

The Size of the Effect of Corruption Experience on the Level of Corruption Perception in the Public Sector

Kilkon Ko, June Park, Siyoung Lee

Abstract

In this study, we examine the size of the average causal effect of corruption experience on corruption perception by using the augmented inverse probability weighting. This study examined the interpretation of corruption perceptions and implications for anti-corruption policies by examining the relative importance of corruption experience to other influencing variables on corruption perception. As a result of the analysis, it is found that those who have experience of corruption have 5.6 percent higher level of corruption perception than those who have not. The result suggests that the measurement of corruption experience should not be limited to the case of direct experience, but should include indirect experience. It also is crucial to integrate socio-cultural factors into government strategies to increase general perceptions of public sector corruption.

Keywords Corruption experience, Corruption perception, augmented inverse probability weighting

I. Introduction

This study examines the average causal effect of corruption experience on the level of corruption perception using a semi-parametric approach based on inverse probability weighting (Lunceford & Davidian, 2004). In addition, we examine whether corruption experience is relatively more important than other factors in affecting the level of corruption perception and thus provide several implications on the interpretation of perceived corruption and anti-corruption policy.

Measuring the level of corruption perception has been playing a pivotal role in corruption studies, but its limits are also pointed out (Treisman 2007:213-224). Corruption Perception Index (CPI) and Global Corruption Barometer (GCB) conducted by Transparency International and Control of Corruption conducted by World Bank are good examples of corruption indices measuring the level of corruption experts and

citizens perceived. In Korea, there are several indices that measures levels of perception on corruption including Integrity Assessment conducted by Korea's Anti-corruption and Civil-rights Commission, which won The United Nation's public service award in 2012, and Survey Research on the Level of Public Sector Corruption conducted by Korea Institute of Public Administration (KIPA). Yet, many criticisms have been raised on that there was a remarkable difference between the level of corruption perception and corruption experience and that the former did not properly reflect the corruption level in reality (Abramo, 2008; Treisman, 2007; Ko, 2017). In fact, according to the CPI, the ratio of those who experienced corruption-related practices in the public sector of Korea is as high as that of Canada, New Zealand or Norway, but Korea's level of corruption perception appears to be far higher than that of the three countries (TI, 2013 & 2014). The result of the Survey Research on the Level of Public Sector Corruption also showed that the annual average ratio of those who had actually provided money, entertainment or convenience to public servants is no more than 2.8 percent from 2010 to 2017, while that of those who think corruption in public sector is grave reaches 59.9 percent. In the long-term trend, the ratio of corruption experience has remarkably dropped since 2000, as that of corruption perception has not been increased. Such phenomenon is reflected in the Corruption Perception Survey conducted by Anti-corruption and Civil-rights Commission in Korea. According to the results of the 2016 survey, the average rate of corruption experience was only 1.9 percent, but 51.6 percent of respondents perceived that public servants were corrupt (Anti-corruption and Civil-rights Commission, 2016). This discrepancy between corruption perceptions and corruption experiences is a commonly observed phenomenon rather than an issue at specific times or in particular countries.

However, the existence of a discrepancy between corruption experiences and corruption perceptions measured using surveys does not necessarily mean that corruption experiences do not affect levels of perceived corruption; in the situation where other factors have more influence on the perception of corruption, corruption experience and corruption perception can appear to be unrelated, even though the former affects the latter. In addition, if the concept of corruption experience includes indirect experience (e.g. witnessing other people's corrupt behaviors) in addition to the firsthand experience of providing or being asked to provide money to public officials, the gap between the level of corruption perception and that of corruption experience may be reduced. Of course, if citizens' experience of corruption does not significantly affect the level of perceived corruption, the approach to anti-corruption policy should be changed because the policies that discourage corrupt behaviors alone hardly improve citizens' perception on public sector corruption levels. In other words, it is necessary to distinguish between

policies that substantially reduce corruption and policies that reduce perceived levels of corruption. It is also necessary to change the interpretation of the results of existing corruption studies which assumed that the level of recognized corruption is equivalent to the level of actual corruption. Therefore, the relationship between corruption perceptions and corruption experiences is an important research question that can lead to the reorientation of anti-corruption policies and the overall re-interpretation of existing corruption studies.

Under this background, this paper tries to raise the following two research questions. First, if there is a correlation between corruption experience and corruption perception, how much more severely do citizens with corruption experience perceive public corruption than those with no such experience? Second, if corruption experience affects perceptions of corruption, how much more important is corruption experience relative to other variables in explaining corruption perceptions? In order to empirically analyze the first question, a model is needed to measure the causal effect of corruption experience, assuming corruption perception as a result of corruption experience. The difficult part is that many variables affecting levels of perceived corruption also have an impact on corruption experience. In particular, a government trust variable have an interactive causal relationship (Uslaner, 2013; Chang & Chu 2006), and in such analysis, ordinary least squares estimators cannot be unbiased estimators. To solve this problem, we can use instrumental variables, but it is not easy to find cases where weak instrument variables are weakly correlated with dependent variables and are highly correlated with independent variables. Hence, in this study, rather than using the regression model, we used a matching method for groups with and without corruption experience to make a situation similar to a random assignment, and then we used inverse probability weighting method (Imbens & Rubin 2015; Guo & Fraser 2010; Lunceford & Davidian 2004) to measure net average treatment effect (ATE). Second, we compare the explanatory power of the corruption experience among the various variables explaining the level of the perception of corruption and examine which variable explains the most the level of corruption perception level by using regression analysis. In particular, considering the previous studies that government trust, cultural acceptance of gray corruption, and an echo chamber effect by media have more influence on the level of perceived corruption than corruption experience, it is necessary to analyze that in explaining corruption perception levels, whether other variables are more important explanatory variables than corruption experience.

II. Literature review

Many factors are affecting the public perception of corruption in the public sector other than corruption experience. In the following, we examine the factors affecting corruption perception that have been raised in the previous research and examine the issues of the relationship between corruption experience and corruption perception.

1. Factors Affecting the perception of corruption

The concept of corruption may vary according to theoretical perspectives including public choice theory, rational choice theory, the new institutionalism perspective, and public opinion (Johnston 2001; Ko & Cho, 2012:215-216). Yet if we understand corruption as a collective trust on the social responsibility the citizen expects for the public sector, corruption can be understood as a concept perceived by the citizen. For this reason, measuring the level of perceived corruption would be meaningful in corruption studies.

There are various studies on the factors that affect the perception of corruption. Many of them indicate that the perception of corruption is less affected by corruption experiences and rather influenced by variables including individual's socio-economic backgrounds, positive or negative perception of government, media effect and personal definition of corruption - variables that appear to be irrelevant to the level of corruption in reality. As can be seen in the following, prior studies widely view that corruption perception is mainly influenced by the demographic characteristics of the individual, the attitude toward the government, and the media rather than the experience of corruption.

1) Demographic characteristics of the individual

First, many studies have been suggested that demographic characteristics of individuals have a great influence on the perception of corruption. Kim et al. (2011) analyzed the data from Survey Research on the Level of Public Sector Corruption conducted by Korea Institute of Public Administration to show that the individual's occupation, age, and educational background have a significant impact on the perception of corruption. They also pointed out that It was important to secure representativeness of the sample by considering the respondents' socio-economic background. In the study, interestingly, corruption experience appears to be a statistically insignificant explanatory

variable.

In the study of Kang and Ko (2016) using the same corruption survey data, gender directly affects the perception of corruption severity, while age, educational background and income have an indirect influence on the perception of corruption through government trust and awareness of law enforcement as mediators. Yet, this study did not use corruption experience as an independent variable.

Jung (2015) analyzed the level of corruption in the Jeju Special Self-governing Province in Korea and showed that there is a considerable difference in recognition between government officials and reporters. He suggested that the reason for this difference is the lack of mutual understanding between the media and the public societies. This suggests that perceptions of corruption may differ due to differences in understanding of the open societies.

Overseas studies also show the importance of demographic variables. Melgar, Rossi & Smith (2010) analyzed data from the 2004 International Social Survey Program (ISSP) conducted in 34 countries around the world. The results showed that self-employed workers, private sector workers, and women showed a higher level of corruption perception than paid workers, public sector workers and men. On the other hand, according to Ko and Cho(2012: 230), there is no significant difference in acceptance of corruption practices between men and women, and men's acceptance is high only for bonus and rebates.

Pazmandy (2011) analyzed the factors affecting perceptions of corruption using Eurobarometer data from 26,663 people in 27 countries in Europe. The analysis shows that employers, middle and low-income workers, the unemployed and men perceive that the level of corruption is higher than employees, high-income workers, the employed and women. In this analysis, Pazmandy used the personal experience of corruption victimization as a control variable¹⁾. Interestingly, individual corruption experiences did not affect corruption perceptions. In addition, the case study in Mexico by Morris & Klesner(2010) suggests that the relationship between corruption experience and corruption perceptions are not significant.

2) Government trust and general recognition of the government

Several studies shows that perception of corruption can be affected by the level of trust that respondents have to the government, senior officials, etc. On the contrary, the

1) Pazmandy used the question, "Over the last 12 months, has anyone in (our country) asked you, or expected you, to pay a bribe for his or her services?" (Pazmandy, 2011: 63).

perception of corruption can affect government trust (Chang & Chu, 2006; Anderson & Tverdova, 2003). The study of Jang (2015) analyzed the factors influencing citizens' perception of corruption by using the Asian Barometer Survey data. According to the research, in the case of Korea, as an individual has stronger trust on public officials and president, he or she perceives the degree of corruption less grave. Similarly, the study of Chang & Chu (2006) on Asian countries also provides empirical evidence that corruption perception has an interactive causal relationship with government trust. Seligson(2002) argues that corruption experience has adverse effects on the legitimacy of governments after surveying various corruption experiences in Latin American countries using surveys. This study suggests that not only trust but also multiple perceptions of government, such as the legitimacy of the government and respect for the government, are related to corruption perception.

The sense of alienation that citizens feel about the government is also affected. Van de Walle (2008) analyzed the determinants of perceived personal corruption based on the results of a survey of 3,168 Belgian nationals. The results showed that people with strong political alienation such as efficacy, cynicism, dissatisfaction, and despair of the government became negative toward the government, and as a result, the perception of government corruption deteriorated.

The political inclination is also a factor that affects the perception of corruption. According to a study by Yu, Chen & Lin (2013), the level of corruption perceived by the public has not been reduced since Taiwan moved from a dictatorship to a democracy. In fact, many Taiwanese responded that corruption became increasingly serious. To explain such phenomenon, the authors suggest that even though the democratization improved the transparency of the policy process and made the check system for the power work, an increase in the level of people's expectation caused the higher level of corruption perception. In this study, they analyzed the Taiwan integrity survey data and found that the perception of corruption in the government sector deteriorated as people make contact with public officials less frequently or have stronger inclination to anti-KMT. This suggests that corruption awareness is also related to political bent and personal experience in the public sector.

3) Media effects

Even within the same society, the level of perceived corruption among individuals varies depending on the path through which they perceive corruption. Rose & Mishler (2010) analyzed the factors affecting perceptions of corruption in the Russian people.

The results of the study show that people who listen to the story that the public sector in Russia was corrupted from the conversation with their friends or the media have tendency to perceive the level of corruption as more serious.

Ferraz & Finan (2008) also suggest that media influence the public perception of corruption. In this study, the authors found that the probability of re-election of the current market in the region where radio broadcasters are located is much lower, even if the number of violations reported by the auditors is the same when publicly auditing the results of local governments before the elections. This indicates that even between regions with similar level of actual corruption, the residents' perception of corruption differ according to the presence of the media.

The review of previous studies on the influencing factors of corruption has very important implications. First, the perception of corruption is mainly influenced by various factors such as personal factors, economic factors, attitudes toward the government, the media, and citizens' subjective definition of corruption concept. It means that the measured perception of corruption is not a result of simply measuring the level of actual corruption in a society, but rather a comprehensive reflection of citizens' trust in the government, level of ethical expectations, and acceptance of practices.

Second, the research that emphasizes the subjective attitudes of the citizens toward the corruption perception, suggests that the experience of corruption has little effect on the perception of corruption. In other words, corruption perceptions are influenced by various personal factors, but they are not directly influenced by corruption experiences. According to this assertion, the difference between corruption perception and corruption experience makes the former not a good indicator to measure the latter.

2. A study on the effect of corruption experience on the perception of corruption

There is also a great deal of research showing that there is a correlation between corruption experience and corruption perception, unlike previous studies. Olken (2009) analyzed the relationship between corruption perceived by residents and actual embezzlement of road construction using the case of road construction projects in Indonesian villages, showing that there is a weak positive correlation between perception and experience of corruption. This suggests that residents may not know corrupt practices in detail, but they certainly are aware of the fact that corruption is underway.

In a comparative study between countries, Ko & Samajdar (2010) presented the results of an analysis of the correlation (Correlation coefficient: -0.75) between the

International Crime Victimization Survey (ICVS) and the Transparency International's corruption perception index (CPI). The results also provide empirical evidence supporting that corruption experience of entrepreneurs is highly correlated with the CPI, the control of corruption of the World Bank, and the corruption perception index of the International Country Risk Guide (ICRG) have. Charron (2016), recently conducted an empirical study of the relationship between the perception of corruption and corruption experience within countries and regions of 24 European countries. This study also provides empirical evidence that there is a relationship between corruption experience and corruption perception. On the other hand, Donchev & Ujhelyi (2014) pointed out that there is a correlation between ICVS and CPI, but showed that this relationship is rare at the individual level.

Meanwhile, Rose-Ackerman & Palifka (2016) suggests that the correlation between experience and perception indicators in Global Corruption Barometer (GCB) data is very weak, and suggested four theoretical hypothesis regarding the relationship between experience and the perception of corruption (Rose-Ackerman & Palifka, 2016: 23-27).

First, the perception of corruption reflects the difference between 'grand corruption' and 'petty corruption'. In other words, if people do not have experience of providing bribes but recognize corrupt behaviors of high-ranking officials of the government, the level of the perception of corruption raises while the indicator of corruption experience decreases. Second, psychological distance to government affects corruption perception. According to the "paradox of distance" theory of Frederickson and Frederickson (1995), people tend to think the government is corrupted when they do not have experience of directly contacting with the government officials or they think of the abstract level of government. However, people seem to generally receive the positive impression from specific government agencies that have had direct contact with or have received service benefits. This is consistent with the work of Yu, Chen & Lin (2013). Third, the perception of corruption changes more slowly than the frequency of corruption. In other words, as the perception of corruption is the product of long-accumulated perceptions, it does not easily change even if the actual corruptions decrease. Fourth, respondents may have misunderstood the questionnaire; the question "how serious is corruption?" may be understood as "how serious is corruption when it occurs?"

Among the four hypotheses proposed by Rose-Ackerman & Palifka, ① the distinction between gross corruption and small corruption, and ② the paradox theory of distance can provide meaningful policy implications to the government trying to improve public perception of corruption. First, it is small corruption such as bribery of the public servants which is closely related to the corruption experience of the public, but in order to improve the perception of corruption, it is necessary to eradicate the grand

corruption or power-related corruption often committed by high-ranking officials. In addition, the paradox theory of distance suggests that reducing the psychological distance from administration through dialogue and contact with public officials helps improve public perception of corruption.

The precedent study emphasizing the subjective perception of corruption perception and the correlation between corruption perception and corruption experience suggest some implications for the empirical research design. First, they are helpful regarding the issue of the analysis unit. If corruption perception and corruption experience are measured at the national level, the bias will be incurred because the characteristics of individuals that influence corruption perception are not considered. In addition, if the country's cultural characteristics are not controlled, each country's cultural factors that are not measured and responses to corruption experiences are correlated with each other, resulting in bias due to endogeneity. In order to overcome these limitations, we limited research subject to Korea and did not conduct any comparisons between countries. In addition the research was designed to control individual level variables.

The second issue is the type of corruption. The difference between corruption perception and corruption experience is caused by the fact that citizens' experience of corruption is mainly about small corruption, while the perception of corruption includes not only the perception of experienced corruption but also the perception of grand corruption. It is difficult to isolate and measure the effects of corruption experiences unless we control factors that affect the perception of corruption in society as a whole. Thus, the echo chamber effects proposed by corruption recognition researchers such as Johnston (2001), Mishler & Rose (2008) and Jules & Villoria (2014) are noteworthy. In other words, in an echo chamber called society, people's subjective perception of the level of corruption in the public sector and the corruption index based on such perception form a vicious circle through media as a mediator. This means that media reports of corruption strengthen public perception of corruption in both the public and public opinion leaders, and such awareness of corruption, especially among business people and investors, affects internationally reputable indices including Corruption Perceptions Index. These corruption indices, in turn, are exposed to the public and public opinion leaders and reinforce their perception of corruption (Mishler & Rose, 2008: 8). Therefore, if the measured corruption experience is a small corruption, it may be desirable to measure corruption perception and corruption experience after controlling the echo chamber effect.

Third, the size of corruption is more important than the relationship between corruption experience and corruption perception. The results of the previous studies suggest that the relationship between corruption experience and corruption perception

may not be large, and some studies suggest that there is no relationship at all between the two, after controlling important factors including individual characteristics and perception of government. Therefore, we can say that the question of whether corruption experience affects corruption perception is hardly meaningful. Rather, the question of how large the size of the effect that corruption experience has on corruption perception is, relative to other factors is a more appropriate research question.

Fourth, the previous studies failed to show in detail the difference in the perception of corruption between those who have corruption experience and those who have not. We can always measure the difference in corruption perception between a group with corruption experience and the other group without in a simple way. If we, however, fail to properly control factors that have influence on both the perception and experience of corruption, the OLS estimator will be biased because of endogeneity and simple difference between corruption-experienced group and corruption-inexperienced group, in a situation when they are not randomly assigned, shows only prima facie causal effect.

Therefore, in order to analyze the relationship between corruption perception and experience, it is necessary to measure the magnitude of the relationship after fully controlling individual characteristics that affect perception. It is also necessary to examine how important an experience is than individuals' subjective factors, if the relationship between the two appears to exist. This analysis is expected to show implications on the longstanding debate over whether citizens' perception of corruption is high because of actual corruption experience, or because the perception of corruption is affected by other variables other than corruption.

III. Key research hypotheses and model settings

1. Research hypotheses

The core research hypotheses of this paper include how corruption experience will affect the perception of corruption in the public sector and how corruption experience will have a greater impact on determining corruption perception than other factors. Based on the review of previous studies, the research hypotheses to be tested in this study are as follows.

1) The effect of corruption experience on corruption perception

The experience of direct and indirect corruption involving civil servants can be expected to have a negative impact on individual perceptions of corruption in the public sector. However, some other research shows different results; in a study by Rose and Mishler (2010) analyzing Russian data and Pazmandy (2011) analyzing data from 27 European countries, no significant relationship was found between corruption experience and corruption perception. This study, thus does not emphasize on examining the mere existence of the relationship between the two, and rather focuses on seeing whether the existence of a corruption experience causes significant difference in the corruption perception. The hypothesis is as follows:

Research hypothesis 1: Those who experience corruption in relation to public officials will have a higher level of corruption perception than those who do not.

As suggested in the previous study review, it is desirable to measure the experience of corruption that includes both direct and indirect experience.

2) Relative Importance of Corruption Experience

The level of perceived corruption will be affected by various factors, as can be seen in previous studies. Therefore, after examining whether echo chamber effect on corruption perception, psychological distance with government, acceptance of practices (cultural factor), government trust, demographic factors, etc. affect the perceived level of corruption, it is necessary to examine the relative importance of the influence of corruption experience and other factors on the level of perceived corruption. Therefore, the research hypothesis 2 is presented as below, and the subordinate research hypotheses on the influence factors are presented as follows.

Research hypothesis 2: Corruption experience is the most important variable explaining corruption perception.

(1) Echo chamber effect

The effect of echo chamber effect is that the subjective perception of an individual is influenced by others, and the perception of corruption through media is highly amplified (Johnston, 2001; Mishler & Rose, 2008; Jules & Villoria, 2014). The media aspect of echo chamber effect is the phenomenon that repetitive media coverages of corruption issues reinforce the existing perception of corruption by making people more insensitive to objective facts about corruption. The more people who are exposed to news about corruption reported by the media, the stronger the perception of corruption. In other words, the higher the degree of reliance on the media to obtain information on corruption in the public sector, the stronger the perception of corruption.

Research hypothesis 2-1: The higher the degree of media usage, the stronger the perception of corruption

Another aspect of echo chamber effect is that public perception of corruption of society in general, especially in the private sector affects perception of corruption in the public sector. If a person recognizes the seriousness of corruption in the private sector through our own business experience or conversation with the people around us, he or she is easy to perceive that corruption is prevalent in our society in general. As a result, the perception of corruption in the private sector can be transferred to the recognition that the level of corruption in our society, including the public sector. According to Cho et al. (2014), the perception of social irrationality is the strongest factor explaining whether businessmen have ever given money to public servants.

Research hypothesis 2-2: The higher the level perception of corruption in the private sector, the higher the level of perception of corruption in the public sector.

(2) Psychological distance to the government

Psychological distances to the government can be measured using the variable of experience of administrative services and political alienation. Frederickson and Frederickson (1995) introduced the notion of 'paradox of distance' to explain the negative perception of government ethics and the empirical research of Yu, Chen & Lin (2013) suggested that the public maintain a negative perception of general or abstract concept of government officials, while they positively perceive the government programs or bureaucrats they contact. In other words, people with less contact with government

officials, having a greater distance to the government, tend to have higher level of perception of corruption in the public sector.

Research hypothesis 2-3: The less contact with government officials, the higher the level of perception of corruption in the public sector.

Political alienation was dealt with as an important variable explaining corruption perceptions in Van de Walle (2008) and De Lancer Julnes and Villoria (2014). Political alienation is the perception that the general public is being excluded from the government's decision-making process or policy benefits. The strong link between political alienation and perception of government corruption has become evident in recent US political situations. White low-income voters have a strong sense of disgust and corruption in Washington politics. and according to Inglehart and Norris (2016), as more people among white working class consider themselves "ordinary people" and the federal politicians as "corrupt" establishment, the outsider political forces such as Donald Trump, who did not belong to the established politics, have emerged. As such, if the public accepts the frame that they do not have influence on the work of the government, and that the public officials are nothing more than the elite seeking their own interests, it is possible for them to recognize that government corruption is serious regardless of actual experience of corruption.

Research hypothesis 2-4: The stronger the political alienation, the higher the level of perception of corruption in the public sector.

(3) Acceptance of practices

Attitudes towards practices have a significant impact on corruption perceptions. In other words, the extent to which corruption is perceived depends on the individual's definition of what acts as corruption. According to Ko and Cho (2012: 6), the practice in relation to corruption is defined as "an act that is widely accepted practices in social norms, and is not easily judged as corrupt or not," pointing out that the boundary between practices and corruption is ambiguous. They emphasize that deciding whether the specific act of providing money to public officials is practice or corruption is a matter of an individual's subjective judgment. The study shows that individuals' acceptance of practices varies not only with the type of practice but also with demographic variables such as age and income (Ko and Cho, 2012:116-17). Therefore, there are people who accept the same act as a practice, while others perceive it as

corruption. From this point of view, if a person thinks of providing gifts and bonuses as a necessity in business processing or as a practice belonging to favor or courtesy, he or she is expected to perceive such behavior, not as corruption.

Research hypothesis 2-5: The the degree of acceptance of gifts and bonuses as a socially accepted practice, the lower the level of corruption perception.

(4) Government Trust

Corruption perception is closely related to the attitude toward the government. In previous studies, government trust is treated as a factor affecting the perception of corruption in the government and at the same time as a consequence of corruption perception. As the degree of government trust is higher, the level of corruption perception decreases (Uslaner, 2013; Jang, 2015; Kang and Ko. 2016), while higher corruption perception causes lower government trust (Jang, 2013; Uslaner 2013). As such interactive causal relationship can cause the problem of endogeneity, this study first examines whether there is endogeneity or not, before examining the effect of government trust on the perception of corruption

Research hypothesis 2-6: The lower the government trust, the higher the level of overall perception of corruption.

In addition, the above hypotheses were tested after including demographic control variables such as gender and age suggested in previous studies. The hypotheses are summarized in Table 1 below.

| Table 1 | Theoretical frame of analysis : factors affecting corruption perception

variables		
dependent variable	corruption perception in the public sector	
independent variable	echo chamber effect	media effect (+)
		corruption perception in the private sector
	psychological distance to the government (-)	number of visit for public service
		political alienation
		acceptance of practices (-)
		government trust (-)
		corruption experience (+)
control variables	gender, age, education, income, marital status, occupation, region, political inclination	

Note: The signs inside parentheses indicate the direction of the hypothetical causal relationship between the explanatory variables and dependent variables set in this study

2. Data and measurement of key variables

This study used one-on-one telephone interview data of 1,000 male and female adults aged 19 and over in Korea. The following survey sample was extracted from the population-proportional allocation sampling by gender, age and region. The area is divided into five regions: the metropolitan area, the Gyungsang area, the Chungcheong area, Jeolla area, and Gangwon-Jeju area. A structured questionnaire was used to conduct one-on-one telephone interviews using CATI (Computer-Assisted Telephone Interview) for 7 days from June 23 to June 28, 2017. The number of valid calls was 6,610, and the effective call response rate was 15.1 percent. The sample error of this survey is the maximum tolerance ± 3.1 percent at the 95 percent confidence level.

1) Dependent variable: the perception of corruption in the public sector

Tools for measuring the corruption perception in the public sector can be accessed in a variety of ways. The simplest approach is to use a single question, such as "How do you think the level of corruption in the public sector?" Yet measurement using a single question poses a problem in the reliability of measurement tools (Carmines & Zeller, 1979). In addition, if the measurement subject is abstract and multidimensional, there is a problem in validity because the researchers do not know which sub-dimension the

respondents had in mind. Therefore, it is desirable to measure public sector corruption perception using multiple questions.

The perception of corruption in the public sector can be divided into perception of corruption in general and perception of corruption of a specific organization. This study divides the perception of corruption by potential subject of committing corrupt behaviors – the perception of corruption of politicians such as lawmakers and the perception of corruption of public officials. We also divide the perception of corruption by the severity of corrupt behavior - grand corruption and petty corruption. The United Nations Office on Drugs and Crime (UNODC) separates grand corruption and small corruption, defining the former as "corruption that leads to abuse of power by spreading over the highest positions in the government" and it “rapidly undermines the rule of law, economic stability and government trust (UN, 2004: 23). Grand corruption is a crime we often call power-related corruption, in which "state capture" occurs where senior officials mobilize the official state apparatus for personal gain. On the other hand, Petty corruption is a phenomenon that the delivery of administrative services is distorted by the low-ranking public servants.²⁾

In this study, we use five questionnaires regarding the degree of corruption of politicians, central and local government officials, high-ranking public officials, municipal civil servants, and all public officials (including public institutions). Table 2 provides the descriptive statistics of the levels of perceived corruption measured by the 6-point scale. It is noteworthy that the perceived levels of corruption of high-ranking officials and politicians are high as that of the frontline institutions is low.

| Table 2 | Factor analysis of the level of corruption perception in the public sector

type		actor	mean (standard deviation)	communality
corruption in the public sector	public officials in general	all public officials	4.50(0.95)	0.36
	political corruption	politicians	5.13(0.92)	0.64
	administrative corruption	government officials	4.57(1.07)	0.46
	grand corruption	high-ranking officials	5.10(0.96)	0.33
	petty corruption	mid-, low-ranking officials	3.45(1.17)	0.64

2) Rose-Ackerman & Palifka (2016: 26) call grand corruption as “high-level corruption,” while Mishler & Rose(2008: 5) call grand corruption as “elite corruption” and petty corruption as “street-level corruption.”

On the other hand, factor analysis was conducted to determine whether the level of perceived corruption could be reduced to a single level of comprehensive public sector corruption. As a result of factor analysis using squared multiple correlation and varimax rotation, five questions had a single dimensionality and the eigen value was 2.44 and 59.4 percent of total variance is explained by a single factor. The Kronbach alpha value was also 0.82(N=952), which showed high internal consistency and high reliability.

2) Independent variables

(1) The experience of corruption

If the experience of corruption is measured only by direct experience, there is a risk of underestimating the level of corruption and the "no experience" response is overrepresented by the avoidance of negative questions. There is also the possibility of an intentional reduction response in consideration of the investigator. Thus, in this study, both direct experience and indirect experience were measured at the same time. First, respondents were asked whether they had been asked explicitly or implicitly from public officials to provide money, hospitality or gifts. This is a questionnaire survey of corruption victims surveyed mainly in TI's global corruption barometer(GCB). In the second question on direct experience, respondents were asked whether they had provided money, hospitality, or gifts to the public officials. The final question is related to the indirect experience of corruption, asking if respondents had ever seen or heard of their family, relatives, close acquaintances or colleagues providing money, hospitality or gifts to public officials. Comprehensive corruption experience variable has a value of 1 if answered "yes" to any of the three experience questions, and 0 if none.

As a result of the survey, the percentage of people who experienced corruption in public relations was 9 percent. On the other hand, the percentage of people who experienced indirectly corruption was very high at 37 percent. 39.2 percent of the respondents answered yes to at least one of the three questions, which was considered as comprehensive corruption experience. These results are significantly higher than those of the Survey on the Level of Public Sector Corruption(2-3 percent since 2013), in which business people were asked to respond about the direct or indirect experience of providing money, entertainment, and convenience to public officials.

| Table 3 | The experience of corruption

variables	rate of those who have experience
Experience of being explicit or implicit asked to provide money, hospitality or gifts	9.4%
Experience of providing money, hospitality or gifts	8.6%
Experience of witnessing family, friends, colleagues providing money, hospitality or gifts	36.8%
Comprehensive experience of corruption	39.2%

(2) Government Trust

In order to measure how much people trusts the government, we asked the question "how much do you trust our central government?" and the response was measured on a 6-point scale, from "I do not trust the government at all" (1) to "I trust the government very much" (6). The number of respondents who answered "I do not trust" (1 ~ 3) was smaller(43.7 percent) than those who responded "I trust" (4 ~ 6). However, at the Survey on Social Integration conducted by Korea Institute of Public Administration (KIPA) in September and October of 2016 measuring the trust of the central government on a 4-point scale, only 24.6 percent of respondents answered "I trust very much" and "I trust a little (KIPA, 2016b:304)." This difference seems to reflect the public's high expectations for the new government that was launched through the impeachment of the former president. Government trust varies depending on political inclination; among the respondents who answered that their ideology was 'progressive', 61.4 percent answered that they trust the government, but only 36.7 percent of the respondents who are 'very conservative' answered that they trust the government.

(3) Echo chamber effect

Echo chamber effect was measured by media effect and the effect of corruption perception in the private sector. First, the media effect was measured by individual media use. This was measured by how many hours they use on average a weekly TV or radio broadcast, Internet (newspaper, blog) and social network service (KakaoTalk, YouTube, Facebook). As shown in Table 4, respondents mostly use less than two hours of media, especially news and current information using the Internet and SNS. There

are also groups that do not use SNS at all, suggesting that digital divide exists. According to the analysis of data, 55 percent of 60 or more age group (n = 242) answered that they obtain no news or current information through SNS, which is very different from 2.72 percent of their counterparts in 20s. The media usage is based on the average of three types of media usage. Yet there may be differences depending on media types, thus the effects by type of media were analyzed individually in the sensitivity analysis,

| Table 4 | Media use

	TV or radio (%)	the Internet (%)	SNS(%)
not at all	7.4	16.8	34.91
less than an hour	36.9	44.1	42.05
two hours	26.6	20.4	11.77
three hours	13	8.8	5.13
four hours	5.8	3.5	1.71
more than five hours	10.3	6.4	4.43

In order to measure the perception of the extent of corruption in the private sector, we asked, "how do you think the level of corruption in the private sector, including corporations, civic groups, and media, in general?" All of these types of perceptions of corruption were measured using the 6-point scale from "not at all serious" (1) to "very serious" (6). Response results show that 85.9 percent of the respondents said that they are somewhat serious, serious or very serious.

(4) Psychological distance to the government

The psychological distances to the government were measured using the frequency of contact with government officials and the political alienation. The psychological distance of the administration felt by the individual was measured by the frequency of contact with public officials. The questionnaire for this purpose was "how often have you met public officials for business purposes over the past year?" The answers were "not at all", "1 to 3 times," "4 to 6 times," "7 to 9 times," "10 to 12 times," and "more than 13 times."

41.1 percent of the respondents said that they did not have it at all, and 67.5 percent said that they had less than 3 times. The mean of six-point scale was very low, making it difficult to have a meaningful analysis. Thus we change the variable into binary scale. If respondents have ever been in contact with government officials for the past year, we gave a value of 1, or 0 if not. About 60 percent of the respondents said

they have had business contacts with government officials during the past year.

To measure political alienation we modified and use part of the political alienation scale used in the Korea Social Integration Survey conducted by KIPA. The results of the four political alienation questions are shown in Table 5 below. As a result of the analysis, the political alienation of the people of Korea was not small. As large as 55.4 percent of the respondents think that they cannot influence the government's policies. while 61.3 percent of the respondents think that politicians will not accept opinions from the public. 88.3 percent believe that politicians pursue not the interests of the people but their own interests.

| Table 5 | Political alienation

type	disagree(1~3)	agree(4~6)	mean (standard deviation)
I do not have any influence on the work of the government	43.4%	55.4%	3.76 (1.59)
The government is not interested in my opinions	38.1%	61.3%	3.98 (1.48)
The important issues in our society and what the government does are too complicated for me to understand	52.2%	47.2%	3.47 (1.49)
Politicians seek their own interests	11.1%	88.3%	4.95 (1.13)

* disagree = strongly disagree + disagree + weakly disagree
agree = weakly agree + agree + strongly agree

(5) The acceptance of Practices

Gray corruption was often justified as socially accepted practices. In order to measure the acceptance of the practices, we modified the items used in Ko and Cho(2012). We gave five example questions that can be considered as corruption and measured how much respondents agree that the examples were corruption.

As Table 6 suggests, there was a difference in the acceptance of practices depending on the type of practice. In the case of promotion decision according to the school ties, the acceptance rate of the practice was low and as high as 79 percent of respondents considered it as corruption. In the case of police officers received money from businesses under their jurisdiction during holidays, 71 percent thought it as corruption. On the other hand, in the case of teachers treated with 30 dollars worth of meal from the parents of students on the teacher's day, 61 percent thought that it was not a corrupted behavior. In this case, the acceptance rate of the practice was generally high.

For the convenience of statistical analysis, the response to the questionnaire was inversely coded to mean that the higher the response value, the higher the acceptance rate.

| Table 6 | Whether to agree that the following actions are corrupt behaviors

type	disagree(1~3)	agree(4~6)	mean (standard deviation)
City hall officials received a gift worth 50 dollars from the vendor	40.7%	59.0%	3.86 (1.54)
In public agency personnel, the chief director promoted his high school junior among promotion candidates with similar conditions	19.0%	79.1%	4.62 (1.37)
The public official received a donation of 100 dollars from the supplier for the child's marriage	48.1%	51.4%	3.65 (1.53)
Teacher received a meal worth 30 dollars from parents on Teacher's Day	61.4%	38.6%	3.21 (1.53)
Police officers received 300 dollars the juridical company for the holidays and used it as the operating cost of the institution	27.6%	71.2%	4.35 (1.50)

* disagree = strongly disagree + disagree + weakly disagree
 agree = weakly agree + agree + strongly agree

(6) Other control variables

The political orientation is a 5 point scale of Riccart. 1 is 'very progressive', 2 is 'progressive', 3 is moderate, 4 is slightly conservative, and 5 is very conservative. Sex was treated as a binomial of 1 for males. The monthly average income was treated as an ordinal variable of 1 for less than 1 million won and 8 for more than 10 million won. Age was the age of the respondent. Marital status was divided into married, unmarried, and other. The analysis results are interpreted based on the married group. Education was treated as an ordinal variable of 1 for undergraduate and 6 for graduate and above. Occupation is divided into (1) farming, forestry and fishing, (2) self-employed, (3) retail, sales, and service, (4) production, technical and simple labor, (5) office, management and professional, (6) civil servant, teacher and public institution employee, (6) full-time housewife, (7) student, and (8) unemployed and retired. Each variable was treated as a binomial variable. The results of the analysis are interpreted on the basis of the first group. The region was divided into five regions including the metropolitan area, Gyung-sang area, Chungcheong area, Jeolla area, Gangwon and Jeju area. The analysis results are interpreted based on the metropolitan area.

IV. Analysis

1. The causal effect of corruption experience on corruption perception

In general, variables affecting corruption perceptions also influence corruption experience. In other words, variables such as age, the acceptance of practices, occupation, and political inclination affect corruption experience and perception of corruption. Therefore, we should analyze the differences between the groups with or without the experience of corruption after controlling for these variables in the model.

In order to measure the effect of corruption experience on corruption perception, the previous studies measured the difference between the average corruption perception of the corruption-experienced group and that of the inexperienced group using OLS as follows:

$$\hat{\delta}_{PF} = E(Y_1|D=1, X) - E(Y_0|D=0, X)$$

(D is whether with or without corruption experience, X is covariance vector, Y is the level of corruption perception)

However, in this study, it is difficult to see that the corruption-experienced group and the inexperienced group are randomly allocated, and because there is a possibility of self-selection, we need to use the difference with counterfactuals in order to accurately measure the effect size of corruption experience. That is, in the case of the corruption-experienced group, the magnitude of the effect of the corruption experience should be analyzed by using the difference between the level of corruption perception when the group experienced corruption and the level of corruption perception when the group did not experience it. This is called the average treatment effect of the treated (ATT). When attempting to measure ATT, there is a fundamental problem that we cannot observe the level of corruption perception of corruption-experienced group if they did not experience corruption,

Similarly, for groups that have not experienced corruption, the magnitude of corruption experience can be analyzed using the difference between corruption perception of the group when they experience corruption and that of the group when they did not experience it. It is called the average treatment effect of the untreated (ATU).

[Table 7] The levels of corruption perception according to the groups with or without corruption experiences

	corruption perception with experience	corruption perception without experience	difference
D=1 (corruption- experienced group)	observable	counterfactual(C_1)	ATT
D=0 (corruption- iexperienced group)	counterfactual(C_2)	observable	ATU

The results of the regression analysis using OLS show that the difference between the causality effect and the true causality is as follows (Morgan & Winship 2007: 46).

$$\begin{aligned}\hat{\delta}_{PF} &= E(Y_1|D=1) - E(Y_0|D=0) \\ &= \delta + \{E(Y_0|D=1) - E(Y_0|D=0)\} + (1 - \pi)\{E(\delta|D=1) - E(\delta|D=0)\}\end{aligned}$$

That is, it can be seen that average treatment effect $\hat{\delta}_{PF}$ measured using the OLS are composed of the true mean, δ , $\{E(Y_0|D=1) - E(Y_0|D=0)\}$ and $(1 - \pi)\{E(\delta|D=1) - E(\delta|D=0)\}$. This is called the *prima facie* causal effect (Holland 1997). $\{E(Y_0|D=1) - E(Y_0|D=0)\}$ is the difference between the effect of treated group without actual treatment and that of control group without actual treatment.

The traditional method used to solve such problem is to infer the effect of counterfactual using propensity score. In other words, by using the values of the policy effect variables of the control group with the same or similar covariate as the treatment group, counterfactual effect (C_1) is measured, and similarly, by using the effect of treatment group with the same or similar covariate as the control group, counterfactual effect (C_2) is measured. By doing so, ATT and ATU are calculated and weighted mean of ATT and ATU is the true causal effect (Guo & Fraiser 2010). This is called the average causal effect (ACE).

However, this simple matching method causes a problem that all unmatched values are lost. In other words, the left and right distributions of the distribution of each group are censored, and the representativeness of the population is lost, thus violating the random selection assumption (Shadish et al. 2002: 161-166). Since the data used in this study have not enough number of observations of those who experienced corruption,

the simple matching method has a risk of losing sample information and being biased.

Therefore, this study used an augmented inverse probability weight (AIPW) approach that combines the regression-adjusted method and the matching method (Lunceford & Davidian 2004). The AIPW method estimates the effect by doubly robust estimation using the inverse probability weight (IPW) using the reciprocal of the propensity score and the regression estimator of the dependent variable. In this equation, \hat{y}_{0i} means the value of the dependent variable estimated by using the regression equation that estimates the dependent variable when $D=0$, and \hat{y}_{1i} means the value of the dependent variable estimated using the regression equation that estimates the dependent variable when $D=1$.

$$\hat{\mu}_0^{aipw} = \frac{1}{n} \sum_{i=1}^n \left\{ \frac{(1-d_i)y_i}{1-\hat{e}_i} + \hat{y}_{i0} \frac{(d_i-\hat{e}_i)}{1-\hat{e}_i} \right\}$$

$$\hat{\mu}_1^{aipw} = \frac{1}{n} \sum_{i=1}^n \left\{ \frac{d_i y_i}{\hat{e}_i} - \hat{y}_{i1} \frac{(d_i - \hat{e}_i)}{\hat{e}_i} \right\}$$

Hence, it is calculated as $ATE_{aipw} = \hat{\mu}_1^{aipw} - \hat{\mu}_0^{aipw}$

In order to apply the matching method, the common support assumption must be satisfied. The distributions of propensity scores of the treatment group and the control group to estimate the propensity score using the logistic regression analysis are shown in Figure 1, so that the common support hypothesis appears to be satisfied. Also, we need to assume that covariate X satisfies $Y_1, Y_0 \perp\!\!\!\perp D | X$, in order to meet the ignorability condition.

[Figure 1] Whether Common support assumption is satisfied or not

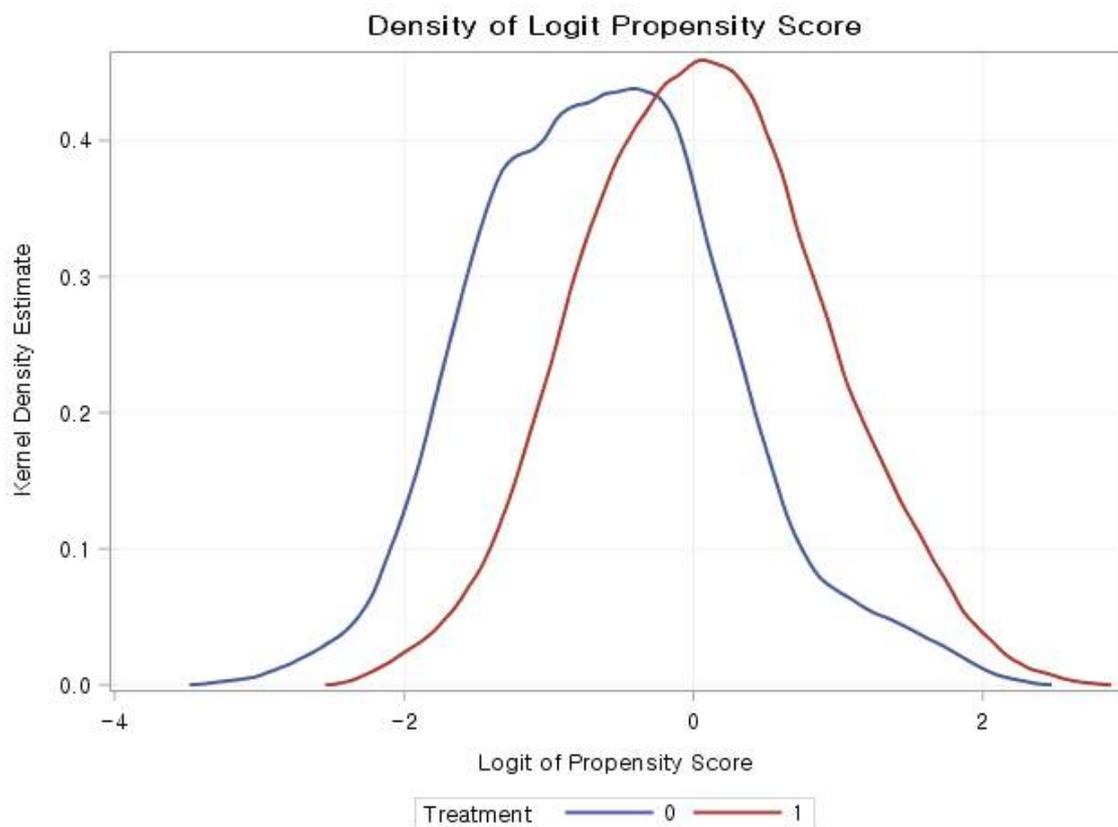


Table 8 shows the covariance differences of standardized variables before and after performing inverse probability weighted matching. In order to adjust the scale difference between the variables, the variables were standardized before the differences were compared. If we look at the covariance of government trust, the difference between corruption-experienced and inexperienced groups is -.20 before applying IPW, which is statistically significant. In other words, the inexperienced group has less trust in the government than the experience group. In addition, the variance ratio of the experienced group and the inexperienced group is also 1.26, showing that the difference in government trust among people in the corruption-experienced group is greater than that among people in the inexperienced group. If there is a difference in the mean and variance of government trust between the corruption-experienced group and the corruption-inexperienced group, we cannot tell whether the difference in the perception of corruption between the two groups is due to differences in government trust or merely because of corruption experience. However, when the IPW is applied, there is hardly any difference between the means of the two groups, and the variance difference is also decreasing. This suggests that IPW matching can be used to effectively control covariance, so that we can accurately measure average treatment effect between the two

groups.

Similarly, groups with experience of corruption appear higher in government service experience (by 0.47 standard deviation), in the acceptance of practices (by 0.17 standard deviation), in income (by 0.25 standard deviation) and in age (0.33 standard deviation), in comparison to the group without corruption experience. This shows that the corruption-experienced group has more government service experience, higher acceptance of practices, income, and age than the inexperienced group. However, the difference between these groups is shown to be greatly reduced in the process of IPW matching.

[Table 8] The mean and variance of the covariates before and after the application of IPW

Difference: (Treated Group-Control Group)					
Parameter		Standardized Difference		Variance Ratio	
		Unweighted	Weighted	Unweighted	Weighted
trust**		-0.2027	-0.0048	1.2659	1.1422
MED		0.0216	0.0076	0.9964	1.1248
contact**		0.4673	-0.0124	1.2987	0.8494
ISOI		0.0555	0.0056	1.0458	1.0315
Cul		0.1725	0.0088	1.1337	1.1755
POL**		-0.1055	-0.0062	1.0632	1.0487
INC**		0.2464	-0.0211	0.9351	0.9141
AGE		0.3331	0.0202	0.7037	0.8936
EDU		0.0714	-0.0188	0.9079	0.9031
SEX	1	-0.0219	-0.0018	1.0010	1.0001
SEX	2				
MAR**	1	0.2573	-0.0192	0.7442	1.0209
MAR	2	-0.2999	0.0143	0.6670	1.0184
MAR	3				
Area	Suppressed				

Table 9 shows the results of estimating the average treatment effect (ATE) using AIPW. In this study, we divided the experience of corruption into the experience of being directly asked to provide money to the government officials, the experience of providing money directly, the experience of witnessing others providing money, and the comprehensive experience that counts any of these three experience.

If we look at the magnitude of the effect of comprehensive experience, those who

experience corruption show 0.25 point increase in perception of corruption compared to those who have not experienced corruption. In other words, if people experience corruption, we can say that the level of perceived corruption is about 5.6 percent higher than their inexperienced counterparts. This effect is statistically significant.

It is noteworthy that in the case when directly asked to provide money, the corruption perception increased by 0.38 points compared to the case of not being asked. However, in the case when they themselves directly provided money, the perception of corruption increased only by 0.1 point and the difference is not statistically significant. This is probably because people justify their behavior of providing money as a socially accepted practices. In the previous studies, when a corruption experience was measured, it was often measured by using a single question - asking about experience of both providing and being asked to provide money. In this case, since corruption experiences are measured with different effects, the effect of corruption experience on the level of perceived corruption might not be clearly identified.

On the other hand, if people witness other people's experience of bribery, the level of perceived corruption increases by 5.3 percent. This implies that the level of corruption perception can also be significantly affected by indirect experience.

[Table 9] Estimation of Averages Treatment Effects using AIPW method

Parameter	Treatment Level	Estimate	Robust Std Err	Wald 95% Confidence Limits		Z	Pr > Z
comprehensive experience	1	4.7117	0.0426	4.6281	4.7953	110.51	<.0001
	0	4.4634	0.04	4.385	4.5417	111.69	<.0001
	ATE	0.2483	0.0569	0.1368	0.3599	4.36	<.0001
being asked to provide	1	4.9163	0.0831	4.7535	5.0791	59.19	<.0001
	0	4.5216	0.0295	4.4638	4.5795	153.15	<.0001
	ATE	0.3947	0.0878	0.2227	0.5667	4.5	<.0001
directly provide	1	4.6473	0.074	4.5023	4.7923	62.81	<.0001
	0	4.5509	0.0289	4.4942	4.6075	157.58	<.0001
	ATE	0.09645	0.0784	-0.05723	0.2501	1.23	0.2187
indirectly witness	1	4.7156	0.045	4.6275	4.8037	104.9	<.0001
	0	4.4787	0.0368	4.4065	4.5508	121.68	<.0001
	ATE	0.237	0.0567	0.1259	0.3481	4.18	<.0001

2. The relative importance of corruption experience to the level of corruption perception

Corruption experience is only one of many explanatory variables on the level of corruption perception. Therefore, it is necessary to examine how corruption experience is more important than other explanatory variables in explaining perceived corruption levels. At this time, there is a risk that estimators can be biased if there is an endogeneity problem between government trust and corruption perception. In order to solve this problem, instead of using corruption perception as dependent variable, we use the estimates of dependent variables of the potential control group and the potential treatment group as the dependent variables, which are estimated through the AIPW approach. After that, we measure the degree of explanatory variables explaining the dependent variable using Type III sum of squares.

As can be seen in Table 10, among the various factors suggested to affect the perceived levels of corruption, the variables such as media use, contact with public officials, income, political orientation, age, gender, and marital status have low explanatory power. On the other hand, cultural factors such as the acceptance of practices, corruption experience, government trust, and political alienation are statistically significant variables explaining the level of perceived corruption.

As can be seen in Table 10, in the case of comprehensive corruption, the acceptance of practices and corruption experience account for 23.67 percent and 18.30 percent of the variation of dependent variables explained by the whole independent variables, respectively. However, in the case of directly being asked to provide money, corruption experience accounts for 73.8 percent of the total variation of dependent variables, showing that corruption experience is the most important explanatory variable.

On the other hand, in the case of government trust, it appears that it affects the perceived corruption as a whole. However, if the experience of directly providing money is defined as corruption experience, it does not affect the level of the corruption perception. After all, if the citizen has experience of providing money directly, it shows such experience of corruption does not affect the corruption perception, and rather is influenced by cultural factors such as the acceptance of practices.

[Table 10] Type III sums of squares and of explanatory variables affecting corruption perception

	comprehensive experience	being asked to provide	directly provide	indirectly witness
corruption experience	27.03(18.3)	65.44(73.84)	13.16(6.93)	27.03(18.3)
trust	15.16(10.26)	24.72(27.89)	9.88(5.2)	15.16(10.26)
MED	2.71(1.84)	3.81(4.3)	8.44(4.44)	2.71(1.84)
contact	0.43(0.29)	0.18(0.21)	0.03(0.02)	0.43(0.29)
ISOI	24.95(16.89)	2(2.26)	16.45(8.66)	24.95(16.89)
Cul	34.96(23.67)	33.37(37.65)	44.05(23.18)	34.96(23.67)
POL	3.67(2.48)	0.33(0.37)	5.03(2.65)	3.67(2.48)
INC	2.29(1.55)	8.02(9.04)	6.62(3.48)	2.29(1.55)
AGE	0.06(0.04)	1.11(1.25)	7.61(4)	0.06(0.04)
EDU	11.09(7.51)	6.02(6.79)	3.23(1.7)	11.09(7.51)
SEX	4.23(2.87)	2.61(2.95)	3.27(1.72)	4.23(2.87)
MAR	5.52(3.74)	7.41(8.36)	34.77(18.3)	5.52(3.74)
AREA	15.6(10.56)	36.74(41.46)	37.52(19.74)	15.6(10.56)

* The values in parentheses show how much each explanatory variables explain the variance of dependent variable.

V. Results and discussions

The results of the previous studies arguing that the correlation between corruption experience and corruption perception were weak were mostly in the study of countries as observation unit and they have limits in that the variables affecting the corruption experience had also an influence on perceived level of corruption, that is, they failed to solve the endogeneity problem. In order to overcome this problem, this study estimated the difference of corruption perception according to the experience of corruption using the augmented reverse probability weighting (AIPW) technique. AIPW uses regression analysis to control the effects of other independent variables, estimates dependent variables, and performs matching using the propensity score to estimate average treatment effect. AIPW thus has the advantage that it can control the endogeneity problem when estimating the perceived level of corruption, and it can analyze

observation data similar to random assignment. According to the results of the analysis, unlike the previous studies, when the corruption experience is measured as the total experience considering both direct and indirect experiences, the level of perceived corruption experienced by those who experience corruption is about 5.6 percent higher than the case without corruption experience. However, when the corruption experience is defined as the case of providing money directly, it shows that corruption perception is also low and is only 2.1 percent higher than the group without providing money directly. On the other hand, the experience of being asked to provide money directly from government officials appears to be the most important variable determining corruption perception. In other words, depending on how the experience of corruption is defined, the difference in the perception of corruption due to corruption experience may be different. Therefore, the reason that previous studies showed low relationship between corruption experience and perception is that they used the experience of directly providing money to measure corruption experience.

On the other hand, corruption perception is influenced by various explanatory variables besides corruption experience; cultural factors, corruption experience, political alienation, and government trust have been shown to have a great influence on corruption perception. In particular, when we define corruption experience as the experience of directly providing direct money, the experience of corruption accounts for only 6.93 percent of the corruption perception, while the acceptance of practice explains 23.18 percent. Therefore, it can be interpreted that the corruption perception is more influenced by cultural factors such as the acceptance of practice than by the experience of directly providing money.

The results of this study provide some implications for the study of the relationship between corruption experience and the level of corruption perception. First, the measurement of corruption experience should not be limited to the case of providing money directly, but should be analyzed comprehensively, including cases of witnessing person nearby is asked to provide money. If we define the corruption experience as only direct providing of money, we may erroneously conclude that there is no relationship between corruption experience and the level of corruption perception.

Second, in the case of both direct and indirect experiences, corruption-experienced group has higher level of perceived corruption than the inexperienced group. However, considering the fact that the level of perceived corruption is still high even in the case of corruption-inexperienced group, it means that it is impossible to lower the perceived level of corruption sufficiently by reducing corruption experience. Despite the fact that corruption has actually declined in Korea due to the steady promotion of anti-corruption policy, the perceived level of corruption of citizens is still high because the factors

other than corruption experiences have not changed significantly.

Third, in order to improve corruption awareness, the government needs to use approaches to change social and cultural factors in addition to current approach of reducing actual corruption. As can be seen in this study, corruption perception is influenced by various factors such as political alienation, demographic factors, regional factors, and political factors. Especially, the cultural factor measured using the acceptance of practices is very important. Therefore, it is necessary to carry out policies to enhance government trust and create a cultural environment that does not tolerate small corruption or gray corruption. In this respect, the 'high-road' approach, which shows good examples of government officials, can be more effective than a simple 'low-road' approach which only focuses on detection and punishment of corruption crimes. For example, Singapore, known as a country of integrity, has a Corrupt Practices Investigation Bureau (CPIB) as a strong anti-corruption body directly under the prime minister. CPIB has released "stories of integrity" on its homepage, showing the cases of public servants including police officers and immigration officers rejected a bribe. This strategy can contribute to reducing the level of perceived corruption of citizens.

In this study, the concept of corruption is limited to the provision of money. However, corruption can be defined in a much wider range, including unfairness in performance of duties, abuse of authority, red tape, and unethical deviances. If corruption is broadly defined, the extent of the experience of corruption will be much wider and its impact on corruption perception may be greater. In future research, it will be necessary to identify the public sector corruption practices that citizens have in mind and measure the effects of corruption practices on the level of corruption perception.

References

- Atkinson, M. M. (2011). Discrepancies in perceptions of corruption, or why is Canada so corrupt?. *Political Science Quarterly*, 126(3), 445-464.
- Charron, N. (2016). Do corruption measures have a perception problem? Assessing the relationship between experiences and perceptions of corruption among citizens and experts. *European Political Science Review* 8(1),147-171.
- Colleoni, E., Rozza, A., & Arvidsson, A. (2014). Echo chamber or public sphere? Predicting political orientation and measuring political homophily in Twitter using big data. *Journal of Communication*, 64(2), 317-332.
- De Lancer Julnes, P., & Villoria, M. (2014). Understanding and addressing citizens' perceptions of corruption: the case of Spain. *International Review of Public Administration*, 19(1), 23-43.
- Donchev, D. and G. Ujhelyi (2014). What Do Corruption Indices Measure?, *Economics & Politics*, 26(2): 309-331.
- E-national index. the perception of corruption.
http://www.index.go.kr/potal/main/EachDtlPageDetail.do?idx_cd=1034(accessed on July 20, 2017)
- Ferraz, C., & Finan, F. (2008). Exposing corrupt politicians: the effects of Brazil's publicly released audits on electoral outcomes. *The Quarterly Journal of Economics*, 123(2), 703-745.
- Frederickson, H. G., & Frederickson, D. G. (1995). Public perceptions of ethics in government. *The ANNALS of the American Academy of Political and Social Science*, 537(1), 163-172.
- Il-hyung Cho, Hyunchul Lee, Kihun Kwon. (2014). A study on causal factor of public corruption : Focusing on awareness of businessmen and business operators. *Korean Journal of Public Administration*, 23(1), 39-63.
- Inglehart, R., & Norris, P. (2016). Trump, Brexit, and the Rise of Populism. Faculty Research Working Paper Series RWP 16-026. Harvard Kennedy School.
- Jiwon Jung, Chisung Park. (2012). Influences of Nepotism on Public Servant Corruption : Comparing Individual Aspect of Corruption and Power-related Corruption. *Korean Society and Public Administration*, 23(3), 369-403.
- Johnston, M. (2001). Measuring corruption: Numbers versus knowledge versus understanding. In Jain, Arvind K. (ed.), *The Political Economy of Corruption*, 157-179. London: Routledge.
- Johnston, M. (2001). The definitions debate: Old conflicts in new guises. In Jain, Arvind K. (ed.), *The Political Economy of Corruption*, 157-179. London: Routledge.

- Jung-suk Kang, Jaekwon Ko. (2016). Analysis of Factors Affecting Public Perception of Government's Corruption. *Korea Economic Forum*, 9(3), 41-63.
- Junoong Lee, Eunmi Kim, Misun Shim. (2006). Exploring Dispositional Media Use Motives : An Extension of the 'Uses and Gratification' Theory in a Multimedia Environment. *Journal of Communication Studies*, 50(1), 252-284.
- Junseok Kim, Jinman Cho, Kihong Um. (2011). An Empirical Analysis of Differences in the perception of corruption: What factors contribute to the difference in perceptions of corruption among citizens in the public sector? *Korean Society and Public Administration*, 21(4), 343-371.
- Kilkon Ko, Hyunwoo Tak, Sejin Kang. (2015). The Effect of the Reverse Coding of the Question on the Response Result in the Questionnaire. *Korean Public Administration Review*, 49(3), 515-539.
- Kilkon Ko, Su-yeon Cho. (2012). The acceptance of practice and corruption. *Korean Public Administration Review*, 46(3), 213-239.
- KIPA. (2016a). Research Survey on the Level of Perception of Public Corruption in Korea.
- KIPA. (2016b). Korea Social Integration Survey.
- Mauro, p. (1995). Corruption and Growth. *Quarterly Journal of Economics*, 110(3), 681-712.
- Melgar, N., Rossi, M., & Smith, T. W. (2010). The perception of corruption. *International Journal of Public Opinion Research*, 22(1), 120-131.
- Mishler, W., & Rose, R. (2001). What are the origins of political trust? *Comparative Political Studies*, 34(1), 34-62.
- Mishler, W., & Rose, R. (2008). Seeing is not always believing: Measuring corruption perceptions and experiences. In *Elections, Public Opinion and Parties 2008 Annual Conference* (pp. 12-14).
- Morris, S.D. and J.L. Klesner (2010), Corruption and trust: theoretical considerations and evidence from Mexico, *Comparative Political Studies* 43(10), 1258-1285.
- Pázmándy, M. (2011). Socio-economic influences on corruption perception: Empirical evidence from 27 European Countries. *Hamburg Review of Social Sciences*, 6(2), 52-80.
- Rose, R., & Mishler, W. (2010). Experience versus the perception of corruption: Russia as a test case. *Global Crime*, 11(2), 145-163.
- Rose-Ackerman, S., & Palifka, B. (2016). *Corruption and Government: Causes, Consequences, and Reform*. Cambridge Univ. Press.
- Rothstein, B. (2011). *The Quality of Government*. Univ. of Chicago Press.
- Seligson, M. A. (2002). The impact of corruption on regime legitimacy: A comparative

- study of four Latin American countries. *Journal of Politics*, 64(2), 408-433.
- Sunstein, C. R. (2017). *# Republic: Divided Democracy in the Age of Social Media*. Princeton University Press.
- Transparency International(2013a). *Global Corruption Barometer*.
- Transparency International(2013b). *Corruption Perception Index*.
- United Nations, (2004). *United Nations Handbook on Practical Anti-Corruption Measures for Prosecutors and Investigators*, Vienna, Austria.
- Uslaner, E. M. (2013). "Trust and corruption revisited: how and why trust and corruption shape each other." *Quality & Quantity* 47(6): 3603-3608.
- van de Walle, S. (2008). Perceptions of corruption as distrust? Cause and effect in attitudes towards government. In Huberts, L., Jurkiewicz, C., & Maesschalck, J. (eds.), *Ethics and Integrity and the Politics of Governance*, 215-236. Cheltenham: Edward Elgar.
- Yongbok Jung. (2015). A Study on Co-orientation for Corruption Perceptions between Officials and Journalists in Jeju. *Journal of Communication Science*, 15(4), 349-404.
- Yongjin Jang. (2013). Causes of Government Trust: Comparative study between countries. *Journal of Government Studies*. 19(3).
- Yu, C., Chen, C. M., & Lin, M. W. (2013). Corruption perception in Taiwan: reflections upon a bottom-up citizen perspective. *Journal of Contemporary China*, 22(79), 56-76.