Theoretical Analysis of the Impact of Tax Evasion

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Abstract

This study sets up a simple theoretical model to explore the impact of taxpayers' tax evasion. This research starts from government policy, takes income taxpayers as the research object, and assumes that there are behaviors of paying taxes and evading taxes without abiding by the law to analyze the impact of tax evasion. This study will use a simple IS-LM model to analyze the impact of tax evasion on GDP and interest rates, using different government expenditure structures as the facet to study whether tax evasion will affect the macroeconomy. This study finds that tax evasion is harmful to economic development when the government is self-sufficient. However, when the government is not self-sufficient, this study finds that when the government's marginal expenditure tends to be larger or smaller, tax evasion is beneficial to economic development. And in the relationship between government expenditure and taxation, this paper studies the multiplier effect of various important variables, and the results of these studies are quite different.

Keywords: Tax Evasion, Government Expenditure, Government Tax Income, Government's Marginal Expenditure Propensity

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1. Preface

The purpose of this article is to explore the impact of tax evasion. There are various correlations between government taxes and government expenditures, which will trigger changes in the macroeconomy, including the impact of GDP and interest rates. Through a simple IS-LM economic model analysis, an interesting and economic policy analysis is set up. To prevent companies from revealing false financial statements and achieve the purpose of tax evasion, relevant government decision-makers need to adopt the corresponding strategies. It is the common responsibility of the government and the people to prevent illegality. To prevent companies from revealing false financial statements and achieve the purpose of tax evasion, relevant government decision-makers need to adopt corresponding strategies. It is the common responsibility of the government and the people to prevent illegality. However, in certain specific situations, if the government acquiesces in tax evasion by enterprises, in certain situations, it may be beneficial to economic development because of tax evasion. In the former, the government will induce enterprises to obtain more accurate and open financial information, which will help the market to develop more soundly in the future; in the latter, a very special economic phenomenon has been formed, that is, the government allows enterprises to conceal the company's financial information, but instead contribute to economic growth to achieve more favorable economic development.

The scientific methods of deduction and analysis in academia are the same as all other techniques. They can only be mastered through long-term research. Although scholars have tried their best in their entire lives, they have never reached the perfect state. Just like this sentence, in recent years, countries around the world have continuously responded to the fragmentation of the tax system in various economic forums. The current laws and regulations and related inspectors are insufficient, making it impossible to conduct thorough investigations on individual taxpayers. The government is committed to revising the laws and constantly updating and strengthen the firmness of the law, and even strengthen the morality of taxpayers, to maximize the principle of user payment, that is, pay taxes in a manner that is law-abiding. However, there are still many companies, and even the general public, who do everything they can to evade taxes. For this reason, the government lacks fairness and justice for those law-abiding citizens. The main point of this research is that the basic GDP algorithm cannot fully reflect the real economic situation. The report form is like a bookcase. Not only does it need to be arranged systematically, but it is also necessary for users to see the problem in the most efficient way. Today, the changes in GDP figures are merely a digital game between countries, and the public cannot see, let alone understand any problems. This study does not believe that the only reason for the discrepancy between the accounts and the actual situation is tax evasion, but from the perspective of the realization of lawlessness and fairness and justice, this should be an issue that the people need to pay attention to.

Allingham and Sandmo (1972) believe that taxpayers will face two choices before filing their taxes, one is to pay tax honestly; the other is to evade tax; however, when the taxpayer decides to evade tax, he must consider the possibility of being caught by the tax authority and must pay a fine. In the face of this uncertainty, the taxpayer chooses the optimal amount of tax evasion and will use the maximization of expected utility as an indicator. The key to the study of Allingham and Sandmo (1972) is that the government does not know the real income of the taxpayer, so it needs to be managed by means of an audit. In this situation of information asymmetry, taxpayers may evade tax. If the taxpayer can evade the tax without being discovered by the government, the taxpayer can save tax. However, if the taxpayer is caught by the government for tax evasion, he must not only make up for the amount of tax evasion but also must be punished. Therefore, the optimal solution for taxpayers is to choose the income to be declared to maximize the expected utility. They believe that a deterrence policy is sufficient to enable the taxpayer to evade tax, that is, they believe that increasing penalties can deter the taxpayer from lawlessness.

Yitzhaki (1974) follows the analysis of Allingham and Sandmo (1972), and revises the penalty basis for the taxpayer's "evaded tax". The study found that an increase in the tax rate would lead to a counterintuition that the willingness to evade tax would decrease. Afterward, many scholars followed the models' framework established in these two papers and studied tax evasion issues to make different extensions and expansions.

Allingham and Sandmo (1972) and Andreoni, *et al*. (1998) mention that the "income effect" and "substitution effect" caused by the increase in tax rate depend on the interaction of the two effects. The so-called "income effect" means that after the tax rate is increased, the taxpayer's disposable income will deteriorate. If the preference is decreasing absolute risk aversion, lower disposable income will increase the "absolute risk aversion" and increase taxation. The willingness of tax evasion of taxpayers has further decreased; the so-called "substitution effect" means that after the tax rate is increased, the expected rate of return for tax evasion by taxpayers will increase while the penalty rate remains unchanged. Therefore, it induces taxpayers to choose more tax evasion.

There are some studies that have been undertaken applying the IS-LM model to discuss the role of tax evasion from a macroeconomic approach. For example, Ricketts (1984) links tax evasion to the monetary sector and found that a rise in tax evasion may not lead to an increase in domestic output. Lai and Chang (1988), Lai, *et al*. (1995), and Chang and Lai (1996) also rely on variants of the IS-LM model in the analysis of tax evasion and tax collection.

Ricketts (1984) uses a simple Keynesian model to apply to the IS-LM model and links tax evasion to the money market. He found that the more serious tax evasion, the more

domestic output may not increase, and the more serious tax evasion usually leads to a decrease in tax revenue. The conclusions of Ricketts (1984) and the research conclusions of this article will be very different. The results are the same as the results of the self-sufficiency model in this paper, but completely different from the results of the non-self-sufficiency model in this paper.

Lai and Chang (1988) establish a model based on the impact of tax evasion on labor supply and showed that when their model is expanded, the more serious the tax evasion, the conclusion of the less total tax revenue will not hold.

This paper deals with the neutrality of profit taxes levied on firms as well as the implications of tax evasion in economies with right-to-manage wage formation and efficient bargaining, respectively. Contrary to the outcome under competitive labor markets, we show that profit taxes are not neutral and the firm's tax evasion decision is not separable from its production decision under right-to-manage wage formation, where a trade union and firm bargain over the wage rate (except in the special case of a monopoly union). A similar conclusion follows from an efficient bargaining model, where a trade union and firm bargain over both the wage rate and employment. In addition, wage bargaining plays an important role in determining the optimal profit tax and the enforcement policy.

Lai, *et al*. (1995) argue that profit tax is not neutral, and the company's tax evasion decision is inseparable from its production decision in the formation of wage management rights. The company and the union will negotiate the wage rate. Similarly, in an efficient bargaining model, the company and union will negotiate wage rates and employment. In addition, wage negotiations play a key role in determining the optimal profit tax.

Chang and Lai (1996) use the efficiency wage hypothesis to build a model to reexamine the existing literature. Their research found that, in the case of the efficiency wage model, the more serious the tax evasion, the greater the total tax revenue.

Tax evasion incentives are affected by inspection rates and fines, as in the traditional literature of Allingham and Sandmo (1972) and Yitzhaki (1974). The above-mentioned paper belongs to the microeconomics for studying tax evasion. However, our study is different from the endogenous motives of tax evasion. Our study is based on the ratio of tax evasion and tax evasion to directly consider its impact on the macroeconomy. It is simpler than the existing literature, and unnecessary complexity can be avoided. It is purely discussed using the IS-LM model.

Allingham and Sandmo (1972) and Yitzhaki (1974) set two conditions to ensure that there is an interior solution to determine that the taxpayer's declared income is lower than its actual income. In our paper, to remove the complexity, there is no need to set two conditions

and directly set the declared income as the actual income minus the total tax evasion, and then it can be determined that the declared income is lower than its actual income.

This research divides the research questions into the following two points:

1. The authenticity of the nominal GDP: using a simple IS-LM model for research, the amount of tax evasion can affect the economic level, so that the people and the government can achieve a balance of information equivalence.
2. The whereabouts of tax evasion: Is the flow of large amounts of money and where the money goes after tax evasion is harmful to the macroeconomy?

Since the government has a choice between the balance of payments and the non-balance of payments, this study will analyze these two situations. The results of the study will find that when the government is self-sufficient, tax evasion is indeed detrimental to the macroeconomy. However, when the government is not self-sufficient, this study finds that it is beneficial to maroeconomy in certain situations.

2. Research methods

The motivation of this research stems from the agency problem of tax evasion and government supervision. Existing literature talks about tax evasion, and most of it is considered at the legal level. The actual impact of tax evasion on the overall economy is uncertain. Given this, this research is to make up for the lack of literature, so it sets up a theoretical model of the impact of tax evasion on GDP. The reduction of taxation will have a partial impact on government expenditure, investment, consumption, and currency demand, and then on GDP and market interest rates. In terms of having a comprehensive impact. With this interlocking influence, this study sets up this simple theoretical model.

The purpose of this research is to set up the theory of tax evasion and tax evasion. This research will set up the IS-LM economic theory model of tax evasion and discuss the problems caused by mutual influence under an agency relationship and government supervision. And apply this theory to practical applications, and endow the potential for future policy development. It is expected to be widely used in the problems of target users and practical applications. This research will set up a theoretical model and analysis of tax evasion and study its important influence. Based on the new development of tax evasion, the research of this knowledge will bring unexpected benefits and applications to the field of economics.

3. Theoretical model and analysis of tax evasion

This theoretical model first sets the following nine items to form the basic equations of the IS-LM model and divides them into self-sufficient and non-self-sufficient models in Section 3.1 and Section 3.2 to analyze them.

This research first sets up the basic model and analysis of tax evasion and government expenditure, and then compares and analyzes the model without tax evasion and sets up propositions.

(1.) The definition of aggregate demand:

$$Y = C + I + G, \tag{1}$$

where Y is the actual aggregate demand or GDP; C is consumption; I is an investment; G is government expenditure.

(2.) The definition of consumption function:

$$C = a + bY_d, \tag{2}$$

where C is actual consumption expenditure; a is spontaneous consumption, and $a > 0$; bY_d is induced consumption; b is marginal propensity to consume, and $0 < b < 1$; $\mathrm{Y_d}$ is disposable income.

(3.) The definition of substantial disposable income:

$$Y_d = Y - T, \tag{3}$$

where Y_d is the substantial disposable income; T is the total tax.

(4.) The definition of the total tax function:

$$T = T^0 + t(Y - \beta X). \tag{4}$$

Where T^0 is the lump sum tax, and $T^0 > 0$; t is the tax rate, and $0 < t < 1$; βX is the total income from tax evasion; β is the rate of tax evasion, and $0 < \beta < 1$; X is tax evasion income and $X > 0$. So $Y_d = Y - T = Y - T^0 - t(Y - \beta X)$.

(5.) The definition of investment function:

$$I = d - ei, \tag{5}$$

where I is the actual investment expenditure; d is the spontaneous investment, and $d > 0$; e is the investment coefficient; i is the interest rate.

(6.) The definition of government expenditure function:

$$\mathrm{G} = G^0 + qT = G^0 + q[T^0 + t(Y - \beta X)] = G^0 + qT^0 + qt(Y - \beta X), \tag{6}$$

where G is the actual government expenditure; G^0 is spontaneous government expenditure; q is the government's marginal expenditure tendency.

(7.) The definition of liquidity money demand function:

$$M_a = f - hi, \tag{7}$$

where $M_a$is the money demand of real assets; f is the spontaneous liquid money demand; h is the liquidity money coefficient, and $f, h > 0$.

(8.) The definition of transaction money demand function:

$$M_t = kY, \tag{8}$$

where M_t is the actual transaction money demand; k is the transaction money coefficient, and $k > 0$.

(9.) Equilibrium of the money market:

$$M = (M_a + M_t)P, \tag{9}$$

where M is the nominal money supply; P is the price level.

3.1. Theoretical model and analysis of tax evasion and government self-sufficiency

This subsection proposes the economic theory of tax evasion and government self-sufficiency (i.e., government expenditure equals government taxation) and conducts a preliminary analysis. After these equilibrium analyses, it is demonstrated by comparative static analysis to obtain the proposition of tax evasion agency theory.

The above Eq. (6) is the basic model and analysis of tax evasion and government non-self-sufficiency. Modify Eq. (6) to $G^0 = 0$ and $q = 1$, then non-self-sufficiency will be modified to self-sufficiency. Therefore, the above item (6.) will become the following:

(6.) The definition of government expenditure function:

$$\mathrm{G} = T^0 + t(Y - \beta X), \tag{10}$$

where G is the actual government expenditure; the model is self-sufficiency, that is, government expenditure equals taxation.

The IS line is formed by the above Eqs. (1), (2), (3), (4), (5), and (10), and the LM line is formed by the above Eqs. (7), (8), (9).

First, by rearranging the Eqs. (1), (2), (3), (4), (5), (10) to obtain the IS line as:

$$\begin{aligned} Y &= C + I + G \\ &= (a + bY_d) + (d - ei) + [T^0 + t(Y - \beta X)] \\ &= \{a + b[Y - T^0 - t(Y - \beta X)]\} + (d - ei) + [T^0 + t(Y - \beta X)]. \end{aligned} \tag{11}$$

After rearranging Eq. (11), the interest rate obtained as a function of GDP is as follows:

$$i = \frac{1}{e}[-(1 - b)(1 - t)Y - t\beta X(1 - b) + T^0(1 - b) + (a + d)]. \tag{12}$$

Secondly, after rearranging Eqs. (7), (8), and (9), the LM line obtained is:

$$M = (M_a + M_t)P = [(f - hi) + kY]P. \tag{13}$$

After rearranging Eq. (13), the interest rate obtained as a function of GDP is as follows:

$$i = \frac{1}{hP}(kY + fP - M). \tag{14}$$

We solve the simultaneous equations from Eqs. (11) and (14), and obtain the equilibrium solutions Y^* and i^* as follows:

$$Y^* = \frac{1}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}}\left[-\frac{t(1-b)}{e}\beta X + \frac{(1-b)}{e}T^0 + \frac{M}{hP} + \frac{a+d}{e} - \frac{f}{h}\right], \tag{15}$$

$$i^* = \frac{\frac{k}{h}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}}\left[-\frac{t(1-b)}{e}\beta X + \frac{(1-b)}{e}T^0 + \frac{a+d}{e}\right] + \frac{\frac{(1-b)(1-t)}{e}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}}\left(\frac{f}{h} - \frac{M}{hP}\right). \tag{16}$$

In this study, the following results can be obtained by comparative static analysis from Eq. (15):

$$\frac{dY^*}{d\beta X} = -\frac{\frac{t(1-b)}{e}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} < 0\,, \tag{17}$$

$$\frac{dY^*}{dT^0} = \frac{\frac{(1-b)}{e}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{18}$$

$$\frac{dY^*}{dM} = \frac{\frac{1}{hP}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{19}$$

$$\frac{dY^*}{dP} = -\frac{\frac{M}{hP^2}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} < 0\,, \tag{20}$$

$$\frac{dY^*}{da} = \frac{\frac{1}{e}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{21}$$

$$\frac{dY^*}{dd} = \frac{\frac{1}{e}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{22}$$

$$\frac{dY^*}{df} = \frac{\frac{1}{h}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{23}$$

$$\frac{dY^*}{dt} = \frac{\frac{(1-b)}{e}}{[\frac{k}{h}+\frac{(1-b)(1-t)}{e}]^2}\left\{-\left[\frac{k}{h} + \frac{(1-b)}{e}\right]\beta X + \frac{(1-b)}{e}T^0 + \frac{M}{hP} - \frac{f}{h} + \frac{a+d}{e}\right\}. \tag{24}$$

Proposition 1 When tax evasion occurs and the government is self-sufficient (i.e., government expenditure equals government tax), the study finds: (1) The more serious the tax evasion, the lower the GDP; (2) The higher the lump sum tax, the higher the GDP; (3) The increase in the money supply, the higher the GDP; (4) The higher the price level, the lower the GDP; (5) The higher the spontaneous consumption, the higher the GDP; (6) The higher the spontaneous investment, the higher the GDP; (7) The higher the demand for spontaneous liquid money, the higher the GDP; (8) The higher the tax rate, the GDP cannot be determined to increase or decrease or unchanged.

According to Proposition 1, when there is tax evasion and the government is self-sufficient, then reduce the occurrence of tax evasion, increase the lump sum tax, increase the money supply, reduce the price level, increase spontaneous consumption, increase spontaneous investment, and increase the demand for spontaneous liquid money can increase GDP. Conversely, encouraging tax evasion, lowering lump sum taxes, reducing the money supply, rising price levels, reducing spontaneous consumption, reducing spontaneous investment, and reducing spontaneous liquid currency demand will be detrimental to GDP. Therefore, it is learned from this model that the government should more actively combat tax evasion. When tax evasion occurs, it is found that "the higher the tax evasion, the lower the GDP." The reason is that insufficient taxation will result in corresponding insufficient government expenditure. This study further found that "the higher the lump sum tax, the higher the GDP." This result is quite different from the existing IS-LM model. The reason is that the lump sum tax can partly compensate for the government's losses due to tax evasion and respond to the government's expenditure, on the contrary, let the lump sum tax be conducive to economic development.

In this study, the following results can be obtained by comparative static analysis from Eq. (16):

$$\frac{di^*}{d\beta X} = -\frac{\frac{kt(1-b)}{he}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} < 0\,, \tag{25}$$

$$\frac{di^*}{dT^0} = \frac{\frac{k(1-b)}{he}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{26}$$

$$\frac{di^*}{dM} = -\frac{\frac{(1-b)(1-t)}{ehP}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} < 0\,, \tag{27}$$

$$\frac{di^*}{dP} = \frac{\frac{M}{hP^2}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{28}$$

$$\frac{di^*}{da} = \frac{\frac{k}{eh}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{29}$$

$$\frac{di^*}{dd} = \frac{\frac{k}{eh}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{30}$$

$$\frac{di^*}{df} = \frac{\frac{(1-b)(1-t)}{eh}}{\frac{k}{h}+\frac{(1-b)(1-t)}{e}} > 0\,, \tag{31}$$

$$\frac{di^*}{dt} = \frac{\frac{k(1-b)}{eh}}{[\frac{k}{h}+\frac{(1-b)(1-t)}{e}]^2}\left\{-\left[\frac{k}{h}+\frac{(1-b)}{e}\right]\beta X + \frac{(1-b)}{e}T^0 + \frac{M}{hP} - \frac{f}{h} + \frac{a+d}{e}\right\}. \tag{32}$$

Proposition 2 When tax evasion occurs and the government is self-sufficient (i.e., government expenditure equals government tax), the study finds: (1) The more serious the tax evasion, the lower the interest rate; (2) The higher the fixed tax, the higher the interest rate; (3)

The increase in the money supply, the lower the interest rate; (4) The higher the price level, the higher the interest rate; (5) The higher the spontaneous consumption, the higher the interest rate; (6) The higher the spontaneous investment, the higher the interest rate; (7) The higher the demand for spontaneous liquid money, the higher the interest rate; (8) The higher the tax rate, the interest rate cannot be determined to increase or decrease or unchanged.

This study knows from Proposition 2 that in the case of tax evasion and self-sufficiency of the government, if the occurrence of tax evasion is reduced, the fixed tax is increased, the money supply is reduced, the price level is increased, the spontaneous consumption is increased, the spontaneous investment is increased, and spontaneous liquid currency demand is increased, then these will all lead to an increase in interest rates. Conversely, encouraging the occurrence of tax evasion, reducing fixed taxes, increasing the money supply, lowering price levels, reducing spontaneous consumption, reducing spontaneous investment, and reducing spontaneous liquid currency demand will lead to lower interest rates. Therefore, it is learned from this model that the more rampant tax evasion, the more abundant market funds will result in lower market interest rates; if the government actively combats tax evasion, it will result in tighter market funds and raise market interest rates.

3.2. Theoretical model and analysis of tax evasion and government non-self-sufficiency

This subsection proposes the economic theory of tax evasion and government non-self-sufficiency (i.e., government expenditure is not equal to government taxation) and conducts a preliminary analysis. After these equilibrium analyses, it is demonstrated by comparative static analysis to obtain the proposition of tax evasion agency theory. The main difference between the model of government self-sufficiency and government non-self-sufficiency lies in government expenditure, which is the sixth item below.

This research sets up the basic model and analysis of tax evasion and government non-self-sufficiency, and then compares and analyzes the model without tax evasion and sets up propositions. This government is a non-self-sufficiency model such as Eqs. (1), (2), (3), (4), (5), (6), (7), (8), and (9). The IS line is formed by the above Eqs. (1), (2), (3), (4), (5), and (6), and the LM line is formed by the above Eqs. (7), (8), and (9).

First, by rearranging the Eqs. (1), (2), (3), (4), (5), (6) to obtain the IS line as:

$$\begin{aligned} Y &= C + I + G \\ &= (a + bY_d) + (d - ei) + (G^0 + qT) \\ &= \{a + b[Y - T^0 - t(Y - \beta X)]\} + (d - ei) + [G^0 + qT^0 + qt(Y - \beta X)] \end{aligned} \quad (33)$$

After rearranging Eq. (33), the interest rate obtained as a function of GDP is as follows:

$$i = \frac{1}{e}[(b - bt - 1 + qt)Y - t\beta X(q - b) + T^0(q - b) + (a + d + G^0)] . \quad (34)$$

Secondly, after rearranging Eqs. (7), (8), and (9), the LM line obtained is Eq. (13). After rearranging Eq. (13), the interest rate obtained as a function of GDP is Eq. (14).

We solve the simultaneous equations from Eqs. (34) and (14), and obtain the equilibrium solutions Y^{**} and i^{**} as follows:

$$Y^{**} = \frac{1}{\frac{k}{h}+\frac{1-b-qt+bt}{e}}\left[\frac{(b-q)t}{e}\beta X + \frac{(q-b)}{e}T^0 + \frac{a+d+G^0}{e} + \frac{M}{hP} - \frac{f}{h}\right], \tag{35}$$

$$i^{**} = \frac{\frac{k}{h}}{\frac{k}{h}+\frac{1-b-qt+bt}{e}}\left[\frac{(b-q)t}{e}\beta X + \frac{(q-b)}{e}T^0 + \frac{a+d+G^0}{e}\right] + \frac{\frac{1-b-qt+bt}{e}}{\frac{k}{h}+\frac{1-b-qt+bt}{e}}\left(\frac{f}{h} - \frac{M}{hP}\right). \tag{36}$$

In this study, the following results can be obtained by comparative static analysis from Eq. (35):

$$\frac{dY^{**}}{d\beta X} = \frac{\frac{(b-q)t}{e}}{\frac{k}{h}+\frac{1-b-qt+bt}{e}} = \frac{q-b}{q-b-\frac{1-b}{t}-\frac{ek}{ht}}, \tag{37}$$

$$\frac{dY^{*}}{dT^0} = \frac{\frac{(q-b)}{e}}{\frac{k}{h}+\frac{1-b-qt+bt}{e}} = -\frac{q-b}{t(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{38}$$

$$\frac{dY^{**}}{dM} = -\frac{e}{Pht(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{39}$$

$$\frac{dY^{**}}{dP} = \frac{eM}{P^2ht(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{40}$$

$$\frac{dY^{**}}{da} = -\frac{1}{t(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{41}$$

$$\frac{dY^{**}}{dd} = -\frac{1}{t(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{42}$$

$$\frac{dY^{**}}{dG^0} = -\frac{1}{t(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{43}$$

$$\frac{dY^{**}}{df} = \frac{e}{ht(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{44}$$

$$\frac{dY^{**}}{dt} = \frac{\frac{(b-q)}{e}}{[\frac{k}{h}+\frac{1-b-qt+bt}{e}]^2}\left[\left(\frac{k}{h}+\frac{1-b}{e}\right)\beta X - \frac{(q-b)T^0}{e} - \frac{a+d+G^0}{e} + \frac{f}{h} - \frac{M}{hP}\right]. \tag{45}$$

Proposition 3 When tax evasion occurs and the government is non-self-sufficient (i.e., government expenditure is not equal to government tax), the study finds:

1. When $q > b + (1-b)/t + ek/ht$: (1) The more serious the tax evasion, the higher the GDP; (2) The higher the fixed tax, the lower the GDP; (3) The increase in the money supply, the lower the GDP; (4) The higher the price level, the higher the GDP; (5) The higher the spontaneous consumption, the lower the GDP; (6) The higher the spontaneous investment, the lower the GDP; (7) The higher the government's spontaneous expenditure, the lower the GDP; (8) The higher the demand for

spontaneous liquid money, the higher the GDP; (8) The higher the tax rate, the GDP cannot be determined to increase or decrease or unchanged.

2. When $\mathrm{b} < q < b + (1-b)/t + ek/ht$: (1) The more serious the tax evasion, the lower the GDP; (2) The higher the fixed tax, the higher the GDP; (3) The increase in the money supply, the higher the GDP; (4) The higher the price level, the lower the GDP; (5) The higher the spontaneous consumption, the higher the GDP; (6) The higher the spontaneous investment, the higher the GDP (7) The higher the government's spontaneous expenditure, the higher the GDP; (8) The higher the demand for spontaneous liquid money, the lower the GDP; (8) the higher the tax rate, the GDP cannot be determined to increase or decrease or unchanged.
3. When $q < b$: (1) The more serious the tax evasion, the higher the GDP; (2) the higher the fixed tax, the lower the GDP; (3) The increase in the money supply, the higher the GDP; (4) The higher the price level, the lower the GDP; (5) The higher the spontaneous consumption, the higher the GDP; (6) The higher the spontaneous investment, the higher the GDP; (7) The higher the spontaneous government expenditure, the higher the GDP (8) The higher the demand for spontaneous liquid money, the lower the GDP; (8) The higher the tax rate, the GDP cannot be determined to increase or decrease or unchanged.

This study learns from Proposition 3 that when there is tax evasion and the government is non-self-sufficient, reducing the occurrence of tax evasion may unexpectedly reduce GDP: that is, when the government's marginal expenditure tends to be greater, $q > b + (1-b)/t + ek/ht$, the relationship between tax evasion and GDP is positive; similarly, when the government's marginal expenditure tends to be small, $q < b$, the relationship between tax evasion and GDP is also positive. Therefore, it is learned from this model that when the government's marginal expenditure tends to be larger or smaller, the government may deliberately not actively crackdown on tax evasion and reduce tax evasion audits, which is intended to stimulate economic growth. The effect of such a policy is beyond the expectation of the legitimacy or appropriateness of the policy.

In this study, the following results can be obtained by comparative static analysis from Eq. (36):

$$\frac{di^{**}}{d\beta X} = \frac{\frac{k(b-q)t}{he}}{\frac{k}{h}+\frac{1-b-qt+bt}{e}} = \frac{\frac{k(q-b)}{h}}{q-b-\frac{1-b}{t}-\frac{ek}{ht}}, \tag{46}$$

$$\frac{di^{*}}{dT^{0}} = \frac{\frac{k(q-b)}{he}}{\frac{k}{h}+\frac{1-b-qt+bt}{e}} = -\frac{\frac{k(q-b)}{h}}{t(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{47}$$

$$\frac{di^{**}}{dM} = \frac{(q-b-\frac{1-b}{t})}{Ph(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{48}$$

$$\frac{di^{**}}{dP} = \frac{(q-b-\frac{1-b}{t})}{P^2h(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{49}$$

$$\frac{di^{**}}{da} = -\frac{k}{ht(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{50}$$

$$\frac{di^{**}}{dd} = -\frac{k}{ht(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{51}$$

$$\frac{di^{**}}{dG^0} = -\frac{k}{ht(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{52}$$

$$\frac{di^{**}}{df} = \frac{\frac{k}{h}(q-b-\frac{1-b}{t})}{ht(q-b-\frac{1-b}{t}-\frac{ek}{ht})}, \tag{53}$$

$$\frac{di^{**}}{dt} = \frac{\frac{k(q-b)}{he}}{[\frac{k}{h}+\frac{1-b-qt+bt}{e}]^2}\left[-\left(\frac{k}{h}+\frac{1-b}{e}\right)\beta X + \frac{(q-b)T^0}{e} + \frac{a+d+G^0}{e} - \frac{f}{h} + \frac{M}{hP}\right]. \tag{54}$$

Proposition 4 When tax evasion occurs and the government is non-self-sufficient (i.e., government expenditure is not equal to government tax), the study finds: (1) When $q > b + (1-b)/t + ek/ht$: the more serious the tax evasion, the higher the interest rate. (2) When $b < q < b + (1-b)/t + ek/ht$: the more serious the tax evasion, the lower the interest rate. (3) When $q < b$: the more serious the tax evasion, the higher the interest rate.

This study learns from Proposition 4 that when there is tax evasion and the government is non-self-sufficient, reducing the occurrence of tax evasion may unexpectedly lower the interest rate: that is, when the government's marginal expenditure tends to be greater, $q > b + (1-b)/t + ek/ht$, the relationship between tax evasion and interest rate is positive; similarly, when the government's marginal expenditure tends to be small, $q < b$, the relationship between tax evasion and interest rate is also positive.

This research is an analysis of the economic theory model of tax evasion. It has produced subversive conclusions on the three aspects of the social system, economy, and academic development. The findings of this research are quite different from the existing research and are very different from the results of previous literature that the government should actively combat tax evasion. When the government's marginal expenditure tends to be larger or smaller, this study found that the government does not actively crack down on tax evasion can stimulate economic development, and the government will face the dilemma of legal and economic growth. Therefore, this study has profound economic implications.

4. Conclusion

In this macroeconomic market, all changes are interlocking. What kind of plans should be implemented between the people and the government to respond to market changes, especially in countries with a free economy? In the past, people only believed that tax evasion should not exist in highly developed countries, and it should be everyone's responsibility to

pay taxes. However, this research mentions that if tax evasion is to be ruled out, it is almost impossible in reality. Probably, the most important economic growth even sometimes depends on some tax-paying individuals evading tax to obtain significant economic growth. This problem is not only the negligence of personal behavior but also the problem that everyone at all levels needs to face. It may be due to the imbalance of market supply and demand, inflation, the instability of money supply and demand, or unreasonable government policies and implementation of laws and regulations, which leads to tax evasion. How to make policies reasonable, market stable, moderate inflation, and information transparency, and other aspects should also let the people of the country understand that paying taxes is not unilateral, but what they should do when they cooperate with the government.

The results of this research allow future research to pay more attention to this aspect. The current economic development and policies in various countries do not mean that illegal behavior can be rationalized. How to reduce and control the quality and quantity of taxation applications is the current government should be an obligation to the people. The foundation of law is constructed under morals and ethics. Morals and ethics are not perfect in an economic society, and so is the law. However, if it can meet the social conditions at the time, conform to the cooperation of the market system, and give the people a sense of belonging and responsibility, then such an economic policy is sufficient.

Although it is generally believed that tax evasion is harmful to the economy, this study found that when the government is not constrained by the balance of tax and payment, the government’s marginal expenditure tends to be larger or smaller, tax evasion is beneficial to economic development. Therefore, the research direction of future economic growth issues may be able to move towards the degree of tax evasion.

In addition, the model set in this article is a one-period IS-LM model. In this model, the government does not have to issue intertemporal bonds to balance the long-term budget. However, governments cannot sustain an infinite deficit in the real world. Therefore, if future research can adopt the intertemporal IS-LM model to make the government's balance of payments in the long run to describe dynamic economic changes, it will be an important research direction.

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