

행동경제학을 적용한 조세 정책 집행 방법 연구

How to Reduce the Tax Gap of South Korea

2018 년 5 월

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Contents

국외훈련 개요.....	2
훈련기관 개요.....	3
How to reduce the tax gap of South Korea.....	6
Before Starting This Report.....	7
I. Problem Statement.....	11
II. Background and Literature Review.....	13
1. Background.....	13
2. Literature Review.....	18
III. Research Methodology and Evaluative Criteria.....	24
1. Research Methodology.....	24
2. Evaluative Criteria.....	25
IV. Policy Options.....	27
Current efforts for reducing tax gap.....	28
Option I: Simplifying the tax law.....	30
Option II: Simplifying tax reporting methods.....	33
Option III: Strengthening punishments.....	37
Option IV: Using behavioral economics.....	41
Evaluation.....	69
V. Conclusion.....	72
References.....	77

국외훈련 개요

1. 훈련 국가: 미국
2. 훈련 기관명: 플로리다 주립대학 행정대학원
(Askew School, Florida State University)
3. 훈련 분야: 조세 정책
4. 훈련 기간: 2016년 6월 12일 ~ 2018년 6월 11일

훈련기관 개요

1. 훈련 국가: 미국

2. 훈련 기관명: 플로리다 주립대학 행정대학원
(Askew School, Florida State University)

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4. 주소: Askew School, 627 Bellamy Building, Florida State University,
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5. 위치

플로리다 주도인 탈라하시(City of Tallahassee)의 도심에 위치하고 있음.
탈라하시는 플로리다 주 북서쪽에 위치하며, 탈라하시에서 조지아 주까지는
차로 1시간 이내에 도착 가능함.

6. 설립 주체

공립대학으로 플로리다 주에서 설립 (주립대). 따라서 미국 내 타 사립대에 비해
학비가 저렴한 편이고 (한 학기에 3과목, 9학점을 수강할 경우 약 \$10,000 소요),
타 주립대에 비해서도 저렴한 편임.

7. 한국 유학생 수

2016년 가을학기 석사 신입생 중 한국 유학생은 6명. 2015년 가을 학기 석사
신입생 중 한국유학생은 3명임 (대부분 중앙부처 및 지자체 공무원들임). 2017년
봄학기 석사 신입생 2명 등 꾸준히 조금씩 들어오고 있음. 다만, 이 대학원의
행정시스템이 좀 느려서, 합격자 발표를 늦게 하는 경향이 있음. 재직 중인
한국인 교수님께 이러한 사실을 알렸으나, 빨라진 것 같다는 느낌은 없음.

8. 행정대학원 (Askew School) 소개

- 입학 조건: 토플 80점 이상, GRE 300점 이상 등 (어학 요건이 조금 부족하더라도 합격하여 입학한 사례가 있음)
- 준비 서류: 자기 소개서, 재정보증 서류, 학사 영문 성적표, 추천서 3 등
- 학사 일정: 연간 3학기까지 등록이 가능하며, 봄학기부터 시작하는 프로그램도 지원이 가능함 (봄학기 1월 초 시작, 여름학기 5월 초 시작, 가을학기 8월 말 시작)
- 소요 학자금: 1학점 당 1,100불 정도 소요. 총 42학점을 이수하여야 함.
- 장점: 입학이 비교적 수월함 (학사 성적이 요건에 미달하였으나, Admission을 받은 사례가 있음, 2016년 가을 신입생 기준), 학비가 저렴함. 또한 생활비도 타주에 비해 저렴하다고 함.
- 단점: 소도시임. 그러나 이것은 잘 생각해보아야 함. 미국의 대도시는 한국의 서울만큼 차가 많이 막히고, 서울 보다 더 사건 사고가 많이 일어 남. 본인 또는 가족들의 선호에 따라 선택하겠지만, 시골이라는 이유로 망설일 필요는 없음. 없는 것 빼고는 다 있음.
- 학교 주변 환경: 탈라하시 중심에 위치. 소규모 도시라 대중교통이 불편함. 공무원 유학생 가족들이 주로 거주하는 탈라하시 북부에서는 차로 약 30분 거리에 있음. 차가 거의 막히지 않는 점을 고려할 때 상당히 먼 거리임. 자녀들 교육과 관련해서 학교, 학군을 잘 알아보되, 플로리다 주립대 주변의 집을 선택하는 것도 나쁜 선택은 아님.

9. 입교 교섭 자료

- 학교 선정: 자신의 어학성적, 경제적 여건 (3인 가족의 경우, 정부의 지원금, 체재비 등으로는 많이 부족함) 등을 고려하여 2~4개 학교를 선택하여 지원
- 입학 수속: 인터넷으로 지원이 가능함. 플로리다 주립대 행정대학원의 경우 메일 등에 대한 답변이 늦거나, 없는 경우도 있으므로, 급할 때는 전화를 직접 걸어야 함.

- 지원 시 필요한 어학 성적: 토플 80점 이상, GRE 300점 이상 등 (2016년 가을학기 입학 기준임. 다만, 어학기준이 약간 미달인 사람도 입학한 사례가 있음)

- VISA 관련: 학교나 학교 부속 어학원에서 I-20 서류를 받은 경우, 비자 발급은 어렵지 않음. 인터넷 검색을 통해 비자 발급관련 사항을 조금만 숙지하고, 시간만 투자하면 어렵지 않으므로, 특별한 사정이 없는 한 본인이 절차를 밟을 것을 추천. 비자 인터뷰도 같이 간 아내에게 아무런 질문도 하지 않았고, 언제부터 공무원으로 근무했냐, 공부하러 가느냐 등의 간단한 질문만 본인에게 함.

- 학비 관련: 졸업까지 총 4만불 정도 소요됨. 미국 주립대 중에서도 저렴한 편이라고 함. 또한 허리케인 등의 재난재해가 많은 플로리다의 특성 때문인지, 행정대학원에서 재난과 관련된 과목들을 매우 많이 개설하고 있음. 이들 과목들은 연방 정부의 지원을 받아서 개설되므로, 약 1/3 정도의 비용을 할인하여 줌. 따라서 재난에 관련된 수업들을 들으면 학비를 조금 절약할 수 있음.

How to reduce the tax gap of South Korea

: Tax policies using behavioral economics

Before Starting This Report

1. What is the study of behavioral economics?

Looking at the Internet, we can find various definitions of behavioral economics. As a simple example, the businessdictionary defines this as “a theory stating that there are important psychological and behavioral variables involved in the economic decisions of consumers or countries.” On the other hand, the Investopedia defines this as “the study of psychology as it relates to the economic decision-making processes of individuals and institutions.” The definition of behavioral economics varies according to scholars. Among the various definitions, I think the most intuitive is what the economist Dan Ariely has defined. A famous behavioral economist, Ariely (2010) describe behavioral economics as studies economic phenomena assuming people are not rational unlike standard economics. In other words, it is a study to discard the premise of rational and ideal human being, to study actual human behavior, and to study how to act and what kind of result occurs in economics.

2. What are some examples of “nudging” polices?

Although the term behavioral economics may be unfamiliar to many people, many have already been influenced by the "nudging" policies created by the results of behavioral economics research. As discussed in Fay's class (Lecture 4, 2017), although many Americans are able to choose their benefit package, they tend to choose the default option that the company or government has set by default. This is a way for governments or companies to set up anchors to drive people's choices. This method can also be used to raise the retirement pension participation rate. Rather than letting people choose whether or not to join a retirement pension, we can set a default option to unconditionally sign up,

and if they want, they can cancel the subscription, and then more people will choose the default option.

Policies utilizing behavioral economics may be more than we think. Let me introduce two experiments about nudging policy. First of all, Hallsworth, List, Metcalfe, and Vlaev (2014) conducted experiments about taxes in the U.K. Their experiments were related to letters to those who did not pay taxes. They found that simply adding only two lines to the letter could increase the rate of tax payments (Hallsworth et al., 2014, p. 17). The two lines they added are: “Nine out of ten people in the UK pay their tax on time. You are currently in the very small minority of people who have not paid us yet.” (Hallsworth et al., 2014, p. 14). The second is an experiment in which these phrases are located and can affect people's behavior. Shu, Mazar, Gino, Ariely, and Bazerman (2012) conducted experiments about self-reports. They asked people to sign the following statement to get an honest self-report from the people: “I promise that the information I am providing is true.” (Shu et al., 2012, p. 15200). They made two conclusions from this experiment. The one is this kind of statement could decrease dishonest self-reports. The other is the location of the statement is important. They found that “ Signing at the beginning makes ethics salient and decreases dishonest self-reports in comparison to signing at the end.” (Shu et al. 2012, p. 15197).

3. Why should we care about these policies and how can we use these policies to change citizen behavior?

As mentioned earlier, behavioral economics assumes that humans are not rational. As we have seen in the above example, people tend to not behave rationally. Therefore, the role of government is to induce them to make socially and economically correct judgments. Governments can use these nudging policies to influence people. Fay (2017,

Lecture 4, p. 31) described examples of nudging policy as following: default options, framing, feedback and information on consequences of choices, visual clues combined with written or narrative information, choice architecture, incentives, and so on. There are factors to consider when the government develops these nudging policies. The factors are anchoring, availability heuristic, similarity heuristic, optimism and overconfidence, rating and remembering gains and losses, status quo bias, lack of attention, and so on (Fay, 2017, Lecture 4, pp. 29-30).

As can be seen from the two experimental results above, these nudging policies can be a powerful means of changing individuals' behavior. In other words, these nudging policies can increase the rate of paying taxes and reduce dishonest self-reports. And these also mean that the efficiency of society as a whole can increase.

4. What are the advantages/disadvantages of this approach to policy intervention?

So far I have looked at the meaning of behavioral economics, its examples, and policy options available to the government. Anyone who experiences this behavioral economics world for the first time is very excited. This is because these nudging policies have great advantages. First of all, nudging policies do not need much budget compared to other policies. Nudging policies often require only a few changes, most of which are budgetless. As with the previous examples, the only change is adding some statements in the letter. Secondly, well-developed nudging policies are effective. A lot of field experiments show us that nudging policies can significantly affect people's behavior. We need to invest a lot of budget and manpower to get the same effect through common policies. Furthermore, there are many cases in which we cannot see how these efforts will affect individual choices.

However, when we study the remarkable results of this behavioral economics, we could feel something bad. Even if we do not mention the arguments of scholars, we can intuitively understand the disadvantages of nudging policies. First of all, people can think that they are unfairly manipulated by the government. Governments should disclose the content and purpose of the policy to individuals. However, the content and purpose of nudging policies are hidden. This is because to do that maximizes their performance. The second is the possibility of government failure. Governments can fail due to political, cultural, and knowledge constraints (Gupta, 2011, p. 63). Also, the intent of the government is not always socially correct. For these reasons, even nudging policies that have succeeded in the government's stance may not be as a social whole.

I. Problem Statement

According to the Internal Revenue Service (2017), the tax gap is “the difference between true tax liability for a given tax year and the amount that is paid on time.” In other words, the tax gap is the uncollected tax due to intentional and unintentional errors. The IRS measures and publishes the tax gap periodically. In contrast, the Korean National Tax Service lacks such efforts. Fortunately, in recent years, a research institute has measured the tax gap using data from the National Tax Service. Ahn, Kang, and Oh (2017, p.15) argues that the tax gap in 2011 was about 22.3 billion dollars. In addition, Ahn et al. (2017, p.15) calculated the tax compliance rate in 2011 was 85%. This means that in 2011, only 85% of Korean taxpayers paid their taxes in due time.

This has several problems. First, it is a matter related to the Korean budget. The tax is an important and big source for the government to work for their people. If the NTS could collect these taxes and the government uses it, this could be economic benefits to the Korea as a whole. For instance, the Korean government can use this money to reduce the national debt. They may use the money for the welfare of the people, or for the development of a specific industry. The money can be used in many areas. Second, it is a matter of social justice. Everyone in Korea must pay taxes if they meet certain requirements. If someone does not pay the imposed tax, it is unfair and makes the burden of others bigger. Paying taxes is the rule made and agreed by the people. Suppose that, despite someone not following the rules, they would be fine without any restrictions. If so, those who follow the rules will not be following the rules any more. In other words, the tax gaps can erode the social capital of a country. Finally, this is a matter of tax policy. The Tax Gap is a practical basis for the fact that the Korean government is not effectively enforcing tax-related policies. Therefore, reducing the tax gap could be a direct way to solve some of these problems.

For these reasons, reducing the tax gap is very important. By reducing the tax gap, the Korean government can secure growth engines and protect social justice. It may also provide an opportunity for more effective enforcement of currently enforced tax-related policies. Therefore, this study will discuss **“How to reduce the tax gap”**.

II. Background and Literature Review

1. Background

Ahn et al. (2017, p.3) simply define the tax gap as the difference between theoretical and actual tax burden. The theoretical burden means the tax amount to be paid when the tax law is applied correctly, and the tax gap is a concept that covers both tax evasion and tax avoidance. They also argue that tax gaps can be divided into under-reporting gaps and under-paid gaps (Ahn et al., 2017, p.3). On the other hand, the IRS in the US distinguishes the tax gaps further. According to the IRS (2017), the tax gap could be defined as

“The gross tax gap is the difference between true tax liability for a given tax year and the amount that is paid on time. It is comprised of the nonfiling gap, the underreporting gap, and the underpayment (or remittance) gap. The net tax gap is the portion of the gross tax gap that will never be recovered through enforcement or other late payments.”

Tax Gap Component	
Gross Tax Gap	$A = B+C+D$
Nonfiling Gap	B
Underreporting Gap	C
Underpayment Gap	D

Table 1. Tax gap components

The difference between these two definitions is the existence of a nonfiling gap. In the study of measuring the Tax gap in Korea, the nonfiling gap is not distinguished but included in the underreporting gap. This can be attributed to differences in the accumulated results of the two countries. As mentioned earlier, it is assumed that it was difficult to measure the nonfiling gap because the Korean government is in the early stages of research on the tax gap.

According to Ahn et al. (2017, 15p), the estimated tax gap of 2011 tax-year in Korea is as following.

(Money amounts are in billions of won)

Tax Gap Component	TY 2011	Share of Gross Tax Gap
Estimated Total True Liability	178,284	
Gross Tax Gap	26,839	100%
Overall Voluntary Compliance Rate	84.9%	
Underreporting Gap (including Nonfiling Gap)	19,206	71.6%
Underpayment Gap	7,633	28.4%

Table 2. Tax Year 2011 Tax Gap Estimates (Ahn et al., 2017)

As you can see, the gross tax gap was 26,839 billion won. This is a large amount of about 9% of the Korean government budget in 2011. In addition, over 70% of the total tax gap was estimated as underreporting gap. Therefore, how effectively reducing the underreporting gap will be a way to successfully reduce the tax gap. As mentioned earlier, tax gaps result from taxpayer's intentional and unintentional errors. Taxpayers' intentional mistakes can be defined as tax evasion in other words. On the other hand, unintentional mistakes are mistakes that taxpayers do not recognize accurately some of the tax process. Therefore, this study will focus on how to reduce underreport gap in

order to reduce tax gap. In more detail, this study will discuss ways to reduce intentional (tax evasion) and unintentional mistakes.

Before starting this study, let’s look at the tax gap of the U.S. According to the “Tax Gap Estimates for Tax Years 2008-2010” (2016), the average annual gross tax gap is about \$458 billion, and the net tax gap is about \$406 billion. The US gross domestic product (GDP) in 2010 was about \$14,582 billion (World Bank, 2011). Therefore, the tax gap is a tremendous amount of about 3% of the US GDP.

(Money amounts are in billions of dollars)

Tax Gap Component	TY 2008-2010	Share of Gross Tax Gap
Estimated Total True Liability	2,496	
Gross Tax Gap	458	100%
Overall Voluntary Compliance Rate	81.70%	
Net Tax Gap	406	
Overall Net Compliance Rate	83.70%	
Nonfiling Gap	32	7%
Underreporting Gap	387	85%
Underpayment Gap	39	9%

Table 3. Tax Year 2008-2010 Tax Gap Estimates (IRS, 2016)

In addition, according to the IRS (2016), the voluntary tax compliance rate is 81.7% and the net tax compliance rate is 83.7% in 2010. This means that people are not paying more than about 15% of the tax for any reason. This phenomenon has the following problems. The first is a financial problem. The tax that the IRS could not collect is about 3% of GDP, as mentioned above. If the IRS could collect this money and the federal government uses it, it would bring economic benefits to the US as a whole. For example, this money can reduce the size of the national debt, or it can be budgeted

and enforced in many areas. In addition, the Net Tax Gap is the amount that the United States can pay about \$ 3,500 per family for subsidies. This is because the number of households in 2010 is only 116 million (U.S. Census Bureau, 2012). Thus, the tax gap due to noncompliance is more than we think and feel. The second is the issue of social justice. Everyone in the United States has to pay taxes if they meet certain conditions. This is the rule agreed by the people, and it is an economic source for the United States to work for the people. If someone does not follow the rules, it makes them feel relative deprivation to those who are keeping the rules. It is also an illegal act that deepens economic inequality. Furthermore, these noncompliant behaviors may invade social capital. With these, if some compliant people who feel relative deprivation are no longer following the rules, American society will become confused. In other words, the tax gap can cause equality and equity to be threatened.

Due to these reasons, reducing the tax gap is one of the nation's important tasks. To reduce the tax gap, it is important to know the type the tax gap. This is the first step in problem solving. The types of tax gaps can be distinguished by types of noncompliance and types of tax. The following table shows us types of gross tax gap and their amounts.

<i>TY 2008-2010</i>						<i>(Dollars in billions)</i>
Type of noncompliance	Individual income tax	Corporate income tax	Employment tax	Etc.	Total	
Underreporting	264	41	81	1	387	
Underpayment	29	3	6	1	39	
Nonfiling	26	no estimates	4	2	32	
Total	319	44	91	4	458	

Table 4. Gross Tax Gap Estimates by type of noncompliance and tax (IRS, 2016)

As you can see, the most problematic noncompliance type is underreporting. Underreporting accounts for about 84.5% of all tax gaps. In addition, tax with the highest tax gap is individual income tax. The tax gap of individual income tax accounts for about 69.7% of all tax gap. More specifically, the tax gap due to underreporting individual income tax is about 57.6% of all tax gaps, which is overwhelmingly larger than other types of tax gaps. Therefore, the federal government and the IRS need to make greater efforts to reduce the tax gap for these types.

2. Literature Review

As we have seen, the causes of the tax gap are the intentional and unintentional errors of the taxpayer. Therefore, it can be concluded that the study on the tax gap has been made in two categories according to its causes. The first category is studies involving taxpayers' intentional errors, tax evasion. These studies began in earnest in the 1970s. The second category is a study of how taxpayers reduce unintentional errors. These studies seem to have started relatively late compared to studies on tax evasion. In addition, different approaches are used for each study.

2-1. Studies on tax evasion

Allingham & Sandmo (1972) are early researchers who attempted a theoretical approach to tax evasion. They did not assume tax evasion was done by the taxpayer's moral judgment. They focus on taxpayers' tax evasion as a result of their actions under the given institutional circumstances. They theoretically analyzed how an individual with a risk-averse tendency would make a choice under the given circumstances of fines for tax evasion, probabilities of seizure, and tax rates. According to their findings, the greater the fines for tax evasion, the less tax evasion. In addition, increasing the probability of detection of tax evasion acts decreased tax evasion behavior. On the other hand, according to their findings, changes in tax rates did not have a consistent impact on tax evasion.

Yoo (2005) explained that Allingham & Sandmo's work is the first tax evasion theory study. He also argues that subsequent developments in the theory of tax evasion are a modification of Allingham & Sandmo's work (Yoo, 2005, p. 20). According to Yoo (2005, p.21), subsequent studies have derived various results by adding new variables, redefining variables, and so on. In other words, depending on the assumption, an increase in the tax rate may lead to a decrease in tax evasion, and vice versa. However, according

to empirical analysis conducted in 1990, it has been proved that tax evasion increases as the marginal tax rate increases. This means that the predicted results are different depending on the data and assumptions used in the study. Therefore, he argues that more empirical studies should be made for more accurate prediction. It also requires a lot of actual data to do so, he insists that the National Tax Service should release a lot of data to the extent that it does not infringe on the privacy of the individual.

After this study, many scholars have studied tax evasion. First, let's look at the relationship between tax rates and tax evasion scales. Jung, Snow, and Trandel (1994) analyzed the effect of tax rate change on the degree of tax evasion and the number of people who involved in tax evasion under the structure where taxable and non-taxable coexist. Therefore, the effect of the tax rate change on the total tax evasion scale appears to be a composite of these two effects. According to these theories, the results are different according to individual tendencies. In other words, the tax rate change may increase or decrease the total tax evasion scale depending on the individual's absolute and relative risk aversion.

Hessing, Elfers, Robben, & Webley (1992) conducted an analysis based on the results of a Dutch taxpayer survey of 1983-1986. The main result is that taxpayers are more likely to have tax probes and be more likely to be caught when the tax evasion is larger. However, this study does not conclude how the differences in subjective perceptions of taxpayers affect actual tax evasion behavior. Tax evasion is part of the tax gap, but we do not know clearly about tax evasion. It is difficult to predict what the sum of their actions will have since individuals are all different situations and their tendencies are different. Therefore, the causes of the tax gap can be very diverse. This means that various methods must be used to solve the tax gap problem.

Sheffrin & Triest (1992) found that the higher the probability of subjective perception, the less tax evasion. In addition, they showed that the attitude of taxpayers

affects the tax evasion behavior so that the effectiveness of the tax evasion prevention policy is reduced if this is not taken into consideration. The attitude of the taxpayer here is a sense of duty to society or morality. They also argue that taxpayers' attitudes are influenced by others and that the more they know about the tax evasion of others, the less they are willing to pay. Therefore, they pointed out that publicity of tax evasion by the government can have a negative effect on tax compliance.

An empirical study has also been conducted on the relationship between tax rates and tax evasion scales. Clotfelter (1983) used IRS data to analyze the relationship between post taxation income and the measured fugitive income from tax audits. According to his results, the tax evasion is positively correlated with post taxation income and tax rate respectively. In other words, the higher the tax rate, the larger the tax evasion scale.

However, Yoo (2005, pp. 32-33) argues that some scholars object to these results. A scholar named Poterba obtained similar results to those of Clotfelter, but there were also many critical studies of these results. For instance, Cox and Cowell argued that there were some problems with their research methodology, and that the relationship between tax rates and tax evasion scales is unclear. In conclusion, it is difficult to conclude whether there is a certain correlation between tax rate and tax evasion scale (Yoo, 2005, p.33).

Next, let's look at the studies related to punishment for tax evasion. In other words, many scholars have studied how the fines and probabilities of tax audit affect tax evasion. Christiansen (1980) analyzed which one is more effective in preventing tax evasion between the fines and the probabilities of tax audit using the risk maximizing individual utility maximization model. The results were as follows. Both fines and probabilities are effective in preventing tax evasion. However, if the expected benefits are kept constant, the fines can be a stronger deterrent than the probabilities of tax audit.

According to Yoo (2005, p. 68), this conclusion is generally accepted in the field of law economics, and that other studies have found similar conclusions. In addition, according to empirical analysis of the specific period in which the probability of tax investigation decreased sharply, the drop in the probabilities of tax audit was the cause of the decrease in tax revenue. Therefore, considering that there is an upper limit to the means of fines, the investigation rate can also be an effective policy measure to suppress tax evasion (Yoo, 2005, p.69).

One of the widely implemented policies since the 1980s is tax amnesty. Tax amnesty is literally a pardon to taxpayers, giving them the opportunity to voluntarily pay taxes. In addition, it is a system to reduce penalties or debt burden correspondingly. This was largely aimed at increasing tax revenue. In the 1980s, US states competitively implemented this measure, and many countries around the world enforced this policy (Yoo, 2005, p.77).

Mikesell (1986) argues that tax amnesty has increased tax revenue in many states in the United States. But he confirmed that this increased tax revenue was a collection of taxes already confirmed by the state. In other words, the government was already aware of the unpaid taxes, and it was a tax that could be collected naturally over time. Therefore, it is not clear how effective the tax slope is to prevent tax evasion. Studies by several scholars since Mikesell have also made similar conclusions (Yoo, 2005, p.79).

2-2. Studies on reducing tax gap

As we have seen above, studies on taxpayers' intentional errors, tax evasion, have been quite active. In recent years, studies have been conducted under the leadership of governments to reduce taxpayer unintentional errors. Here, we will focus on the most active cases of the United States.

In 2006, the US Treasury's Office of Tax Policy (2006) issued a report proposing policies to reduce the tax gaps. Their policies are as follows: 1. Reduce Opportunities for Evasion, 2. Make a Multi-Year Commitment to Research, 3. Continue Improvements in Information Technology, 4. Improve Compliance Activities, 5. Enhance Taxpayer Service, 6. Reform and Simplify the Tax Law, and 7. Coordinate with Partners and Stakeholders. These are the directions the government should pursue rather than policies. It is important to note that these studies are not limited to tax evasion but are tax policy-wide.

After then, the IRS released a new report based on the report of Treasury's Office of Tax Policy. The IRS agreed on the above seven political directions and presented the following important principles that the government must adhere to in order to reduce the tax gap. 1. Both unintentional taxpayer errors and intentional taxpayer evasion should be addressed, 2. Sources of noncompliance should be targeted with specificity, 3. Enforcement activities should be combined with a taxpayer service, 4. Policy positions and compliance proposals should be sensitive to taxpayer rights and maintain an appropriate balance between enforcement and an imposition of taxpayer burden (IRS, 2007).

A few years later, Government Accountability Office (2012) also proposed the necessary policies to reduce the tax gap: 1. Enhancing information reporting by third parties to IRS, 2. Ensuring high-quality services to taxpayers, 3. Devoting additional resources to enforcement, 4. Expanding compliance checks before IRS issues refunds, 5. Leveraging external resources, such as paid tax return preparers and whistleblowers, 6. Modernizing information systems, 7. Simplifying the tax code.

The above reports released by different US government agencies suggested policy directions to reduce the tax gap. But the big frame of each reports seems very similar. The newly published report was based on the previously published report. As time goes

on, the contents become more and more intense. Through these, we can infer some facts. The first is that the government is pushing the policies with certainty to reduce the tax gap. This is because the policy framework has not changed, and similar policies have been steadily promoted. The other is that the government may not be able to find a more effective alternative. This will be revealed once the effectiveness of these policies is analyzed.

III. Research Methodology and Evaluative Criteria

1. Research Methodology

The purpose of this study is to suggest policy alternatives to reduce the tax gap in Korea. However, as mentioned above, systematic research on the tax gap has just begun in Korea. The results of measuring the tax gap in Korea have also been published recently. Therefore, analyzing the cases of developed countries to find policy alternatives to reduce the tax gap in Korea could be one way. But that's not the best way. Since early 2000, the United States has been studying how to measure the tax gap and how to reduce the tax gap. However, the results do not seem to be clear yet.

(Money amounts are in billions of dollars)

Tax Gap Component	TY 2010	TY 2006	TY 2001
Estimated Total True Liability	2,496	2,660	2,112
Gross Tax Gap	458	450	345
Overall Voluntary Compliance Rate	81.70%	83.10%	83.70%

Table 5. Changes in Tax Gap Estimates (IRS, 2016)

Table 5 shows that the voluntary compliance rate in the United States is declining. That is, the ratio of the tax gap is increasing. Despite the efforts of the US government, such as the IRS, this result means that other policies may be needed to influence taxpayer behavior. Therefore, this study will explore policy alternatives by analyzing not only cases of developed countries but also other previous studies.

2. Evaluative Criteria

In fact, the criteria for evaluating policy alternatives have changed over time, by agency, and by regime. That is, there is no absolute standard. I did not find out the opened criteria for evaluating the tax-related policies through the public information. Perhaps it would have been difficult to disclose for political and administrative reasons. However, the administrative direction of the National Tax Service of South Korea was confirmed. On January 31, 2018, NTS announced the "How to operate the national tax administration in 2018". According to the report, NTS is pursuing a vision of 'fair tax administration with the people'. Specifically, they emphasize the voluntary participation and cooperation of taxpayers, and actively support sincere reporting, thereby stably financing the revenue budget. Therefore, these contents are expected to affect NTS's evaluation of policy alternatives in the future.

However, these are reflected in the evaluation of policy alternatives through the discussion process of various policy groups. Therefore, here I present the baseline criteria for evaluating policies, especially tax-related policies, and evaluate policy alternatives accordingly. These criteria were chosen through my experiences in participating in decision making process as a civil servant of South Korea and my experience at NTS.

To evaluate the alternatives that I will suggest, I would like to use three criteria: 1. Tax resistance, 2. Cost, 3. Achievement of the goal. The first is tax resistance of citizen. People are usually very sensitive about tax policies because they are related to people's money. Therefore, we should consider the tax resistance of taxpayers when we pursue some policies. If the resistances are very strong, any policies could not be started. The second is cost. It is necessary to spend budget for implementing some policies. If the costs are too high to implement a certain policy, that is hard to push. Governments are restricted to limited budgets. Therefore, we should consider the costs of the policy. The last criterion is the achievement of the goal. Every policy must have an own purpose and

we are able to achieve those purposes. The achievement of the goal is the most important criterion for evaluating.

However, there is one limitation to the criteria. Before any policy is implemented it is difficult to accurately measure how much the goal is achieved. Even after a policy has been implemented, it is often difficult to pinpoint exactly what are the causes of such changes. Because society is constantly changing, and it is a complex influence of many changes of circumstances. Therefore, in this study, I will try to grasp the criteria, which is called achievement of goals, as a possibility. In other words, the criterion of the achievement of the goal will be considered as the possibility that each policy alternative will reduce the tax gap. Of course, the evaluation of it will be based on several studies.

IV. Policy Options

As we have seen, the tax gap is largely caused by two factors. The first is unintentional errors and the other is intentional errors. Therefore, eliminating these causes will be a way to reduce the tax gap. In order to reduce unintentional errors, taxpayers should be able to know the exact tax amount they will have to pay. To do this, the government can simplify tax laws and simplify tax reporting. These methods can reduce the likelihood of taxpayers making mistakes. In order to reduce intentional errors, ie, tax evasion, punishment should be strengthened when tax evasion is detected. There are ways to enhance punishment by increasing the penalty and by increasing the probability of tax audit. These three methods; 1. Simplifying tax laws, 2. Simplifying tax reporting, and 3. Strengthening punishments are policies that have been studied so far and have been implemented in other countries. However, recent studies have shown that there could be another effective way. It is an area of study called behavioral economics. These findings suggest that some methods may affect taxpayer behavior and that they may eventually reduce intentional errors as well as unintentional errors. Therefore, this study will examine how to use behavioral economics as a fourth method.

Current efforts for reducing tax gap

Prior to presenting policy alternatives to reduce the tax gaps, let's talk about the IRS's efforts on reducing the tax gap. The IRS implements a lot of policies in accordance with the above theoretical grounds and the results of internal research. Therefore, we could not discuss all of the policies in this report. The GAO (2013, pp. 230-231) pointed out some innovative actions which IRS has taken for further improving tax compliance. They are the efforts based on the strategies and principles which the IRS stated in 2007 and the GAO suggested in 2012. For example, the IRS is trying to get more information through lots of channels such as banks, financial institutions, and brokers. Under the laws, they are required to report some data to the IRS. So, what is the performance of these policies? It is not easy to assess the performance of these policies at this time. This is because many of the policies started after the tax gap estimates of TY 2006 are reported in 2012. Therefore, the assessment of current policies will be possible by 2020, when the tax gaps measure of 2016 is announced. However, it is not easy for current efforts to optimize performance. As mentioned earlier, government efforts are similar in large frameworks. There has been no major change in policy direction since early 2000.

(Money amounts are in billions of dollars)

Tax Gap Component	TY 2010	TY 2006	TY 2001
Estimated Total True Liability	2,496	2,660	2,112
Gross Tax Gap	458	450	345
Overall Voluntary Compliance Rate	81.70%	83.10%	83.70%
Net Tax Gap	406	385	290
Overall Net Compliance Rate	83.70%	85.50%	86.30%

Table 6. Changes in Tax Gap Estimates (IRS, 2016)

Table 6 shows us the changes in the tax gap. Given the slightly different ways to estimate the tax gap, there is little change in the compliance rate compared to the IRS's constant efforts. Rather, it is a trend that is getting smaller and smaller. This means a great deal. We can see through this that the past efforts of the government have not achieved great results. In conclusion, since the current government policies are not so different from the past, it is highly likely that the effects of the current policies that will be confirmed in the future will not be significant. This is why we have difficulty optimizing the future. Therefore, if there are improvements or alternatives to current policies, they should be implemented now. If the current policies are assessed after 5 years and then adjusted again, the effectiveness of the policy will be very low.

Option I: Simplifying the tax law

It is inevitable that tax laws become complicated in the constantly changing social and economic structure. In other words, it is getting harder and harder to reach fair taxation with simple tax laws. However, these complex tax laws increase taxpayers' costs. That is, taxpayers need a lot of time and effort to figure out the exact tax they have to pay. Therefore, many unintentional mistakes of taxpayers occur in this process. There are also people who use intricate tax laws to intentionally evade tax evasion. An overly complex tax law can result in rather unfair taxation. Therefore, simplifying the tax law can reduce the tax gap and can be a way to reduce the administrative costs of the government.

First, let's look briefly about the tax system of South Korea. South Korea separately sets tax breaks for each category by dividing taxable objects or types of taxable acts in accordance with the 1 Tax Category - 1 Tax Code rule. The current tax law consists of 20 laws, 20 enforcement ordinances, and 18 enforcement rules. There are also 25 tax types. Amendments to existing tax laws can be proposed by lawmakers and the government. The legislation proposed by the National Assembly shall be implemented after the resolution of the plenary session has been made. The bill submitted by the government shall be submitted to the speaker of the National Assembly after deliberation by the Cabinet of Ministers and shall be considered by the National Assembly.

Oh, Oh, & Lee (2015, pp. 61-64) argue that the Korean tax law is complex and difficult due to the following reasons. First of all, the tax law is getting more complicated because of the taxation of various kinds of economic transactions. For taxable objects, the tax burden should be fair. In addition, tax laws are becoming more complicated because tax avoidance should be avoided through transactions that are not subject to taxation. Second, tax laws are being amended annually for economic and political purposes. These

amendments further complicate complex tax laws. The contents of the tax law are complex and difficult, but the tax law forms are the same. It is true that taxpayers who are not specialists are hard to understand because there are many ambiguous and difficult expressions in the tax laws of South Korea. For example, the rules for the acquisition price are stipulated in various laws, and it is difficult for taxpayers to decide which one of these acquisition values should be selected, if they are not tax experts.

Thus, the tax laws of Korea are complex. There are two main ways to simplify this complex tax law. The first method is a content approach. Simplify the tax rate system and reduce unnecessary tax bill revisions. However, it is difficult to simplify the system of tax rates easily in modern society. To simplify the tax rate system is to limit the tax redistribution effect. It can therefore be a sacrifice for the role of the government for the benefit of the taxpayer. Therefore, simplifying the system of tax rates requires national consensus and more research. In order to simplify the contents of the tax law, it is realistic to reduce unnecessary tax law revision. In particular, deductions and exemptions that are applied to individual taxes need to be abolished or integrated and simplified. That is, deductions and exemptions that taxpayers do not use should review the rules. In the case of introducing tax expenditure, the efficiency should be considered and the period for implementation should be determined (Oh et al., 2015, p. 70).

If it is difficult to simplify the contents of the tax law, we can make it easy for taxpayers to understand tax laws. This is a formal approach. In other words, it is fitting complicated and difficult tax laws to taxpayers' eyes. In order to make it easy for taxpayers to find and understand legal texts, we could rewrite the tax law. Rewriting tax laws can be done according to the following procedure (Oh et al., 2015, p. 65). First, we should rearrange the outline and order of tax law so that taxpayers can find what they need. Taxpayers should be able to easily understand the overall structure of the tax law and make it easy to find the text. Second, Korean legal texts contain a lot of Chinese

characters, Japanese terms, and foreign languages. Therefore, we need to translate these words into accurate and easy-to-understand Korean. Third, the duplicate terms used in the tax law should be unified. For example, several words are used together to represent employees. In this case, it is necessary to unify these various words into one word.

Simplification of the tax law can be the first option to reduce the tax gap. Simplifying the tax law in internal and formal way raises taxpayers' understanding. This allows taxpayers to reduce errors. This approach can not only reduce the tax gap, but also increase the competitiveness of the country. For example, simplified tax laws may be a factor in increasing foreign corporations' investment. The following procedures are necessary to implement the simplification the tax laws. In order to simplify the tax law in terms of contents, the National Assembly should be actively committed. In addition, since the amendment of the tax law is related to the property rights of the people, national consensus is needed. However, redundant abatement regulations can be relatively easily maintained. The government's aggressive willingness is important to simplify tax laws in formal terms. This work can be carried out through an organization composed of public officials such as the National Tax Service, the Ministry of Strategy and Finance, the Legal Department, and outsiders such as lawyers.

Option II: Simplifying tax reporting methods

The second option to reduce the tax gap is to simplify tax reporting methods. By simplifying complex tax reporting methods, taxpayers can easily report and pay taxes. Therefore, this method can reduce unintentional errors of taxpayers. That is, it can reduce the tax gap due to unintentional errors of taxpayers. As we have seen, the United States is making a lot of effort to streamline tax reporting. The IRS is working to create a framework for sharing and providing tax information in order to provide taxpayer convenience through more tax information. That is, private companies holding taxpayer's tax information should report the information to the IRS. These methods are becoming more and more feasible due to the development of information and communication technologies. There is another advantage of this information sharing system. That is, companies can reduce errors. Taxpayer information provided by corporations is checked naturally in the process of confirming that the tax is correctly calculated. With this process, both individuals and businesses can reduce errors.

In Korea, such a system is better equipped than the United States. A typical example is a simplified year-end tax settlement service for workers operated by the National Tax Service of Korea. Korean workers will be subject to income tax withheld on a monthly basis in accordance with certain standards. This year-end tax settlement is the year-end settlement of the income tax paid every month. In other words, the year-end tax settlement is a procedure for the payment of the work income tax paid by the employee in the year. When the company who is subject to withholding pays the salary for the following year, the tax amount already deducted at the time of monthly payment is calculated accurately according to the tax law. If they pay more than the amount of annual income tax, they can pay back a lot of tax. If they pay less, they should pay extra (National Tax Service, 2017). Even 10 years ago, the year-end tax settlement for workers was very difficult. They did not know how to write the papers and what documents they

needed. Also, even if they had gotten to know them all, it was obviously a lot of time and effort to write and collect the documents. These inconveniences caused taxpayer errors. Workers were more likely to commit unintentional errors due to complex tax reporting methods. Companies have also used intentional tax evasion to reduce their taxes by using these workers' errors.

To address these problems, the National Tax Service has provided a year-end tax settlement simplification service. Simplified year-end tax settlement service refers to a service that provides tax and income tax credits submitted by receipt issuing organizations such as banks, schools, hospitals, etc. to the workers through a home page called "Home Tax" by the National Tax Service (National Tax Service, 2017). Income and tax credits such as insurance premiums, medical expenses, education expenses and credit card usage details can be automatically checked at the taxpayer without having to collect them by themselves. The taxpayers are required to submit proof of the deductible, which is different from the actual amount of the deduction, to the company. However, the taxpayer must confirm whether he or she meets the deduction requirement. This responsibility lies with the taxpayer. In addition, data that is not collected in the year-end tax settlement simplification system should be collected directly by the taxpayer. In fact, the simplified year-end tax settlement system has drastically lowered the taxpayer's cost of cooperating with the government and companies. In addition, the National Tax Service did not have to check all the submitted data. This system is reducing administrative costs as well. Thus, taxpayers who are workers can reduce their errors, which results in reducing the tax gap. However, this system is limited to paying taxes on workers' earnings. For many self-employed, large corporations, and other specifications, this system has not yet been applied. Therefore, expanding its scope will be a way to further reduce the tax gap by simplifying the tax reporting method.

Now let's look at ways to further streamline the tax reporting methods in Korea. The first is to use a vast amount of data that NTS can access. NTS holds a lot of taxpayers' information. In addition, as many transactions are computerized, NTS could also access to external taxation information. In this way, NTS can build a system that can intelligently analyze large capacity data from inside and outside and utilize it effectively. Through this system, NTS can provide taxpayers with tailored tax advice and other services. In addition, the general public can utilize the big data that NTS will hold. This is one of the ways to improve the transparency of tax administration. An example of analyzing and utilizing big data is as follows. By analyzing transactions and spending patterns by type of taxpayers as well as workers, NTS can provide taxpayers with information that they can simplify tax reporting more easily. Analyzing the spending histories of corporations will allow them to identify and guide the specific expenditure of a corporation as expenses.

A second way to simplify tax reporting method is to provide mobile services for taxpayers. When taxpayers can look up and pay taxes via mobile, taxpayers are more convenient and pay taxes. Also, as taxpayers' complaints can be solved through mobile, taxpayers can more easily get their tax information. Furthermore, if taxpayers can provide tax payment slips to their mobile by application, they can also reduce mistakes in postal service.

The last way to simplify tax reporting method is to simplify current tax forms. As of 2015, the NTS offers more than 1,800 forms (Oh et al., 2015). Of course, one taxpayer does not use all these forms, but there are too many types of forms. The bigger problem is that, among so many forms, taxpayers have to find out what form they should use. Taxpayers, of course, can search and download the forms via the internet. They can also check with NTS or tax accountants to see if the forms they need to use is correct. However, replacing this system can reduce these efforts, which can also reduce

taxpayers' errors. The current system can be improved as follows. NTS automatically selects and offers taxpayers the form they want. Let's take an example. A taxpayer's search for a form has some purpose for him. If the taxpayer enters such a purpose, the NTS could inform the taxpayer of the various forms required for it. If several forms are required at the same time, the taxpayers can fill in one form, so that other forms are filled the same automatically. This way, taxpayers will be able to see the forms that they need to fill out, as well as reduce their errors.

If it is difficult to make the tax law simple, the next thing to consider is to simplify the tax reporting method. Simplifying tax reporting method is a change in NTS attitudes toward taxpayers. In the past, the government just collected data from taxpayers in a passive manner. However, in the future, the government must actively assist taxpayers to collect the data they need. In other words, NTS must actively encourage and support taxpayers' sincere reporting. If NTS is committed to providing services that reflect the individual characteristics of taxpayers, taxpayers will be able to report tax more easily. It is likely that it will soon result in a reduction in the tax gap.

Option III: Strengthening punishments

A third option to reduce the tax gap is to strengthen punishments. If the government increases punishment for taxpayers' errors, taxpayers will try harder than now to avoid errors. This is therefore the most direct way to influence taxpayers' behavior. There are two main ways to enhance punishment. The first is to increase the fines or to increase the period of imprisonment for taxpayers. The second is to strengthen the tax investigation of whether the taxpayer correctly reported and paid the tax. First of all, let's discuss the increase of the fines and the imprisonment.

The Punishment of Tax Evaders Act of South Korea defines the punishment of tax evasion as follows.

Article 3 (Tax Evasion) (1) A person who evades a tax, obtains a tax refund or deduction by fraud or other improper means shall be punished by imprisonment with labor for not more than two years or by a fine equivalent to not more than double the amount of tax evaded, refunded or deducted (hereinafter referred to as "amount of tax evaded, etc."): Provided, That in any of the following cases, he/she shall be punished by imprisonment with labor for not more than three years or by a fine equivalent to not more than three times the amount of tax evaded, etc.:

1. Where the amount of tax evaded, etc. is 300 million won or more and such amount of tax evaded, etc. is at least 30/100 of the tax amount to be reported and paid (referring to the tax amount which shall be determined and notified by the Government, in cases of taxes the Government imposes and collects according to a return of a person liable to taxation);
2. Where the amount of tax evaded, etc. is at least 500 million won.

As we have seen, taxpayers determine the act of tax evasion by comparing the benefits that can be gained through tax evasion with the damages they will incur if they are caught. Thus, assuming that the tax rate does not change, strengthening punishment can clearly reduce tax evasion. Of course, this is a conclusion that can be gained by ignoring changes in the total tax revenue that the government can collect. For example, if a taxpayer pays four to five times, not two or three times as much as the amount he evaded, as a fine, taxpayers will certainly reduce tax evasion. Also, if the government increases the period of imprisonment for a tax evasion to up to five years, this will also make taxpayers hesitate the tax evasion. This is also true for violations of the duty of issuing receipts for cash payments. The Korean government is encouraging people to trade through their cards. This is because transaction details through the card are clearly recorded. However, transactions using cash are difficult to find by the government unless they are reported by sellers and buyers. Therefore, for some industries, it is the seller's obligation to issue receipts unconditionally for cash transactions. In the event of breach of this obligation, the seller shall pay a fine. The Punishment of Tax Evaders Act defines the punishment as follows.

Article 15 (Breach of Obligations to Issue Receipts for Cash Payments)

(1) A person who breaches obligations prescribed in Article 162-3 (4) of the Income Tax Act and Article 117-2 (4) of the Corporate Tax Act shall be punished by an administrative fine equivalent to 50/100 of the sales value for which receipts for cash payments have not been issued:

Provided, That this shall not apply where the relevant sales are subject to insurance benefit under the National Health Insurance Act.

Nonetheless, the number of reports for breach of obligations to issue receipts for cash payments is increasing every year.

Reports for breach of obligations	2013	2014	2015
Number of reports	2,122	6,296	9,651

Table 7. Reports for breach of obligations (NTS, <http://nts.go.kr>)

Therefore, in order to prevent the tax evasion of high-income self-employed, NTS can consider expanding the receipt issuing business for cash payment continuously. Also, raising the penalty for taxpayers who violate these obligations to more than 50% is a way to prevent tax evasion. Currently, NTS imposes only a fine on those transactions for taxpayers who violate this obligation. However, it is also necessary to take strong countermeasures, such as NTS's tax audit, for industries and taxpayers who do not issue receipts for cash payments frequently.

The second way to strengthen punishment is to strengthen tax audits. Currently, NTS conducts approximately 17,000 tax audits each year (National Tax Service, 2018). Therefore, increasing the total amount of these tax audits can reduce the tax evasion of taxpayers. This is because the probability of detection of tax evasion increases. However, the expansion of the number of tax audits has not always been implemented by opposing views. Many politicians and businessmen have been opposed to strengthening tax audits because of the economic downturn. If it is difficult to increase the number of total tax audits, the NTS can use a method to concentrate tax audits in specific areas. In other words, it focuses on tax audits for large corporations and high income self-employed people. The NTS should precisely verify anomalous tax evasion activities such as the operation of the fake property of large corporations, outflow of business funds, and transfer price manipulation with overseas subsidiaries. In addition, the NTS can conduct an intensive analysis of inheritance and gifts of high-income self-employed. To do this, the NTS must train tax audit personnel. In order to cope with advanced tax evasion, it is

necessary to intensively train forensic experts and to strengthen professional capacity by placing lawyers and investigation experts in the audit team over the medium to long term.

This strengthening of punishment prevents the taxpayer's tax evasion, which can reduce the tax gap. As we have seen, according to many studies, it is more effective to prevent tax evasion to strengthen the fines than to strengthen the tax audits. Even considering administrative costs, it is far less costly to revise the law than to recruit or train personnel. But we can impair other values in order to achieve the purpose of reducing the tax gap. It is the unintentional errors of taxpayers. Taxpayers who deliberately evade taxes must of course be strongly punished. However, it is controversial whether it is correct to strongly punish taxpayers who have become tax evaders as a result of unintentional errors. In addition, there is a limit to increase the penalty or imprisonment period. Therefore, it is desirable to strengthen tax audits to prevent tax evasion. The perception that the economic activities of companies are shrinking when the tax audits are strengthened should be changed. This will change naturally if the tax audits are conducted to the extent that they do not interfere with normal business activities of companies and NTS's excessive data requirements are eliminated.

It is possible to prevent tax evasion in a different way than to enhance punishment. It is just analyzing and sharing information. Many countries, including the United States, Britain and the EU use this method. The NTS also recently suggested that this kind of methods could be further strengthened (National Tax Service, 2018). For example, the NTS can analyze and use big data. Economic transactions are obviously leaving traces. Therefore, if the NTS analyze a lot of data, they can detect tax evasion. Also, if the NTS share information held by government or public institutions, the NTS will be able to find information on tax evasion. Many countries exchange information and promote cooperation between countries in order to detect tax evasion through foreign trade is a way to prevent tax evasion.

Option IV: Using behavioral economics

Dan Ariely who is a famous behavioral economist defines behavioral economics as studies of economics on the assumption that human behavior is unreasonable (Ariely, 2010). At the very bottom of traditional economics is the assumption that humans act rationally. In other words, the basic assumption of traditional economic theories is that humans will behave in a given situation to maximize their expected utility. The first thing we encounter as we learn economics is the assumption that humans are rational. Because humans are rational, they reasonably judge and act. Almost all theories of economics have been established under this assumption. But are humans really rational? When you find your favorite clothes in a shopping mall, do you check there is no place to sell the clothes cheaper, and think that whether the clothes are really necessary for you? Or do you compare the prices of all the gas stations within 2 or 3 miles when you go to a gas station? To those questions, we can rarely say that we were always rational. Some economists explain the irrational behavior of these people with limited rationality. However, behavioral economics is a discipline that does not assume that humans act rationally. Behavioral economist Dan Ariely describes behavioral economics as follows:

“However, unlike standard economics, behavioral economics does not assume that people are rational. Instead, behavioral economists start by figuring out how people actually behave, often in a controlled lab environment in which we can understand behavior better, and use this as a starting point for building our understanding of human nature.” (Ariely, 2010)

Behavioral economics can be used in many areas. But it is also true that more research is needed. Especially in South Korea, the study of behavioral economics is still unfamiliar. There are few scholars who actively study only behavioral economics, and there are few places where behavioral economics is taught in college. Therefore, there is little attempt to use behavioral economics in policy. However, behavioral economics is

being studied extensively in some developed countries, including the UK. Experiments and efforts have also been made to apply behavioral economics to policy. This study will review such prior studies and discuss the policies that can be introduced to reduce the tax gap in South Korea.

Hallsworth, List, Metcalfe, and Vlaev (2014) conducted the following experiments with Her Majesty's Revenue and Customs (HMRC) in the UK and Behavioral Insights Team (BIT). First, they randomly selected and delivered one of five messages to the 100,000 taxpayers who had reported their taxes correctly but had not paid taxes yet among UK taxpayers. The five messages sent to the taxpayers are as follows:

“(i) Nine out of ten people pay their tax on time, (ii) Nine out of ten people in the UK pay their tax on time, (iii) Nine out of ten people in the UK pay their tax on time. You are currently in the very small minority of people who have not paid us yet, (iv) Paying tax means we all gain from vital public services like the NHS, roads, and schools, (v) Not paying tax means we all lose out on vital public services like the NHS, roads, and schools.” (Hallsworth et al. 2014, p. 4)

Group name	Test phrase	N	Debt value	Mean debt value	Mean Age	% Male
Control		17,038	£49,555,210	£2,908.51	49.33	73.61
Basic norm	<i>Nine out of ten people pay their tax on time.</i>	17,026	£47,923,291	£2,814.71	49.38	73.53
Country norm	<i>Nine out of ten people in the UK pay their tax on time.</i>	16,926	£46,688,514	£2,758.39	49.37	73.31
Minority norm	<i>Nine out of ten people in the UK pay their tax on time. You are currently in the very small minority of people who have not paid us yet.</i>	16,515	£46,415,638	£2,810.51	49.52	72.96
Gain-framed public good	<i>Paying tax means we all gain from vital public services like the NHS, roads, and schools.</i>	16,807	£47,640,777	£2,834.59	49.37	75.00
Loss-framed public good	<i>Not paying tax means we all lose out on vital public services like the NHS, roads, and schools.</i>	17,159	£48,875,216	£2,848.38	49.37	75.26

Table 8. Background characteristics of the six different groups

The first three messages told the taxpayers that they belong to a group that had not paid taxes yet. The last two messages were telling them how the tax was going to be used. These messages, of course, contain similar content but differentiated each. In other words, each message emphasized the UK or stressed that taxpayers who had not paid taxes fell into very few groups. They also made separate messages by dividing how taxes are used into positive and negative expressions. Could it have been possible to raise the tax rate simply by sending these messages? What difference did each message make? Hallsworth et al. (2014, p. 4) have shown that sending these messages can have a significant impact on taxpayer behavior.

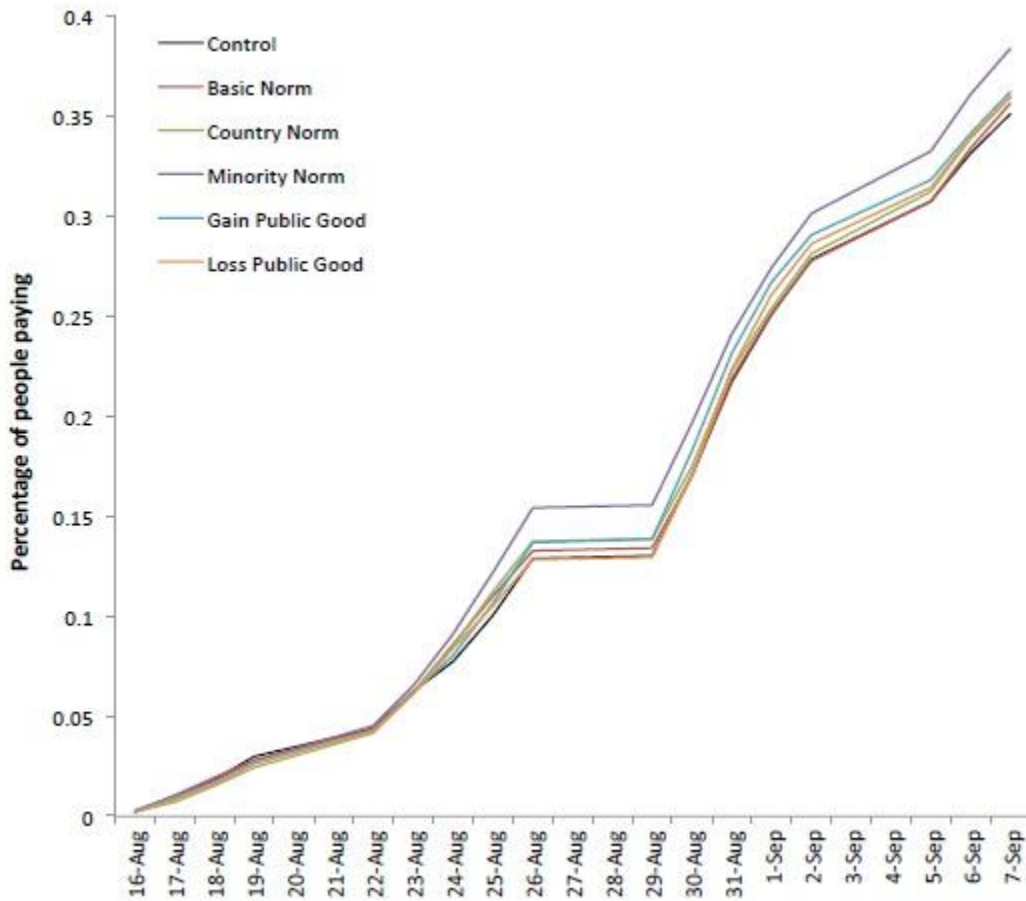


Table 9. The cumulative percentage of people paying per day by treatment group for the first 23 days

In other words, the researchers concluded that all five messages were effective. Taxpayers who received any of the five messages paid more taxes within 23 days than those who did not. Especially, (iii) messages showed the greatest effect compared to (i) and (ii) messages. The increased amount of taxes paid within 23 days were (i) the message: € 623,000; (ii) the message: € 980,000; (iii) the message: € 2,367,000. Compared to (i) message, (iv) message and (iv) message were not significantly different.

Dear Sir/Madam

www.hmrc.gov.uk
Date of issue 4 August 2011
Reference REFERENCE NUMBER

Please pay £9999999999.99

Our records show that your Self Assessment tax payment is overdue.

It is easy to pay. Please call the phone number above to pay by debit card, credit card, or Direct Debit.

You can also pay using internet and telephone banking. For more information on when and how to pay, go to www.hmrc.gov.uk/payinghmrc

If you don't believe that this payment is overdue, please contact us on the number above.

If you have already paid, thank you. If not, please act now.

Yours faithfully

Officer of Revenue and Customs

Table 10. An example of the control letter in the experiment

Dear Sir/Madam

www.hmrc.gov.uk

Date of issue 4 August 2011

Reference REFERENCE NUMBER

Please pay £999999999999.99

Our records show that your Self Assessment tax payment is overdue.

Nine out of ten people pay their tax on time.

It is easy to pay. Please call the phone number above to pay by debit card, credit card, or Direct Debit.

You can also pay using internet and telephone banking. For more information on when and how to pay, go to www.hmrc.gov.uk/payinghmrc

If you don't believe that this payment is overdue, please contact us on the number above.

If you have already paid, thank you. If not, please act now.

Yours faithfully

Officer of Revenue and Customs

Table 11. An example of the basic norm letter in the experiment

These experiments suggest a simple way to reduce unpaid taxes. Unpaid taxes are a type of tax gap. Therefore, if this method is used, the government could reduce the tax gap. This does not require a new system right away. Nor does it need to amend the tax law. Currently, NTS sends mail to taxpayers who are not paying taxes. The mail includes the amount, due date, and penalty that the taxpayer has to pay. In addition to them, the NTS could add a message at the very beginning of the mail, '한국에서 열명 중 아홉

명은 세금을 제때 냅니다. 당신은 아직까지 세금을 납부하지 않은 매우 소수의 집단에 속해 있습니다 (Nine out of ten people in South Korea pay their tax on time. You are currently in the very small minority of people who have not paid us yet).’ Or they could send a text message to them. Both of these methods are methods that can be implemented without costly. Of course, these methods have been proven effective by previous researchers, but they may not have any effect in South Korea. However, one of the greatest advantages of this method is that even if this policy fails, it does little harm to the government or taxpayers.

Let's look at a study of behavioral economics related to tax audits. Kleven, Knudsen, Kreiner, Pedersen, and Saez (2011) conducted the following experiment on 42,784 taxpayers in Denmark. They mailed letters to taxpayers about the probabilities of future tax audits. Some letters contained the message that the very taxpayer would be subject to a tax audit at a 100 percent probability and others contained the message that the taxpayer would be subject to a tax audit with a 50 percent chance. Kleven et al. (2011) analyzed how these letters affect the level of income tax that taxpayers report. The results were as follows. First, the reported income level of the group receiving the information was higher than that of the group that received no information about the probability of tax audit. That is, the threat of tax audit increases taxpayers' reported income. Also, the probability of 100 percent was almost twice as effective as the probability of 50 percent. Any taxpayer may be subject to a tax audit. This fact is already known to all taxpayers. However, taxpayers' behavior may change if they are informed individually by the government of this fact, which everyone knows naturally.

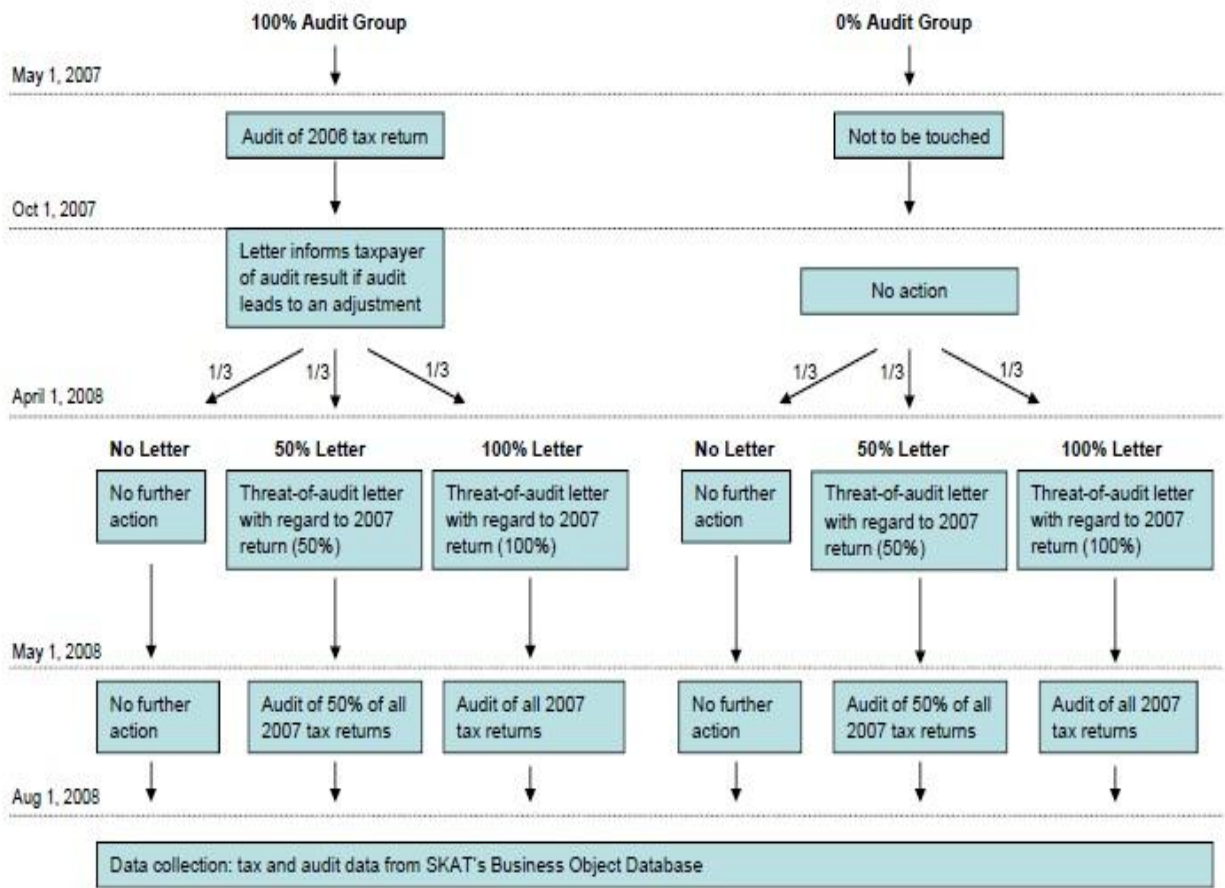


Table 12. Experimental Design for Employees

The results of this experiment can be utilized in Korea's NTS. In Korea, tax audits can be divided into periodic audits and non-periodic audits. Corporations and self-employed people are supposed to receive periodic audits once every five years in principle. However, conducting tax audits every five years for all taxpayers will require too much administrative overhead, so the NTS will select the subject through its own standards. Non-periodic audits are conducted for taxpayers whose specific tax evasion information is confirmed or tax evasion is suspected. It is only after the NTS has made its own deliberation that taxpayers which are several times as many as subjects to the

periodic and non-periodic audits were confirmed by the NTS. No information is passed on to taxpayers in this process. In other words, taxpayers who are selected for tax audits will not know until after the selection processes are done. Therefore, during this selection process, the NTS can inform taxpayers about the probability of tax audits, thereby inducing their honest reporting. For example, for taxpayers who have not undergone periodic audits for four years, the NTS can use a method of notifying them that they are 70 percent likely to be subject to tax audits next year. This method can induce all taxpayers who receive a letter to correctly report their income without conducting a direct tax audit.

The Behavioural Insights Team (2012) in the UK conducted the following tests for 3000 doctors in 2011. Selected doctors were taxpayers who received excessive tax returns over the past four years compared to other doctors. The UK government has sent letters informing them that these doctors are likely to have not reported their income honestly. The researchers have experimented with sending letters that are slightly different from the letters that the UK government has been sending. The letter consisted of simple contents unlike the existing letters. In other words, the important messages to be conveyed and the necessary actions are highlighted in the first part of the letter. The results of this experiment are similar to those of the previous experiments. Doctors responded to existing letters only 4%, but about 35% of doctors responded to new forms of letters which were simplified letters. In other words, it is more effective to simplify the message by emphasizing only important and necessary information, rather than conveying a lot of information (Behavioural Insights Team, 2012, p. 24).

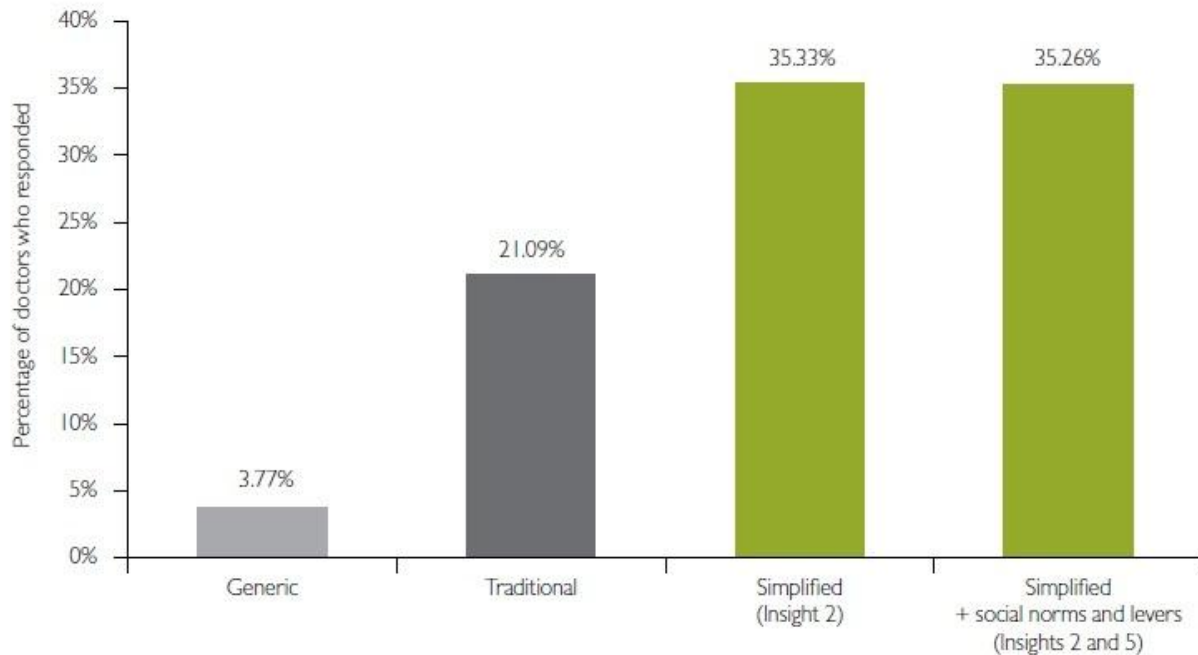


Table 13. Response rate of doctors to HMRC letters

The NTS in South Korea can also use this method. As mentioned earlier, NTS selects and reviews taxpayers who are suspected of tax evasion before they select the subject. Those who report excessively high or low incomes are usually targeted. For all these taxpayers, if the NTS streamlines their message to confirm their declaration again, the declaration for the following year can be very different.

Kettle, Hernandez, Ruda, and Sanders (2016) conducted another interesting field experiment in Guatemala. They used behavioral interventions to increase the rate of tax compliance. They conducted an experiment on taxpayers who did not declare income tax until the due date. It is similar to previous experiments. They sent letters of different kinds and observed their behavior (Kettle et al., 2016). Following table 14 shows the summary of letter types.

Group	Description
Control Group <i>n</i> = 12,397	<ul style="list-style-type: none"> No Letter
Original SAT Letter <i>n</i> = 6,198	<ul style="list-style-type: none"> Simple reminder to declare, no information on how to declare
Behavioral Design Letter <i>n</i> = 6,197	<ul style="list-style-type: none"> Begins with a short ‘call to action’ stating declaration is needed now Specified the website address to declare at Informed taxpayers that they can pay in instalments Included the deterrent message: <i>“If you do not declare you may be audited and face the procedure established by law”</i>
Behavioral Design + Social Norm Letter <i>n</i> = 6,198	<ul style="list-style-type: none"> The same as the behavioral design letter but including the message: <i>“According to our records, 64.5 percent of Guatemalans declared their income tax for the year 2013 on time. You are part of the minority of Guatemalans who are yet to declare for this tax”</i>
Behavioral Design + Deliberate Choice Letter <i>n</i> = 6,198	<ul style="list-style-type: none"> The same as the behavioral design letter but including the message: <i>“Previously we have considered your failure to declare an oversight. However, if you don’t declare now we will consider it an active choice and you may therefore be audited and could face the procedure established by law”</i>
Behavioral Design + National Pride Letter <i>n</i> = 6,199	<ul style="list-style-type: none"> The same as the behavioral design letter but excluding the call to action and the deterrent message. Softer tone, including an image of the Guatemalan flag and the phrase: <i>“You are a Guatemalan citizen and Guatemala needs you. Be a good citizen and submit the 2013 annual return of income tax ... Are you going to support your country?”</i>

Table 14. Summary of Letter Types

In addition, descriptive statistics for this experiment are as follows.

Condition	Number of observations	Number of letters delivered	Percent Central region	Percent Businesses	Baseline ¹ mean payment (US \$)
Full Sample	43,387	21,781	67.4	25.9	61.5
No Letter (control group)	12,397	0	67.0	25.6	60.3
Original SAT Letter	6,198	4,382	67.6	25.8	66.0
Behavioral Letter	6,197	4,316	67.9	25.7	60.4
Behavioral + Social Norms	6,198	4,332	67.2	25.9	55.6
Behavioral + Deliberate Choice	6,198	4,337	67.5	26.3	68.6
Behavioral + National Pride	6,199	4,414	67.2	26.0	59.3

Table 15. Descriptive Statistics and Balance Checks

Experimental results will be described later, but these experiments should be done in Korea as well. When experiments are being done in the near future, the following letter samples are attached to this report to reduce NTS concerns and trial errors.



ALERTA SAT

Guatemala, 23 de mayo de 2014

Chimaltenango, Chimaltenango

Por este medio me permito informarle que de conformidad con los registros con que cuenta para el efecto la Administración Tributaria, usted omitió la presentación de la declaración siguiente:

PERIODO	IMPUESTO	FORMULARIO
2013	ISR ANUAL	SAT-1411

Por lo antes indicado, se le requiere revisar sus registros y presentar la declaración omitida, haciendo uso de los medios que la SAT ha puesto a disposición de los contribuyentes.

Lo anterior no limita el ejercicio de la potestad con que cuenta la Administración Tributaria para iniciar el procedimiento de determinación correspondiente.

En caso de duda, cordialmente le invitamos a acudir a la oficina tributaria de su conveniencia, donde será atendido y orientado por un analista especializado.

Base legal: artículo 32 de la Constitución Política de la República; artículo 3 del Decreto 1-98 Ley Orgánica de la SAT; artículos 89, 98, 112 inciso c), 112 numeral 6, del decreto 6-01 del Congreso de la República. Código Tributario.

Atentamente,

SUPERINTENDENCIA DE ADMINISTRACIÓN TRIBUTARIA

Table 16. Original SAT Letter (n=6,198)



ALERTA SAT

Arbitxago, Chasibonago

Guatemala, 26 de mayo de 2014

Por favor presente su declaración del impuesto sobre la renta

Estimado contribuyente:

Hemos revisado nuestros archivos y encontramos que usted no ha presentado su declaración anual del Impuesto sobre la Renta correspondiente al año 2013.

Si usted no declara, puede ser auditado y ser sujeto al procedimiento establecido por ley.

Por favor declare en un plazo de 10 días después de recibida esta alerta, lo cual será verificado.

- Para ello, visite: <http://declaraguate.gt> (Formulario SAT-1411)

Si usted no puede pagar el monto total ahora, podría ser posible que pague en cuotas, luego de preparar su declaración y acercarse a una oficina de la SAT.

Si tiene alguna consulta, contáctenos a través del teléfono 2329-7111. En ese caso haga referencia a su número de alerta: ALERTA SAT.

Estaremos verificando cómo responde a esta carta.

Atentamente,



Juan Carlos Rodríguez
Director General de Administración Tributaria

Base Legal: Artículos 98, 111 y 146 del Código Tributario;
Artículo 3 de la Ley Orgánica de la Superintendencia de Administración Tributaria.

Table 17. Behavioral Design Letter (n=6,197)



ALERTA SAT

Ciudad de Guatemala, Guatemala

Guatemala, 26 de mayo de 2014

Por favor presente su declaración del impuesto sobre la renta

Estimado contribuyente:

Según nuestros registros, 64.5% de los guatemaltecos declararon a tiempo su Impuesto sobre la Renta correspondiente al año 2013. Usted es parte de una minoría de guatemaltecos que no ha presentado su declaración de este impuesto.

Si usted no declara, puede ser auditado y ser sujeto al procedimiento establecido por ley.

Por favor declare en un plazo de 10 días después de recibida esta alerta, lo cual será verificado.

- Para ello, visite: <http://declaraguate.gt> (Formulario SAT-1411)

Si usted no puede pagar el monto total ahora, podría ser posible que pague en cuotas, luego de preparar su declaración y acercarse a una oficina de la SAT.

Si tiene alguna consulta, contáctenos a través del teléfono 2329-7111. En ese caso haga referencia a su número de alerta: ALERTA SAT.

Estaremos verificando cómo responde a esta carta.

Atentamente,

Dr. César Alfredo López Estrada
General Director
Servicio de Administración Tributaria
SAT

Base Legal: Artículos 98, 112 y 148 del Código Tributario;
Artículo 5 de la Ley Orgánica de la Superintendencia de Administración Tributaria.

Table 18. Behavioral Design + Social Norm Letter (n=6,198)



ALERTA SAT-4

Ciudadan@, Ciudadan@

Guatemala, 28 de mayo de 2014

Por favor presente su declaración del impuesto sobre la renta

Estimado contribuyente:

Hemos revisado nuestros archivos y encontramos que usted no ha presentado su declaración anual del Impuesto sobre la Renta correspondiente al año 2013.

Anteriormente, hemos considerado su falta como un descuido. Sin embargo, si usted no declara ahora, vamos a considerar que es su elección, y puede ser auditado y ser sujeto al procedimiento establecido por ley.

Por favor declare en un plazo de 10 días después de recibida esta alerta, lo cual será verificado.

- Para ello, visite: <http://declaraguate.gt> (Formulario SAT-1411)

Si usted no puede pagar el monto total ahora, podría ser posible que pague en cuotas. Luego de preparar su declaración y acercarse a una oficina de la SAT.

Si tiene alguna consulta, contáctenos a través del teléfono 2329-7111. En ese caso haga referencia a su número de alerta: ALERTA SAT-4

Estaremos verificando cómo responde a esta carta.

Atentamente,



Base Legal: Artículos 98, 111 y 146 del Código Tributario;
Artículo 3 de la Ley Orgánica de la Superintendencia de Administración Tributaria.

Table 19. Behavioral Design + Deliberate Choice Letter (n=6,198)



ALERTA SAT

Chimbalenago, Chimbalenago



Guatemala, 27 de mayo de 2014

Estimado contribuyente:

Usted es un ciudadano guatemalteco y Guatemala lo necesita. Sea un buen ciudadano y presente su declaración anual del Impuesto sobre la Renta del año 2013.

Por favor declare en un plazo no mayor a 16 días después de recibida esta alerta.

- Para ello, visite: <http://declaraguate.gi> (Formulario SAT-1411)

Si usted no puede pagar el monto total, podría ser posible que pague en cuotas, luego de preparar su declaración y acercarse a una oficina de la SAT.

Si tiene alguna consulta, contáctenos a través del teléfono 2329-7111. En ese caso haga referencia a su número de alerta: ALERTA SAT

¿Va a apoyar a su país?

Atentamente,



Base Legal: Artículos 98,112 y 146 del Código Tributario,
Artículo 3 de la Ley Orgánica de la Superintendencia de Administración Tributaria.

Table 20. Behavioral Design + National Pride Letter (n=6,199)

Taxpayers were randomly selected to receive one of the above letters, or no letters were received. The experimental results are very interesting. All five types of letters have led some positive action by taxpayers. Nonetheless, they were able to conclude that only two kinds of letters would increase the actual payment rate. In other words, the third and fourth letters were the most effective (Kettle et al., 2016, P. 27).

Of course, their experimental results are more detailed. But that is not so important. It is likely that the specificity of the country called Guatemala is reflected. Also, cultural differences with Korea are so great that the results do not appear directly in Korea. However, the important thing is that NTS can reduce the tax gap through this method. According to NTS (2018), we can see that NTS is working to solve the problem of not paying taxes. First, NTS analyzes taxpayers who do not pay taxes by type. Through this, we select and keep track of those who hide their property. Some of them must be banned from leaving the country and have to face litigation. In addition, NTS regularly lists the delinquents. NTS also nurtures professionals for efficient tax collection and focuses on the organization's many capabilities (National Tax Service, 2018, p. 14).

However, NTS can use other approaches to solve this problem. The previous experimental results tell us about it. NTS is sending a lot of letters to taxpayers. Civil servants also call them directly and send text messages through the system. The budget for these things is not too few. However, NTS has only focused on the content of the messages they are going to deliver to taxpayers. In other words, they did not worry much about the types of delivery of their contents to taxpayers. NTS has made a lot of effort to solve the big problem of tax delinquency, but it did not consider these methods that could be more effective than those. Even now, NTS should try to use these methods. Of course, experiments should be preceded. To carry out these experiments, NTS has really good systems. That is, what is needed is interest and will.

Let's look at another experiment. The title of this study is 'Sig signing at the beginning makes ethics salient and decreases dishonest self-reports in comparison to signing at the end' (Shu et al., 2012). Many important transactions already require signatures to make people be honest. However, it seems to be insufficient. The insurance fraud as well as the tax gap are not small. Usually, the proof of honest intent is typically provided through signature at the end of forms. What if the location of the signature is changed? So, they hypothesized that signing at the beginning decreases dishonest self-reports in comparison to signing at the end. To confirm that, they tested some experiments. They tested two lab experiments.

At first, a total of one hundred one students and employees at local universities in the southeastern United States completed the experiment for pay. And they were randomly assigned to one of three conditions: i) group one- signature at the top, ii) group two- signature at the bottom, iii) group three- no signature. And the statement was "I declare that I carefully examined this return and that to the best of my knowledge and belief it is correct and complete" (Shu et al., 2012, p. 15199). However, I think there is a problem. The average age of the participants was 22.1, and 82% of them were students. Therefore, most participants were university students who were young and highly educated. The results might not be generalizable to the real world. Older people and uneducated people might not be same as the students. So, I think this experiment has an external validity problem. Let's go back to the experiment. There were two rooms. In the first room, the participants received two papers. Test sheet and collective slip. And they had to solve twenty math puzzles in five minutes. They had to find two numbers that summed to 10. They would receive some money based on the result. After solving puzzles, they had to count the number of correctly solved puzzles and noted that number on the slip. Finally, they had to turn in both papers. After the problem-solving task, the participants had to fill tax return form. In the second room, they received different tax

return form which were assigned based on their group; i) signature at the top, ii) signature at the bottom, iii) no signature.

Form 3305 (Rev. June 2010) Center for Decision Research	Research Study Tax Return For the period June 1, 2010, through August 30, 2010	Keep a copy of this return for your records. OMB No. 1555-0111
Sign Here	I declare that I carefully examined this return and that to the best of my knowledge and belief it is correct and complete.	
	_____ Signature	_____ Date
Write Clearly	Name Address (Number, street, and room or suite number) City, State, and ZIP code	PID For Administrative Use Only T FF FP I TL
Part 1	Please fill out the questions below to compute your taxed payment.	
	1. Please enter the payment you received on the problem solving task (\$1 per correct matrix you solved in the other room)	1
	2. Tax on payment: Please enter the equivalent of a 20% tax on your payment (i.e., 20 cents for every dollar earned).....	2
	3. Please subtract the value specified in box 2 from value specified in box 1	3
Part 2	Participants will be compensated for extra expenses they have incurred in order to participate in this study. In Part 2, you are asked to estimate the costs incurred in order to participate. These costs will be deducted from your tax return.	
	1. Please estimate the time it took you to come to the lab. You will be compensated \$0.10 per minute, up to a 2 hour maximum	4
	2. Please estimate the cost of your commute, if any, to come to the lab. You will be compensated up to a maximum of \$12	5
	3. Please add the value specified in box 4 and the value specified in box 5	6
Part 3	Please compute your final payment.	
	1. Please add the value specified in box 3 and the value specified in box 6. This is the amount of your final payment for today's session.....	7

Table 21. Tax form used in experiment 1, signature-at-the-top condition

Form 3305 (Rev. June 2010) Center for Decision Research	Research Study Tax Return For the period June 1, 2010, through August 30, 2010		Keep a copy of this return for your records.
			OMB No. 1555-0111
Write Clearly	Name	PID	For Administrative Use Only T FF FP I TL
	Address (Number, street, and room or suite number)		
	City, State, and ZIP code		
Part 1 Please fill out the questions below to compute your taxed payment.			
1. Please enter the payment you received on the problem solving task (\$1 per correct matrix you solved in the other room)		1	
2. Tax on payment: Please enter the equivalent of a 20% tax on your payment (i.e., 20 cents for every dollar earned).....		2	
3. Please subtract the value specified in box 2 from value specified in box 1		3	
Part 2 Participants will be compensated for extra expenses they have incurred in order to participate in this study. In Part 2, you are asked to estimate the costs incurred in order to participate. These costs will be deducted from your tax return.			
1. Please estimate the time it took you to come to the lab. You will be compensated \$0.10 per minute, up to a 2 hour maximum		4	
2. Please estimate the cost of your commute, if any, to come to the lab. You will be compensated up to a maximum of \$12		5	
3. Please add the value specified in box 4 and the value specified in box 5		6	
Part 3 Please compute your final payment.			
1. Please add the value specified in box 3 and the value specified in box 6. This is the amount of your final payment for today's session.....		7	
Sign Here	I declare that I carefully examined this return and that to the best of my knowledge and belief it is correct and complete.		
	▶ _____ Signature	▶ _____ Date	

Table 22. Tax form used in experiment 1, signature-at-the-bottom condition

Form 3305 (Rev. June 2010) Center for Decision Research	Research Study Tax Return For the period June 1, 2010, through August 30, 2010		Keep a copy of this return for your records.
			OMB No. 1555-0111
Write Clearly	Name	PID	For Administrative Use Only T FF FP I TL
	Address (Number, street, and room or suite number)		
	City, State, and ZIP code		
Part 1 Please fill out the questions below to compute your taxed payment.			
1. Please enter the payment you received on the problem solving task (\$1 per correct matrix you solved in the other room)		1	
2. Tax on payment: Please enter the equivalent of a 20% tax on your payment (i.e., 20 cents for every dollar earned).....		2	
3. Please subtract the value specified in box 2 from value specified in box 1		3	
Part 2 Participants will be compensated for extra expenses they have incurred in order to participate in this study. In Part 2, you are asked to estimate the costs incurred in order to participate. These costs will be deducted from your tax return.			
1. Please estimate the time it took you to come to the lab. You will be compensated \$0.10 per minute, up to a 2 hour maximum		4	
2. Please estimate the cost of your commute, if any, to come to the lab. You will be compensated up to a maximum of \$12		5	
3. Please add the value specified in box 4 and the value specified in box 5		6	
Part 3 Please compute your final payment.			
1. Please add the value specified in box 3 and the value specified in box 6. This is the amount of your final payment for today's session.....		7	

Table 23. Tax form used in experiment 1, no-signature (control) condition

The payment structure consisted of income, 20% tax, and compensation. If a participant solved twenty puzzles perfectly, and took two hours to the lab, and paid ten dollars for commuting, the participant would receive thirty-eight dollars.

< Room #2 >

Payment Structure

- Income: \$2 per correct matrix
- Deductions: Travel expenses
 - i. Commuting time: \$0.1 per minute (up to \$12)
 - ii. Commuting Cost (up to \$12)
- Tax: 50% of Taxable Income

$$\begin{aligned} \text{Payment} &= \text{Income} - \text{Tax} \\ &= \text{Income} - 0.5 \times (\text{Income} - \text{deductions}) \end{aligned}$$

Table 24. Payment structure of experiment #1

In addition, the table 25 is the results of this experiment.

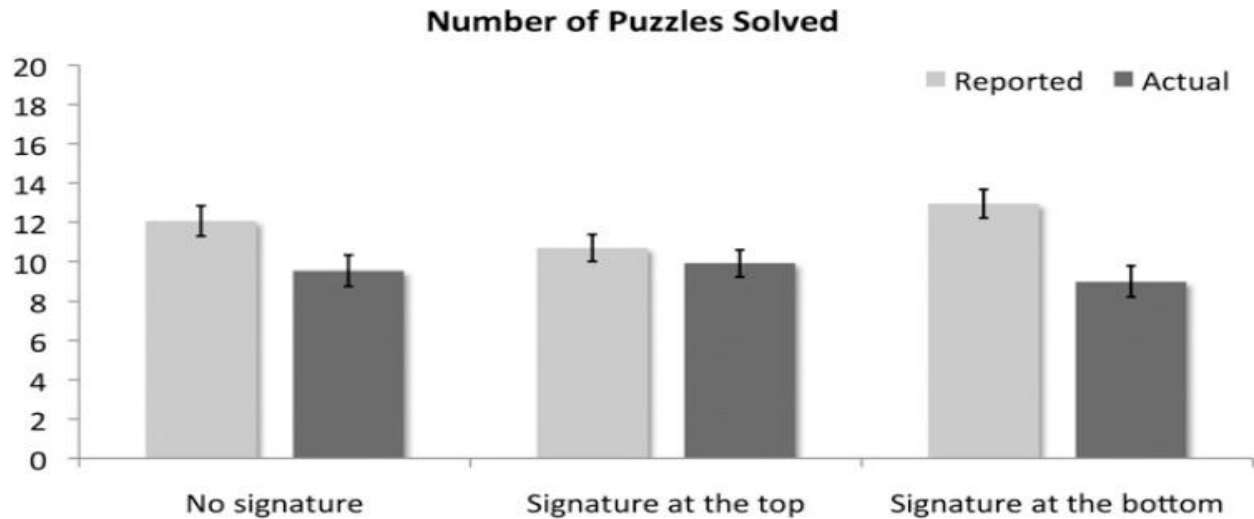


Table 25. Experiment #1: Reported and actual number of math puzzle solved (Shu et al., 2012, p. 15198)

At first, in terms of the number of puzzles solved, group one (which was in the signature at the top condition) had the smallest difference between reported and actual. Furthermore, the results about the number of cheaters and credit for travel expenses were

not different. So, the researchers concluded that signing before a self-reporting task promoted honest reporting (Shu et al., 2012, p. 15198).

They conducted another similar lab experiment. The participants were sixty. However, this experiment has same external validity problem. Anyway, in this experiment, they divided the participants into two groups: i) group one- signature at the top, ii) group two- signature at the bottom. In the first room, the processes were same as experiment one. But the payment structure was a little bit different. Income was two dollars per correct puzzle, and travel expenses were deductions. And tax was fifty percent of taxable income. This is more similar to a real tax return form of the U.S. If a participant solved all the puzzles correctly, took two hours, and paid ten dollars for commuting, the participant would receive thirty-one dollars.

< Room #2 >

Payment Structure

- Income: \$2 per correct matrix
- Deductions: Travel expenses
 - i. Commuting time: \$0.1 per minute (up to \$12)
 - ii. Commuting Cost (up to \$12)
- Tax: 50% of Taxable Income

$$\begin{aligned} \text{Payment} &= \text{Income} - \text{Tax} \\ &= \text{Income} - 0.5 \times (\text{Income} - \text{deductions}) \end{aligned}$$

Table 26. Payment structure of experiment #2

In addition, table 27 shows the results of the experiment.

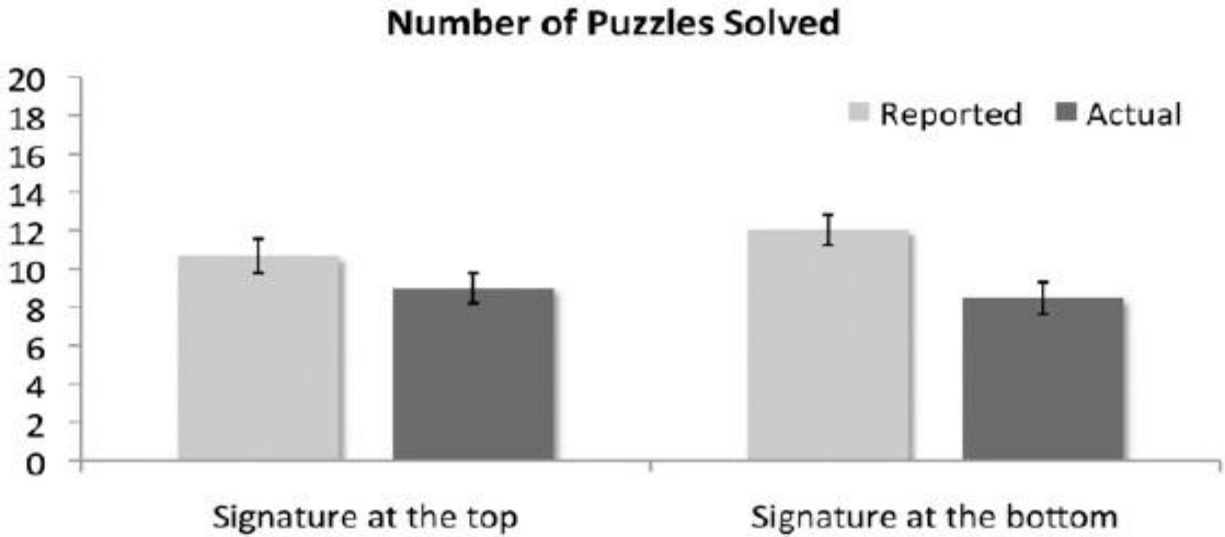


Table 27. Experiment #2: Reported and actual number of puzzle solved (Shu et al., 2012, p. 15198)

Group one in the signature at the top condition was more honest than group two in the signature at the bottom. The results about number of cheaters and deductions were same as that. Therefore, they concluded that singing at the beginning decreased dishonest self-reports in comparison to signing at the end (Shu et al., 2012, p. 15198)..

These are well-designed experiments. But they have some validity problems. So, the researchers conducted another experiment, a field experiment. With an insurance company, they asked some customers to report their odometer readings. The participants were randomly assigned to one of two conditions: i) group one: forms with signature at the top, ii) group two: forms with signature at the bottom. And the statement was “I promise that the information I am providing is true.”. The researchers received about twenty thousand odometer readings from thirteen thousand customers. They calculated miles driven from two odometer readings. Odometer reading one and two. Odometer one is from the insurance company’s database two years ago. Odometer two is from the self-reported current odometer reading. And policyholders had an incentive to report lower use because of the lower their insurance premium.

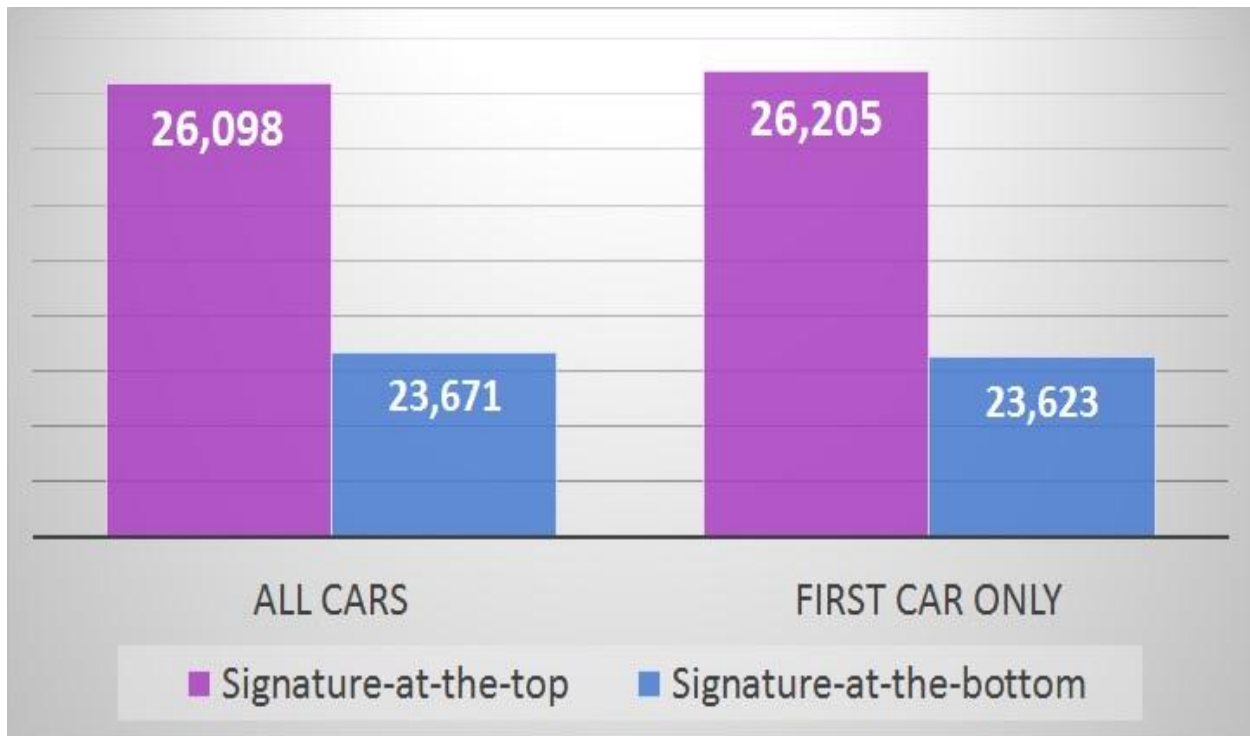


Table 28. The results of the experiment #3 (Shu et al., 2012, p. 15200)

The results of this experiment were not different from the previous lab experiments. The group one, signature at the top, reported higher odometer readings than the group two. It is important to make morality salient, right before it is needed most, so that it can remain active during the most tempting moments. And it is important for us to know these results as well. A simple change can make a huge difference. It does not impose on the freedom of individuals, it does not require the passage of new legislation, and it can profoundly influence behaviors of ethical and economic significance. We can consider this when we make policies or design new public forms.

These experimental results can suggest a lot to the NTS. The NTS offers a number of forms to taxpayers. Taxpayers report their income, expenditures, and tax returns through their forms. In Korea, the NTS treats what the taxpayers report to the NTS as true. And the NTS charges taxpayers on the basis of those facts. In other words,

taxpayers' cooperation is very important to reduce the tax gap. Thus, if NTS provides a slightly modified form, it can reduce the tax gap. As noted, these changes do not require much budget. Of course, research and experimentation are needed on how to change forms.

Korea has good conditions for doing these experiments. Unlike the United States, in Korea, the NTS is giving direct assistance to taxpayers. For example, in the United States, the obligation to file a tax is entirely with taxpayers. They do a lot of things directly to deal with them, or they ask tax agents for help. However, the situation in Korea is slightly different. Of course, the obligation to declare and pay is entirely with taxpayers. However, workers are seldom assisted by tax accountants. Self-employed and businesses should be assisted by tax accountants, but regular workers are often assisted by the NTS. At the time of the income tax return, all tax offices are filled with taxpayers because they file taxes with the help of the NTS. Therefore, first, some tax offices may conduct experiments by transforming the forms related to workers into various forms.

Thus, the results of behavioral economics can be used to reduce the tax gap. As mentioned earlier, these policies do not require much change compared to other policy options. Behavioral economists argue that small changes can change the behavior of taxpayers. Policies often show unintended consequences. When a policy is implemented, it could be the worst case that the intended effect is small, while the unintended side effect is huge. However, policies utilizing behavioral economics are relatively free of such concerns. Since it is not a policy that requires a big change, it is very likely that the side effect is small, and it is not difficult to return it to the first time if side effects are found.

Behavioural Insights Team (2012, p. 4) suggested 7 insights to reduce fraud, error and debt. Those are very helpful to the NTS. They could design some experiments or

change some forms based on these insights. Also, the NTS could develop more effective policies based on them.

Box 1: Lessons from behavioural science – seven steps to reduce fraud, error and debt

The seven insights below are all based on evidence from behavioural science. They show that, by going with the grain of how people behave, we can reduce the prevalence of fraud, error and debt.

Insight 1. Make it easy: Make it as straightforward as possible for people to pay tax or debts, for example by pre-populating a form with information already held.

Insight 2. Highlight key messages: Draw people's attention to important information or actions required of them, for example by highlighting them upfront in a letter.

Insight 3. Use personal language: Personalise language so that people understand why a message or process is relevant to them.

Insight 4. Prompt honesty at key moments: Ensure that people are prompted to be honest at key moments when filling in a form or answering questions.

Insight 5. Tell people what others are doing: Highlight the positive behaviour of others, for instance that '9 out of 10 people pay their tax on time'.

Insight 6. Reward desired behaviour: Actively incentivise or reward behaviour that saves time or money.

Insight 7. Highlight the risk and impact of dishonesty: Emphasise the impact of fraud or late payment on public services, as well as the risk of audit and the consequences for those caught.

Table 29. Lessons from behavioural science – seven steps (Behavioural Insights Team, 2012, p. 4)

Based on these insights, the Behavioural Insights Team conducted a lot of experiments. They argued that some trials were effective to reduce fraud, error and debt.

If the NTS refers to these, they can reduce their own trial and error about the experiments.

Box 2: Test, learn, adapt – eight trials to reduce fraud, error and debt

Trial 1. Using social norms: investigates whether informing people that the vast majority of those in their area have already paid their tax can significantly boost payment rates.

Trial 2. Highlighting key messages and norms: examines whether we can increase tax compliance among doctors by simplifying the principal messages and actions required, as well as using social levers and norms.

Trial 3. Using salient images: investigates whether using images captured by the Driver and Vehicle Licensing Agency can help to reduce unnecessary repeat correspondence and encourage prompt payment of fines.

Trial 4. Better presentation of information: explores different ways of presenting information to discover which is most effective at encouraging the payment of debts.

Trial 5. Personalising text messages: tests the impact of sending more personalised text messages on people's propensity to pay court-ordered fines.

Trial 6. Prompting honesty: examines whether simplifying key messages, emphasising the consequences of fraud and getting people to sign forms upfront results in more honest declarations.

Trial 7. Varying the tone of letters: explores the effectiveness of different types of communication in encouraging plumbers to get their tax affairs up to date.

Trial 8. Using beliefs about tax: tests the effectiveness of different messages – related to the fact that most people think that paying tax is the right thing to do – on payment of tax debts by companies.

Table 30. Test, learn, adapt – eight trials (Behavioural Insights Team, 2012, p. 4)

Evaluation

The three criteria for evaluating the proposed policy options in this report are: 1. Tax resistance, 2. Cost, 3. Achievement of the goal. From now on, I will evaluate policy options based on these three criteria.

Simplifying the tax law NTS can simplify the content and format of tax law. People will not object to simplifying the format of tax law. But it is not the case that simplifies the contents of the tax law. Citizens are very sensitive to tax-related policies. Because the policies can have a direct impact on the people's property. Tax rates have long been a political issue. Through the tax rate structure, governments can redistribute property or raise money for welfare. On the other hand, it also has a great impact on economic activities. Adjusting the tax rate may be profitable or damaging to a particular group. Therefore, adjusting the tax rate is not easy. This is because the taxation resistance of the groups that are damaged by the changed tax rate is very strong. For this reason, changing the contents of the tax law should be done through national consensus. Without such a consensus process, the simplification of the tax law will inevitably lead to the tax resistance. On the other hand, this option has great cost advantages. It is not costly to simplify tax laws. It is only necessary to revise the law through a certain procedure. Then, how effective is streamlining tax law to reduce tax gap? There are very few studies that directly analyze the effect of simplifying tax law on the tax gap. However, many advanced countries, including the United States, the United Kingdom, Australia, and New Zealand, have or have been in the process (Oh et al., 2015, p. 58). Therefore, it may be judged that the simplification of the tax law is likely to achieve the policy goal of reducing the tax gap to some extent.

Simplifying the tax reporting methods Compared to simplifying tax laws, this option will have very little tax resistance. This is because most of these policies are designed to reduce the taxpayers' cost of cooperating with NTS. In other words, there will be little tax resistance because the main contents of these policies make taxpayers' tax declaration and payment easy. However, it is not so simple for companies to provide information to the government. They are obliged to provide specific information at specific times in the form required by the government. This obviously requires additional manpower and costs for companies. Therefore, some companies are likely to oppose these policies. The biggest disadvantage of this policy option is cost. The government should build a system to enforce this policy. It is very costly to build and operate a system for receiving and submitting taxpayers' information. In addition, the information that the system will handle will require a higher level of technical skills because it contains personal information. This is not just a matter of government. As mentioned earlier, companies that need to provide government-requested information also require additional staff and costs. Therefore, this option will cost the most compared to the other options. Simplifying tax reporting methods is clearly effective in reducing tax gaps. However, nothing has been studied as such to simplify the tax law. This method is also used by many developed countries such as the United States. At this point, we are not wrong to assume that this option is likely to achieve the purpose of reducing the tax gap.

Strengthening punishments This option has the biggest impact on reducing the tax gap compared to the others. In other words, this is the most likely option to achieve the goal of the policy. Studies are underway to determine what kinds of punishments can most effectively reduce the tax gap. However, many studies have shown that the enhancement of punishment is effective in reducing intentional and unintentional errors. In addition, this option does not need much budget. Of course, such methods as

expanding tax audits require manpower and budget. However, increasing the fines and length of imprisonment requires little cost. In spite of these advantages, the biggest disadvantage of this option is tax resistance. Anyone who is a taxpayer can make a mistake. In other words, unintentional errors always occur. However, the punishment for such errors does not concern the intentions of those errors. This is because the punishment is judged by only the results of errors. There are also taxpayers who claim that the current penalties are overdone. Strengthening punishments in this situation is bound to face strong resistance.

Using behavioral economics Many studies of behavioral economics show that even small changes can have a significant impact on individual behavior. The suggested policies to reduce the tax gap do not require much change. This policy option is therefore less expensive. Changing the contents of the letter, changing the text of the form, and informing specific groups of specific facts are the main contents of these policies. This option, which can be implemented with small changes, is unlikely to face tax resistance for the same reasons. Even taxpayers may not be aware that these policies, which may affect them, are being implemented. However, it is not known how much this option will have any effect in reducing the tax gap. This is slightly different from the options I and II. In the cases of option I and II, it is certain that it is effective, but it is hard to know about how much. But with this option, nothing is certain. That is, it may not be effective at all. Even under the same circumstances, individual cultural differences can lead to differences in behavior. Policies that were effective in the United States or in the UK could be useless in Korea. In Korea, policies that worked in Seoul may not have any effect in Busan. Thus, although many studies predict the success of this option, it is unclear whether it will be applicable to Koreans. Therefore, in order to make this somewhat clearer, many studies on Koreans should be done.

V. Conclusion

So far, we have looked at four policies that the NTS can implement to reduce the tax gap in Korea. In fact, there is no active research on tax gap in Korea. The government does not directly measure and announce the tax gap. Therefore, what is most needed now is to study the tax gaps with greater interest from the government. With these efforts, the NTS could identify and solve the problems. The NTS has already made efforts on simplifying tax reporting methods (option II) out of the four proposed policies. Simplified system for year-end tax settlement is the result of the efforts. Of course, these efforts have not begun to reduce the tax gap, but as a result, they are helping to reduce the tax gap.

	Cost	Tax resistance	Achievement of the goal
1. Simplifying the tax law	0	++	+
2. Simplifying reporting method	++	+	+
3. Strengthening punishment	+	++	++
4. Using behavioral economics	0	0	+

Table 31. Summary of the Evaluation

If the NTS needs to select and implement a policy to solve the tax gap problem, I recommend Option IV. This is because the following reasons. First, as discussed in the evaluation part, using behavioral economics is less costly. This requires the least budget among the four proposed policy options. It does not have to build a new system or mobilize a lot of people. The policies can be implemented with very simple changes. Second, unlike other options, using behavioral economics does not have to face tax

resistance. Tax resistance can be politically expressed. It is because the politicians represent the people's position. Therefore, it is difficult to implement policies that require revision of laws or require budget without the consent of the National Assembly. The biggest reason why it is difficult to implement to strengthen punishments which is the most directly effective option is the opposition of politicians. Third, there is no burden on failure. Policies involving major changes wastes a lot when the policy fails. There is also a cost to fix the failure, as well as the manpower and budget used to implement the policy. However, using behavioral economics does not have this burden. If a policy fails, it is considerably simpler than other options to go back to the start line. Finally, this option is a new area. The Korean government has never used policies based on behavioral economics. Nobody knows what effect this option will have. If you consider this with the fact that there is little risk, there is no reason not to choose this option. We need to think about how we can use behavioral economics research results in various ways and develop policies.

The plans to implement policies that use behavioral economics are as follows. The NTS should conduct field experiments with experts. The results in other countries cannot be concluded that it is effective in Korea. This is because the culture is different. The NTS can start by selecting several tax offices and conducting pilot projects. Changes such as sending letters to taxpayers, sending text messages, etc. are easy to implement. If these pilot programs are judged to be effective, they can be extended to the whole country. In addition, policies to change the format that require procedures such as announcements can be implemented after field experiments. Systems which communicate with taxpayers through the Internet, such as the year-end tax settlement system, can be changed without revision of the law. In this case, any of the available research results to date can be implemented immediately.

Finally, what we must discuss is an obstacle to this policy option. This is also directly linked to ethical issues. It is a question of legitimacy. These policies are to induce taxpayers' behavior to the government's intentions. However, unlike other general policy inductions, the use of behavioral economics works in a state where taxpayers are not aware of them. This problem can be a big obstacle as time goes by. Let's consider following situation. Behavioral economics is being used more in the market than in the government policy field. Here is an interesting advertisement.

Economist.com	SUBSCRIPTIONS
OPINION	<p>Welcome to The Economist Subscription Centre</p> <p>Pick the type of subscription you want to buy or renew.</p> <p><input type="checkbox"/> Economist.com subscription - US \$59.00 One-year subscription to Economist.com. Includes online access to all articles from <i>The Economist</i> since 1997.</p> <p><input type="checkbox"/> Print subscription - US \$125.00 One-year subscription to the print edition of <i>The Economist</i>.</p> <p><input type="checkbox"/> Print & web subscription - US \$125.00 One-year subscription to the print edition of <i>The Economist</i> and online access to all articles from <i>The Economist</i> since 1997.</p>
WORLD	
BUSINESS	
FINANCE & ECONOMICS	
SCIENCE & TECHNOLOGY	
PEOPLE	
BOOKS & ARTS	
MARKETS & DATA	
DIVERSIONS	

Table 32. Web advertisement of the Economist

There are three options for subscription. By the way, there is something odd about this advertisement. The price of the print only option is the same as the price of the print & web option. What would you choose if you had to choose one of these three options?

Now let's remove one of the options. Since the print only option and the print & web option are the same price, no one will choose the print only option. So, let's remove this print only option. Now, which option do you choose? Table 33 shows the results of the experiment which we just conducted.

The Economist:		3 options	2 options
<input type="checkbox"/>	Web only	\$59	16% → 68%
<input type="checkbox"/>	Print only	\$125	0% ✕
<input type="checkbox"/>	Web & Print	\$125	84% → 32%

Table 33. The results from the Economist experiment

As you can see, the experimental results are shocking. The existence of the print only option, which seemed to have no role, really had a big impact on people's choices. When there were only two options, only about 32% chose the web & print option. However, with the print only option, 84% of people selected for the web & print option. This is because it is hard to compare the value of web only option to web and print option. However, it is very easy to compare web and print option to print only option. They are the same price. Therefore, we could choose web and print option easily. The Economist would have been able to achieve even greater sales by simply including options that seemed like nothing else.

Assume that you bought something. By the way, over time, you became aware of the following facts. The company's marketing methods were based on behavioral economics, and you were attracted to such inducements to buy more than you need and more expensive. If you knew all this, how would you feel? It will not be pleasant. What if these things happen in the public realm, not in the private realm? Is the government doing well? Do these policies have no ethical problems at all? We need to seriously consider and agree on these questions. It is also good to create guidelines if necessary. But without this preliminary readiness, we should keep in mind that leveraging behavioral economics can lead to taxpayers' strong opposition.

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