_0^k (te-\theta)dT + \varphi = \pi \tag{6}$$

In which, $D(T) = \frac{x-a}{b-a}$.

Finally, calculations lead to:

$$k^* = \frac{(b-a)(\pi-\varphi)+a(t-\theta)}{te-\theta} \tag{7}$$

According to the values of a and b, as well as the existing tax rate (25%):

$$k^* = \frac{\pi-\varphi}{0.25\,e-\theta} \tag{8}$$

Now suppose that an indifferent taxpayer is placed at the point 0.4 in the discussed interval. Therefore:

$$\int_0^{0.4} \text{all 3 groups of taxpayers} = \pi - \varphi$$

$$\Rightarrow \int_0^{A_1} \text{Tax exempt group} + \int_{A_1}^{A_2} \text{The first group} + \int_{A_2}^{A_3} \text{The second group} + \int_{A_3}^{k} \text{The third group} = \pi - \varphi \tag{9}$$

According to the salary tax calculation in 2020, up to an income of 672.000.000 Rials per year is exempt from tax, while the surplus between 672.000.000 and 1.800.000.000 Rials, 1.800.000.000 and 3.000.000.000 Rials, 3.000.000.000 and 4.200.000.000 Rials, and surplus of 4.200.000.000 Rials will be subject to 10%, 15%, 20%, and 30%, respectively. The tax income of public and government sector employees was about 530 thousand billion Rials in 2021. Therefore:

$$10\%\ (X_2 - X_1) + 15\%\ (X_3 - X_2) + 20\%\ (X_4 - X_3) + 30\%\ (X_5 - X_4) = 53.050.000.000.000 \tag{10}$$

Since $X_2 = 2.67\ X_1$, $X_3 = 4.41\ X_1$, $X_4 = 6.2\ X_1$, and $X_5 = 9.3\ X_1$:

$\Rightarrow 1.715X_1 = 53.050.000.000.000 \Rightarrow X_1 = 30.932.944.606.414$

Thus, about 310 thousand billion Rials of total collected taxes is from minimum taxable salaries and wages. In other words, the total salary and wages received during the exempt period will be equal to this figure. Therefore, the percentage of tax that could have been paid (but was exempted under Article 84) should be calculated from the total tax paid to obtain the salary-tax exemption (Article 84). Hence:

$$53.050.000.000.000 + 30.932.944.606.414 = 83.982.944.606.414$$

Therefore, if we assume that eight million people fall within this range, the exemption for each of them will be about 105.000.000 Rials, which is almost twice the amount announced by the INTA in 2022. Now, the announced figure for the tax exemption under Article 84 for public and private sector employees can be considered a function of the inflation rate, housing rent, and household size, repressing the maximum announced to be exempted subject to Article 84. For example, considering the inflation rate (the current rate of inflation=40%), if a person pays rent for a house, and the household size is more than 4 people, the exemption under Article 84 is 105.000.000 Rials per month for this person. The relationship between the variables of housing rent and household size with the amount of tax exemption under Article 84 is direct, but inflation shows an inverse relationship. The effect of each of the above-mentioned variables can be considered based on the assessments of the INTA or by estimation methods. In the real world, employees working in the same section may not have the same economic situation. For example, one person may have issues such as being a renter, having a sick family member, having a large number of children, medical expenses, etc., and their salary exemptions should be considered differently from another.

Finally, it should be noted that the above results can be generally used for any other period. Therefore, to determine the exemption rate subject to Article 84, the indifferent taxpayer is primarily obtained from the relation $k^* = \frac{\pi-\varphi}{0.25\ e-\theta}$. Then, the total incomes not subject to tax (exempt from payroll tax) are calculated by having the percentage values for receiving tax according to the amount of salary and wages determined. The resulting value is then added to the total expected income from payroll tax and divided by the number of taxpayers in this interval to determine the values corresponding to the exemption rate subject to Article 84.

In the following, the discussion will continue on the groups included in the note in Article 100. According to the statistics of the INTA, the total tax received from those subject to the note in Article 100 was about 80.000 billion Rials (about 3% of the total tax) for the year 2020. Thus, when the tax income was about 5.300.000 billion Rials for the year 2021:

$0.4x = 16.000.000.000.000 \Rightarrow x = 40.000.000.000.000$

Therefore, 400.000 billion Rials of the total tax is from this part of the economy. Since up to one hundred times the exemption under Article 84 (56 million Rials per month for the year 2021) is tax-free, up to 67.200 billion Rials from the taxpayer's sales according to the items (previous 5 items) specified by INTA shall be included in this note. Hence, as shown in Figure 2:

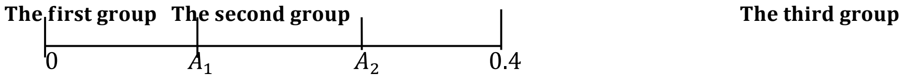


Figure 2. Distribution of 3 groups subject to the note in Article 100 to the point of indifferent taxpayer

Source: *Researcher's findings*

$$\int_0^{A_1} \frac{1}{0.4}\, dx = 16.000.000.000.000 \tag{11}$$

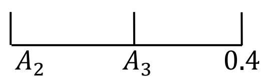
Based on the above equation, A_1 can be easily obtained:

$$A_1 = 6.400.000.000.000$$

If there are z taxpayers in this entire interval, the share of each will be equal to $\frac{16.000.000.000.000}{z}$, leading to an income of 160.000 billion Rials from all the first, second, and third groups. According to the statistics of 2020, about 3.000.000 taxpayers were included in this note, which means a share of nearly 53.330 million Rials for each taxpayer. Of course, the share of higher groups should be higher due to higher income.

According to the results obtained in the previous section, if there are i taxpayers in the interval of the first group, the share of each taxpayer will be equal to $\frac{6.400.000.000.000}{i}$.

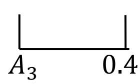
Now, according to the previous section, 96.000 thousand billion Rials remain (from 16.000 billion before the point of taxation). As a result, according to the following figure:



Thus:

$$\int_{0=A_2}^{A_3} \frac{1}{0.4}\, dx = 9.600.000.000.000 \Rightarrow A_2 = 3.840.000.000.000 \qquad (12)$$

Now, if there are j taxpayers in this interval, the share of each taxpayer will be equal to $\frac{3.840.000.000.000}{j}$. Repeating the previous method gives:



Therefore, as in the previous cases, the share of the remaining taxpayers of this sector will be equal to 5.760.000.000.000. Here too, if there are j taxpayers in this interval, the share of each taxpayer will be equal to $\frac{5.760.000.000.000}{m}$.

Given the obtained results, if the number of taxpayers of each included group is determined, the corresponding values to the payment of each group can be easily calculated. For example, in 2020, the total number of about 3.000.000 taxpayers were included in this note. It is expected that the share of the first group will be more than the second group, and the share of the second group will be more than the third group because the large number of taxpayers is small, and the share of taxpayers required to submit tax returns (under legal considerations) will be less. For simplicity, if the shares of the first, second, and third groups are equal to 2.000.000, 700.000, and 300.000 taxpayers, the share of each taxpayer will be 3.200 million, 5.485 million, and 192.000 million Rials, respectively. An important point to note is that an indifferent taxpayer will fall in the first 20% of the mentioned interval, and the hypothetical values obtained will be lower for the first group and higher than the values obtained before for the third group.

For example, assume an indifferent taxpayer at point 0.2. According to the previous calculations:

$$0.2x = 16.000.000.000.000 \Rightarrow x = 80.000.000.000.000$$

Therefore, 800.000 billion Rials of the total tax is from this part of the economy. As previously mentioned:

$$\int_0^{A_1} \frac{1}{0.2}\, dx = 16.000.000.000.000 \tag{13}$$

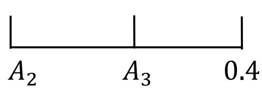
According to the above equation, A_1 can be easily obtained:

$$A_1 = 3.200.000.000.000$$

As in the previous assumptions, if there are z taxpayers in the total interval, the share of each taxpayer will be equal to $\frac{16.000.000.000.000}{z}$, indicating an income of 160.000 billion Rials collected from all the first, second, and third groups. As mentioned, according to the statistics of 2020, about 3.000.000 taxpayers were included in this note, leading to a share of 53.330 million Rials for each taxpayer.

According to the value obtained in the previous section, if there are i taxpayers in the interval of the first group of taxpayers, the share of each taxpayer will be equal to $\frac{3.200.000.000.000}{i}$.

According to the previous part, 128.000 thousand billion Rials remain (from 160.000 billion Rials before the tax point of the indifferent taxpayer). Therefore, based on the following figure:

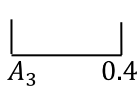


Thus:

$$\int_{0=A_2}^{A_3} \frac{1}{0.4}\, dx = 12.800.000.000.000 \Rightarrow A_2 = 5.120.000.000.000 \tag{14}$$

Again, if there are j taxpayers in this interval, the share of each taxpayer will be equal to $\frac{5.120.000.000.000}{j}$.

Repeating the previous method gives:



Thus, as in the previous cases, the share of the remaining taxpayers of this sector will be equal to 7.680.000.000.000. Here too, there are j taxpayers in this interval, the share of each taxpayer will be equal to $\frac{7.680.000.000.000}{m}$.

Given the obtained results, if the number of taxpayers of each included group is determined, the corresponding values to the payment of each group can be easily calculated. For example, in 2020, the total number of about 3.000.000 taxpayers were included in this note. It is expected that the share of the first group will be more than the second group, and the share of the second group will be more than the third group because the large number of taxpayers is small, and the share of taxpayers required to submit tax returns (under legal considerations) will be less. For simplicity, if the shares of the first, second, and third groups are equal to 2.000.000, 700.000, and 300.000 taxpayers, the share of each taxpayer will be 1.600 million, 7.314 million, and 256.000 million Rials, respectively. Of course, it should be mentioned again that these results are based on the year 2020. Another important point to note is that when an indifferent taxpayer falls in the starting points of the mentioned interval, the share of the first group (smaller taxpayers) will be much lower, and the share of the third group (almost larger taxpayers) will be higher, which can be used to achieve tax justice.

Now, the announced figure for Note 100 for taxpayers can be considered a function of the inflation rate, housing rent, household size, business lease, liquidity growth percentage, and debit and credit difference of the taxpayer's account (to encourage taxpayers' account turnover). As before, it can be said that taxpayers working in the same industry or taxpayers with similar economic situations have different issues or problems that should affect the amount of their exemption. Here too, the effect of each of the above-mentioned variables can be considered based on the assessments of the INTA or by estimation methods.

5. Concluding and Suggestions

Iran's tax system has several shortcomings, some of which include the lack of a comprehensive tax information system, the multiplicity of tax rates in different economic sectors, extensive and varied tax exemptions, and the application of personal opinions in the tax collection process. In addition to the above, ignoring some economic sectors in the process of tax inclusion, the inadequacy of technical supervision on the processes of tax detection and collection, and ambiguity in the laws and tax rates for different periods according to economic conditions, such as inflation rate, etc., impose more burden on the taxing system of Iran. Legal disorder is one of the most important and first damage on the tax system. These factors make taxpayers and government employees always be confused about the impact of policy makers opinions on taxes and exemptions, and they don't have a clear approach for the coming years. Also, the government and the tax affairs administration should reach a comprehensive and scientific results and approach to determine the tax of note in Article 100 and the exemption of Article 84 of salary and pay attention to the economic parameters in this approach. Finally, it can be said that as the relationship between these two articles and laws has been clarified, it can be concluded that a very high percentage of taxpayers in the country are affected by these two articles and laws, and every year there are many discussions at the national level when determining these two. Regarding the exemption of Article 84, which includes employees, and they are a group for whom these changes are very vital and have a large population at the national level. Also, small taxpayers are increasingly affected by the tax in Note in Article 100, and during the implementation of the plan, there is a lot of tumult across the country. It seems that a large part of this tumult is due to the lack of clarity about taxpayers' duties in different periods, which face extensive changes every year and cannot differentiate taxpayers in terms of income or variables affecting exemption. Most taxpayers in a category may not be separated and exempted based on other factors, such as the number of children, having a sick family member, being a tenant, etc.

This article has presented a game between the INTA and taxpayers (and wage earners) that distributed in 0 until 1 interval to model and analyze the results. Finally, an inverse approach was used, along with determining the note in Article 100 and the relationship between these two variables, to specify the payroll exemption rate (Article 84). According to the hypothetical data of 2022, the results showed a payroll-tax exemption of 105.000.000 Rials, which was almost twice the amount announced by the INTA in 2022. Also, regarding the note in Article 100, if an indifferent taxpayer is at point 0.4, each taxpayer's share will be 32.000.000, 54.850.000, and 192.000.000 Rials for the first, second, and third groups of taxpayers, respectively. Besides, if an indifferent taxpayer is at point 0.2, each taxpayer's share will be 16.000.000, 73.140.000, and 256.000.000 Rials for the first, second, and third groups of taxpayers, respectively. It should be mentioned again that these results are irrelevant considering indifferent taxpayer position and for the year 2022, the amount of salary exemption as well as the note in Article 100 for this year is far more than the amounts announced by the government and the tax affairs administration for employees and taxpayers because indifference taxpayer will be considered on the left side and at the beginning of the considered interval.

Considering the nature of this research, the Iranian National Tax Administration should benefit from the results to use important and influential variables on the investigated subjects to provide a general rule for each period and year while familiarizing taxpayers with these variables and enabling them to adapt their expectations accordingly.

Author Contributions

Conceptualization, all authors; methodology all authors; formal analysis, all authors; resources, all authors; writing original draft preparation, all authors; writing review and editing, all authors; supervision, Salimian, S. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

Data Availability Statement

The data used in the study were taken from https://www.intamedia.ir/en

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