

## On the Framing Effect to the Perception and Cognition of Individual Tax Compliance: A Case Study in Wuhan City of China

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**Abstract:** This study focuses on the problem of individual tax evasion and its perception and cognition. Since individuals are prone to evade payment of taxes by concealing the information of personal income, it is very important to use tax intelligence information to recognize tax evasion. However, very limited work has been done in this field in China, especially for the framing effect in the perception and cognition of individual tax evasion. For this reason, this study has comprehensively researched the framing effect in the perception and cognition of individual tax evasion in Wuhan city of China. To investigate the existence of framing effect, a questionnaire survey of 300 respondents has been complemented and completed. The covariance analysis has been used to analyze the results of the survey. It has found that the level of taxpayers' compliance is higher when they receive positive framework information than confronting the negative framework information, which convinces the existence of framing effects in the perception and cognition of individual tax evasion. It is also demonstrated that gender differences also affect taxpayers' compliance level and male taxpayers' compliance level is lower than female because they have higher risk preferences. Finally, some strategies have been proposed to strengthen individual tax compliance level.

**Keywords:** Framing effect, individual tax compliance, perception and cognition, tax evasion

### INTRODUCTION

In the 1996 Information Resources and Social Development International Conference, (Rubens, 1996) from University of Pittsburgh, pointed out that the theory of information science mainly developed in the areas of man-machine interface, user awareness and demand. Intelligence behavior will become one of the most important social phenomenons in human behavior. Since the emergence of the tax system, the taxpayers have had the intelligence-gathering behavior of various types of tax. As Klepper and Nagin (1989) said, "3 things are identified in human life: death, taxes and unremitting efforts that human make in order to avoid these 2 things." Compared with Western countries, due to the later appearance of personal income tax in China, the relevant collection and management regulations need to be further improved and the tax non-compliance issue is particularly prominent. Especially, with the rapid development of modern information technology, the way that individuals pay their taxes have changed a lot. We have to explore new research methods and make deeply research on personal tax information behavior, needs and psychological mechanism to improve the consequence of tax collection and management and the tax compliance degree effectively.

The physical activity of tax intelligence is a response to the external conditions under the domination of the tax intelligence cognitive thinking, such as clearing intelligence requirements in real terms,

selecting the appropriate tax information analysis system and developing a proper search strategy and tax decisions, etc. All these processes cover taxpayers' cognitive thought processes. Among the different types of taxpayers, the tax compliance issues in high-income class (including private business owners, individual businesses, freelancers, etc.) are especially serious, which is highlighted as that the high-income group pay personal income tax for individual income tax of the country revenue amounted to only about 30%, while the tax paid by low-income working-class accounted for more than 65% of the total revenue of China's personal income tax. "High-income class pay less taxes and even pay nothing, on the contrary, lower-middle class has become a tax force", this strange phenomenon is not only making individual income tax effect its role in regulating the social distribution and easing the gap between the rich and the poor, but in a "reverse adjustment" unfavorable situation.

At the Eleventh National People's Congress of China held on March 5, 2010, Premier Jiabao Wen made it clear that ensuring reasonable income distribution system is an important manifestation of social fairness and justice. However, tax non-compliance issues, especially among high-income earners, have a serious impact on social justice and social harmony and are not conducive to social stability. For the purpose of discussing the perception and cognition of individual tax evasion, a

comprehensive study has been carried out via a systematic survey in Wuhan city of China. The analysis of the survey has discovered the existence of framing effect in individual tax evasion. It also found that gender differences affect taxpayers' compliance level. Based on these analysis results, some strategies have been proposed to strengthen individual tax compliance level.

## **LITERATURE REVIEW**

Foreign scholars on the personal tax compliance theory began with the standard economics of expected utility theory and a typical representative is the cornerstone of the A-S model (Allingham and Sandmo, 1972). Rational and self-interested decision-makers are the base of expected utility theory, but in reality the taxpayer's behavior has given rise to anomalies such as tax compliance confusion, framing effects and so on. Taxpayer's compliance decisions are influenced by the impact of risky choice framing effects, as for the decision results for the same tax, if the taxpayers see it as loss, they will demonstrate risk seeking tendency. If the taxpayers see it, to some extent, as earnings, they will show risk aversion (Schmidt, 2001). Therefore, changing the perception of the taxpayers' tax decision-making can change the level of the taxpayer's risk preferences. Academic research results in this field have confirmed this point of view. Schadewald (1989) pointed out that when tax consultants describe possible consequences a tax decision may cause, subtle differences in language may affect their customers' decision-making framework and risk appetite. Holler *et al.* (2008) also found that, depending on the situation, the tax information with different expressions to convey to the taxpayer, can improve tax compliance. Prepayment of taxes puzzle in the reality is a typical performance of the framing effect. On the basis of fully rational assumptions based on expected utility theory, the tax prepayment will not change the expected return of the taxpayer and thus will not affect the tax compliance decisions. However, scholars' empirical and experimental research results have confirmed the increase in prepaid taxes that makes the taxpayer take a more compliant behavior (Kirchler and Maciejovsky, 2001; Cullis *et al.*, 2006).

According to the principle of risky choice of framing effects, (Elffer and Hessing, 1997) put forward the proposal to improve the tax laws for the Dutch government and intended to make the taxpayer prepay more in taxes than the tax payable strategies to improve the taxpayer's tax compliance. Later, (Dennis, 2001) analyzed the possibility of policy proposals being accepted by the taxpayers that Elffer and Hessing

(1997) put forward, his research results show that the taxpayers in the case of the balance of needs in back and letting the agent fill in a form of Certified Public Accountants, are easier to accept excessive prepayment of taxes. In addition to the risky choice framework, (Marianne *et al.*, 2008) study found that when taxpayers make taxpayer compliance decisions, they will consider the target frame effect. The tax authorities may, in higher compliance degrees, stress the potential gains of the taxpayers, whereas taxpayers follow low, focus taxpayers may suffer a loss and use information means to adjust the expectations of taxpayers and increase the level of compliance.

Many foreign scientific studies show that framing effects have a significant effect on the taxpayers to pay their taxes and they made a number of methods and initiatives to reduce this impact and improve the quality and efficiency of tax collection. The specific measures are to improve the taxpayers' tax paid in advance and use information technology management mode. However, due to the country's political, economic development level, cultural and institutional huge difference, the results of the study does not necessarily apply to the actual situation of our country. At present, we have not fully developed whether framing effects will affect decision-making behavior of taxpayers and researchers need to be further in-depth. Wang and Xu (2007) in our country have started the analysis of risky choice framing effects and this study is to increase the tax credits as a starting point for consideration. The study point of view in this study mainly adopts the form of questionnaires and focuses on the research of goal framing effects, namely, adopting different ways to the same information to the taxpayers and observing the taxpayers' reaction on the same information in different means of communication, in order to seek the reasonable tax information communication to improve the degree of our taxpayers' tax compliance.

## **THE TAXPAYER'S INTELLIGENCE PERCEPTION AND COGNITIVE**

**Tax information and intelligence collection:** The definition of Tax Information Exchange, specified in the International Tax Agreements, refers to in order to strengthen cross-border tax administration and avoid double taxation and tax evasion, sign the agreements and terms between China and the States Parties of the tax treaty. The definition of the concept of Tax Information in this study is different from the intelligence of tax exchange and tax Information referred to in this study is based on the application of IT in tax administration, Specifically, putting levers and

taxpayers in the state of equal but opposite and both sides searching for tax-related information through a variety of ways. Information is the basis of intelligence, intelligence from information, but the information is not equivalent to intelligence, only by processing and after activation, with some effectiveness information is intelligence. Taxation work involved is activated, the usefulness of the information and knowledge, which belongs to the category of intelligence.

The premise and basis of taxation of the tax authorities is to obtain taxpayers' economic and financial information, such as the production and operation status, financial management and other aspects of personal and business property flowing information, but it must be admitted, the taxpayers' economic and financial and other related information belong to the taxpayer information private holds category. And therefore the tax department is necessary to monitor the sources of revenue. The tax department track and control tax collection work by tax monitoring. The use of computers in tax collection, makes advanced and efficient, meticulous, professional and efficient IT apply to the collection and management work in tax administration and makes it richer, accurate and reliable to access to tax information, so that tax efficiency is significantly improved and tax collection and management, tax services and other tax work can be effective. In recent years, Western countries establish extensive association to protect the tax network in the tax collection and administration.

As is the case with the rate paying corporate to establish enterprise association tax for tax, public security departments to establish public security association tax for tax and government departments to establish the government's tax and other support. The network builds a substantial increase in the level of law enforcement to tax collection and management efficiency as well as tax staff and is effective in the prevention of tax evasion behavior.

In order to collect the taxpayer's intelligence and information, the author designed a questionnaire. The questionnaire is divided into 4 parts: the first part of the research is about the object's gender, level of education and other basic information. Due to the difference between male and female of social division of labor, tax compliance aspects will show gender differences. Compared with women, men have higher risk appetite (He *et al.*, 2002). Therefore, men tend to conceal income to avoid paying taxes. Of course, this will be exposed to higher subject to audit the risk. This study will examine the behavior and intelligence awareness of

the different gender taxpayers when the tax, to verify the framework effect in gender differences. The second part is the collection of intelligence information when taxpayers are faced to the persuasive communication. Persuasive communication refers to the taxpayer after paying taxes, access to public goods, services, or the possible legal sanctions. If the taxpayer takes measures of concealing income and other means to evade tax, the tax authorities may investigate and deal with these acts, taxpayers will face various degrees of legal sanctions, including the overdue tax evasion and late fees and even criminal proceedings, depending on the extent of tax evasion plot. Many taxpayers often pay more attention to the potential benefits after avoiding paying taxes, while ignoring the possible legal sanctions brought greater losses. The information in the content on the same logical sense, similar, but the expression of the form is different. The information framework is described to face the income, negative information framework focuses on taxpayers facing losses, but without going through the full, rational thinking, the framework effect will affect the final choice of the taxpayer.

In the third part of the questionnaire, the author designed a tax scenario, by giving each investigation object with different amount of hypothetical monetary, respondents may according to the given income to adopt different tax act. After paying taxes, the survey will receive a lot of information, including the public products and services provided by the Government, the audit rate and the law. These will have different presentations of information in the questionnaire, but the meaning is basically the same and will not make those surveyed misunderstand. Each survey need to answer the question after reading raised by different modes of expression for the questionnaire, used to detect whether the taxpayer will be affected by positive framework information or negative framework information and do different responses with information on the same content under different modes of expression. The fourth part of the questionnaire contains six issues, which take into account the actual situation of our tax collection and management, with reference to foreign scholars, (Roberts, 1994) design of the attitude meter of tax non-compliance. This part aims at detecting the issue of the taxpayer failing to comply with the attitude. In the investigation of taxpayer's compliance information, we adopt the split-half reliability method. Tax compliance research project is divided into 2 aspects, by computing their correlation

Table 1: The sample distribution of the questionnaire

Samples classified		Toll collection	Percentage
Sex-disaggregated	Males	156	52.5%
	Female	141	47.5%
Classification by the educational level	undergraduate students	162	54.5%
	Post-graduate	89	29.9%
	Full-time post-graduate MBA	46	15.6%

coefficient to estimate the reliability of whole attitude meter. Measuring table is the 9-level Liker scale and in the calculation of each half of the scale reliability coefficient, people can use Spearman-Brown formula to estimate the scale's reliability coefficient. Table 1 shows the sample distribution of the questionnaire.

The survey sample of 300 college students were randomly selected in Wuhan city of China, including undergraduate and post-graduate students. Selecting group of students as the survey sample can be more convenient to obtain real survey data. MBA students are basically in the social work with certain jobs and they are taxpayers in real life. Taking the group into the survey sample, primarily for its students and occupation of the dual identity can bring data comparison for our sample.

In the study room and a lab environment, students gathered in large and learning atmosphere was relatively quiet and thus students were less affected by other factors while completing the questionnaire. So the site of filling out questionnaire was selected in the study room or laboratory. Valid questionnaires in the survey were distributed into 300 questionnaires and the number of effective questionnaires is 297, the effective return rate is also as high as 99%. In the collection of intelligence information of the student groups, we have prepared some small gifts, this can enhance their willingness to accept the survey and there will be no contradiction in completing the questionnaire, this can be more real data. Of course, we also take into account the confidentiality of intelligence information. We will make a solemn promise to the investigators that the survey results are only used for research and will not disclose their information.

**Measurement of taxpayer information and intelligence:** In order to measure the taxpayer's information and intelligence and analyze whether the taxpayer is subject to the expression of tax intelligence information, namely, search whether the taxpayer has the framing effect, we usually select the method for the analysis of variance. However, in this study, when measuring the taxpayers' information and intelligence, the author selected the analysis of covariance method, namely, in the analysis of independent variable on the dependent variables affecting, first deducted other uncontrollable factors quantitative variables. This is mainly because tax decisions and actions of the taxpayer are not only affected by the expression of tax

information, there also are other uncontrollable reasons, if we don't eliminate these reasons, it will significantly interfere with the results of the analysis and even possibly get incorrect results. Taking the analysis of covariance analysis and processing of data can effectively improve the results of a study of the reliability and precision. In the study of taxpayer compliance, the most important information and intelligence will be used to pay taxes.

Therefore, we will set the investigation object of tax law as the dependent variable. This part of the information and intelligence in the third part will be involved in the survey. Questionnaires designed to answer are divided into nine levels, for example, whether the taxpayers will be in accordance with the law in a timely manner to the tax authorities to declare taxes, the answer from 1 to 9 nine levels, which will be certain with 1, certain not with 9, digital from small to large, taxpayers' tax compliance tend to turn weakened, therefore, the degree of tax compliance of the investigation subject can be determined by questionnaire answers. The reason why we choose 9 Liker scale to examine the tendency of the taxpayer's tax declaration is that we feel that, in the face of audit risk, the people with different genders and different levels of education will have different choices and the more information they receive the more opportunities they will have when faced with the choices. The more scale series, the greater the breadth to cover, the more complex taxable attitude can be reflected. In addition, tax tendency has the meaning of the trends in the data and it is difficult to accurately measure. So the scale of 9 can better reflect the people's tax attitudes on the trend.

In order to study the impact of tax on people's behavior factors and intelligence cognitive framing effects, we selected these variables: A questionnaire objects are in a positive framework information or negative framework information; B survey objects are male or female; C The education level of the questionnaire survey are undergraduate or post-graduate students. I believe that gender, level of education may exist relationship with the framework and each other's internal influence is reflected in the taxpayer's compliance behavior. Therefore, we assume that among the 3 there is a regulator of the corresponding relations, in the study of the 3 independent variables and dependent variables

Table 2: Covariance analysis results

Factors	SS	MS	F-value	p-value
Tax attitude (TC)	656.135	656.135	185.476	0.000
Gender information (Gender)	15.768	15.768	4.159	0.047
Framework (Frame)	14.231	14.231	4.432	0.029
Level of education (EB)	3.467	3.467	1.981	0.452
Gender plus Frame	4.512	4.512	1.284	0.369
Gender plus EB	8.005	8.005	2.551	0.647
Frame plus EB	0.602	0.602	0.941	0.755
Gender and Frame plus EB	12.317	12.317	3.679	0.689

Table 3: The mean value and error according to sex and framework

Group		Mean value	SE	Toll collection
Framework	Positive framework	4.377	0.126	139
	Negative framework	4.861	0.126	158
Sex information	Male sample	4.898	0.130	156
	Female sample	4.215	0.131	141

influence degree, we can set between products as moderating variable. In the face of the obligation to pay taxes, different people have different attitude towards taxable, that is, tax compliance attitude. Individual attitudes in the experiment cannot be controlled, but have a greater impact on the experimental results. We regard this as a covariate. Covariate in this study, selects a taxpayers' tax non-compliance and the research is completed in the fourth part of the questionnaire, which contains six questions constituting tax non-compliance meter to measure the taxpayer's non-compliance. Each issue is divided into a sub-minimum of 1 point, maximum of 9 points and is divided into nine levels. The highest total score is 54, sub-divided into 6. The lower the score is, the taxpayer is more inclined to tax failing to comply with the behavior. In the completed questionnaire after obtaining the data for the determination of the tax information expression (positive framework information or negative framework information), the taxpayers' gender and education level of the taxpayers in our country are analyzed using the SPSS software.

**Covariance analysis on the survey:** The one-way analysis of variance is used in this study for the survey data analysis. Select the factor for the tax to comply with the attitude of this uncontrolled single factor and finding that the p-value is close to 0, that is, tax non-compliance attitude can significantly affect tax compliance behavior. If we also set tax non-compliance attitude as the dependent variable, then, due to their gender, level of education and the framework in which there is a relationship of mutual influence, it will cause the error of the regression results and reduce the degree of precision of the empirical results. It is necessary to exclude gender, education level and other factors such as interference and use the covariance analysis to set non-compliance attitude as a covariate to consider. Table 2 shows the covariance analysis results. The

results of the covariance analysis in Table 2 turn out the framework for the main effect of  $P$  value is 0.029 and indicate that there is a significant framing effect. It notes that taxpayers, when facing tax decisions, receiving different forms of information, even if the meaning of the information is similar or the same will make different tax compliance decisions. However, at this time we could not confirm how the framing effect affects the tax behavior of taxpayers and need further analysis later. In addition, the taxpayers' gender main effect  $P$  value is 0.047, also significantly, indicating that the significant impact of gender on the tendency of people's tax. The taxpayers of different gender will make different tax compliance decisions, which validate the assumptions of the previous work.

We also found that the main effect of level of education was not significant and the interaction effect of the framework, gender and educational level of these 3 variables was also not significant. This means that the tendency of people's tax has no significant relationship with the level of education and previous assumption does not hold qualifications and education will not become the tax decision-making factors of evading. In addition, the relationship of the 3 self-regulate between the variables did not get the validation data, which reflects that the 3 independent variables do not exist multicollinearity and will help reduce the error of the experimental results.

Through the above analysis we can conclude: The main effects results of framework and main effect results of taxpayers' gender are both significant, meaningful, while the other influence factors has no practical significance to the study. Table 3 shows the group mean of framework and gender. It can be seen in Table 3 that, the tax compliance of positive framework and negative framework were 4.377 and 4.861 and that the taxpayers under the framework of positive framework information has higher tax compliance behavior than negative framework information. This

shows that if the taxpayer receives information that avoiding paying taxes can gain information, but will face greater risks, in order to avoid the risk of inspection and punishment, the taxpayers will tend to tax law and show a higher tax compliance; if the taxpayer receives information that evading the tax will result in loss, but these losses are acceptable, then the taxpayers will tend to conceal taxable income or avoid paying taxes by other means and show a lower tax compliance. From a gender perspective, women's average is 4.215, the male's mean is 4.898 and the tax compliance of women is obviously higher than men. This result verified the effect of gender differences in tax compliance framework, especially men, have a higher appetite for risk and they tend to gain by evading taxes; while women have a lower risk appetite and show conservative in the face of the tax authorities' possible tax inspectors and they tend to declare the income in accordance with the law to pay taxes and have a high degree of tax compliance.

### **DISCUSSION**

The prospect theory of behavioral finance, i.e., under conditions of uncertainty, the value of choice theory, made it clear that in the same amount of money the individual loss is greater than the gains and the pain brought by losing money to the individual is higher than the same number of money to the individual happiness. The value function is reflected in Figure S-shape, in return for concave and convex loss. Loss region is steeper than the income region curve shows that the individual are more inclined to risk-averse in the face of income and are more likely to seek risk in the face of loss. This theory well explain the conclusions of this study, namely, compared with negative framework, positive framework is more convinced to the taxpayers. In this study, the described taxpayers facing losses, namely negative frame information, taxpayers are more inclined to seek risk, i.e., the higher degree of tax non-compliance ; instead, focus on the description of taxpayers facing earnings, namely frame information, the taxpayers show risk aversion, i.e., tax non-compliance is low.

Some foreign scholars draw the same conclusion of framing effects with the research conclusions in this study, that there exists framing effects when the taxpayers are faced with tax compliance decisions. In addition, it can be drawn from this study that gender significantly affects the degree of tax compliance and tax compliance of women is higher than men. The conclusions are the same with some foreign scholars' such as Baldry (1987). It is pointed out that, due to differences in male's and female's perspectives and the hobbies and understanding of the tax collection, for

example, men show greater interests than women in the tax-related affairs, or men regard the tax as a loss and men deal with tax matters more, etc. All these factors caused the people of different gender have different tax compliance decision-making behaviors.

### **CONCLUSION AND STRATEGIES**

Through the investigation and analysis in this study it can be concluded that the framing effect exists in the current tax compliance in China. It suggests that the same tax information due to the different transfer modes, i.e., positive framework information and negative framework information, will produce different tax compliance decision-making behaviors. Specifically, taxpayers with positive framework information tend to risk aversion, while taxpayers with negative framework information are prone to seeking tax risk. Hence, the level of taxpayers' compliance is higher when they receive positive framework information than confronting the negative framework information. In addition, the gender of the taxpayers will also influence the tax compliance decision-making behaviors. These conclusions agree well with the reports in most of foreign scholars' pervious work. As a result, the investigation and results in this work can be used as a theoretical and technological reference for practical applications. Based on the analysis results in this work, it is believed that the following strategies can be adopted to strengthen individual tax compliance level.

- In the tax information perception and cognition process, the tax department should give full consideration to taxpayer frame effects so as to improve individual tax compliance level
- Necessary legal sanction on the negative framework information shall be appropriately disclosed to deter those who want to make tax evasion against tax law. Hence, the law effect can be gotten reflected to avoid tax financial loss and promote individual tax compliance
- Since men tend to choose tax evasion in the decision-making, in order to improve the overall tax compliance the tax department should focus on supervision and examination of the male tax acts in practice

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