



A Transaction Cost Economics Analysis of Corruption: Survey Evidence from Public Healthcare Services in Vietnam

Phuc-Hai Nguyen^{1*} and Xuan-Nam Pham¹

¹Faculty of Economics, National Economics University, 207 Giai Phong Road, Hanoi, Vietnam.

Authors' contributions

This work was carried out in collaboration between both authors. Author PHN designed the study, wrote the protocol and wrote the first draft of the manuscript. Author XNP managed the data collection process. Both authors performed the statistical analysis, read and approved the final manuscript.

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ABSTRACT

This study aims to investigate the internal stability of corrupt transaction. By employing survey data of 274 public healthcare service users, through the lens of transaction cost economics, we revealed that social capital can play role of safeguard for a corrupt transaction. Moreover, the paper provides evidence to support hypothesis that parochial corruption has greater stability in comparison with market corruption. Hence, corruption is regarded as identity-specific transaction, and anti-corruption policy should focus on creating high transaction cost environment for this phenomenon.

Keywords: Market corruption; parochial corruption; reciprocity; transaction cost; trust.

1. INTRODUCTION

Corruption is considered as one of the modern evils, and public healthcare service is characterized with high risk for this phenomenon. Literature has been largely focused on causes and consequences of corruption. [1] pointed out 3 main approaches to the problem of corruption: sociocultural, economic and institutional. Sociocultural approach explains why individuals are pushed toward corrupt activities by their cultural values and social pressure. Economic approach focuses on economic incentives and opportunities to engage in corrupt transaction by assuming that corrupt behavior is a rational choice of agents. Institutional explanation, combining both above mentioned approaches, emphasizes on the types and forms of corruption, argues that corrupt transaction has governance structure and safeguarding mechanism. Taking the view point of transaction cost economics (TCE), a branch of institutional economics, this study attempts to look at corruption from the inside.

TCE insists that economic exchange exists when transaction cost is minimized [2]. Due to the illegal nature of corrupt transaction, agents involved in are not protected by legal framework, transaction cost is high [3]. Therefore, informal enforcement mechanism is required for this kind of transaction. From this perspective, this study aims to investigate the role of social capital, key elements of which are trust and reciprocity, in safeguarding corruption. Assuming that corrupt deal requires secrecy and camouflage, this paper focuses on the classification of corruption suggested by [4]: market corruption and parochial corruption. This helps us to investigate the role of identity and social relationships in granting stability for corrupt transaction.

The key idea of choosing public healthcare services for analysis is the fact that various types of corruption may exist in this sector [5]. Public healthcare in Vietnam is characterized with high corruption perception, but the number of officially detected corrupt behavior is relatively small [6]. This implies that corruption could have been internally stabilized. Hence, this study aims to identify the determinants of this stability.

This paper is organized as follows. The next section presents the theoretical background of key concepts and the development of proposed hypotheses. The research method is then

outlined. Results, discussions and policy recommendations make up the final sections of the paper.

2. LITERATURE BACKGROUND AND HYPOTHESES

2.1 The Definition and Classifications of Corruption

2.1.1 The definition of corruption

In the past few decades, many researchers, employing various different approaches, had attempt to define the corruption phenomenon. However, it is difficult to give a concise answer that covers all aspect of the simple question "What is corruption?". The simple and generalized definition from the World Bank Organization, which is widely accepted in the literature, considered corruption to be the abuse of public power for self-interest. The Transparency International extended the scope of corruption to the private sector and define corruption as the abuse of assigned power for self-interest. In this study, the authors used the definition from the World Bank Organization, however, some characteristics of the corruption phenomenon will be explained in details.

Firstly, the abuse of power in this case is characterized as the violation of the arm's length principle. This principle requires personal and other forms of relationship did not affect the independence of the decision-making agents. Equal treatment to every society member is one of the key foundation of efficient market, favoritism or biased attitude toward one or others will create opportunities for corruption [7].

Secondly, the concept of "self-interest" is not only associated with the acts of receiving money or other valuable assets, but also implies the strengthening or increasing of power or social status. Specifically, receiving promises regarding favors and future benefits for relatives or friends can also be considered forms of "self-interest" [3].

2.1.2 Classifications of Corruption

International studies, varied on the approach and the research objectives, offered many different classifications of corruption. Within the scope of this study, the authors made use of the following classifications.

- *Petty corruption and grand corruption*: a classification based on the material value of the corrupt transaction [8].
 - Petty corruption: the material values of petty corrupt transactions are relatively small. This is usually the kind that involved low or middle level civil servants.
 - Grand corruption: the material values of grand corrupt transactions are relatively large. This is usually the kind that involved high level civil servants or the elites of the government.
- *Active corruption and passive corruption*: a classification that is often employed in analyzing the acts of bribery, and was stated in the Criminal Law Convention on Corruption of the European Union [9]:
 - Active corruption: the bribe recipients directly demand payment or indirectly demand payment using attitude, nonverbal behaviors to signal the necessity of bribery.
 - Passive corruption: the bribe recipients do not actively demand or make suggestion of bribery.
- *Market corruption and parochial corruption*: a classification based on the level of the agents' identity involvements in the corrupt transactions [4]:
 - Market corruption (MC): characterized by the high level of openness, the identity of the involve parties is not the deciding factor to the existence of the corrupt transaction. The corrupt behaviors could be performed by parties that were unknown to each other, and the amount of bribe can be determined easily. For example, a violator's bribe to the traffic police.
 - Parochial corruption (PC): characterized by the low level of openness, the identity of the involve parties is the deciding factor to the existence of the corrupt transaction. The corrupt behaviors are performed by those party that shared some social relationship. For example, traffic law violators call acquaintances to intervene with the traffic police, so that their penalty can be ignored or mitigated.
- *According-to-the-rule corruption and against-the-rule corruption*: a classification by [10], which was employed when analyze corruption behaviors in the form of bribery:
 - According-to-the-rule corruption: the bribe recipients do not break the regulations or the principles of their positions, they simply did their job better, faster and thus benefitted the bribe givers. For example, patients bribe doctors so they could receive better medical care.
 - Against-the-rule corruption: the bribe recipients must break the rule of their position in order to bring benefit to the bribe givers. For example, the traffic law violators gave money so that the traffic police ignored or lightened their faults.

2.2 The Transaction Costs of Corruption

Transaction cost is defined as the cost to operate the economic system, whereby the organization of the economic activities (for example, the make-or-buy decision) will transform according to the transactions costs of the involved parties. Transaction cost exists due to the 2 basic characteristics of economic agents: (i) opportunism and (ii) bounded rationality [2]. Because of opportunism, human behaviors became unreliable. Along with the context where the information is asymmetric, the agents will be prone to act only for their self-interest. The rationality of human behavior is bounded due to the fact that they must face complicated trade-off while their capabilities to absorb, store and process information is limited. From this perspective, economic activities can only maintain their stability when the transaction costs are minimalized [2,3].

The transaction costs of corruption could be classified according to the order in which the transactions were operated: (i) the searching and information costs; (ii) the negotiation costs and (iii) the monitoring and enforcement costs [3].

2.2.1 The searching and information costs

In an illegal transaction, the agents apparently cannot openly advertise their corrupt services. Therefore, the agents must expend costs of time and other resources to search for suitable partners. However, when the corruption activities are the by-product of an official transactions, this cost can be considerably reduced [3]. Because in these specific cases, the potential partners of the

corrupt transaction could be immediately identified from the official transactions. This phenomenon explains the reason why in practice, corruption rarely exists in isolation, but often be the derivative transaction from an official one.

The existence of the searching and information cost is an important suggestion in order to find solutions to the corruption issue. If this transaction costs are too high, then the corruption activities cannot occur. This approach has been successfully applied to several public bureaucratic services through the implementation of information technology. A typical example is the process of awarding and renewing the drivers' licenses. When the application process is conducted through the internet, the service users cannot find out who the civil servants that will make the decisions are, and vice versa, the civil servants also cannot find out who the applicants are. With these severe lack of information, the opportunities for corruption are minimized.

2.2.2 The negotiation costs

Suggesting a bribe is a risky action, as it can happen that the civil servant reject the offer due to ethical barriers or they simple dare not to perform an illegal act. Even in the case where the official is corruptible, they still can choose to denounce the bribe to gain publicity. This situation might happen if the value of the bribe is smaller than the value of the reputation that can be gained from the act of denouncement [11]. Therefore, it is critical for the involved parties to determine clearly the value of the bribe, so they can compare the associated costs (the risks of being denounce of over paying the bribe) and benefits. In this aspect, according-to-the-rule corruption is largely preferred to against-the-rule corruption. In the case of according-to-the-rule corruption, the bribe can be directly offered or suggested under the disguise of gifts showing gratitude [10]. This factor apparently must be considered when gift giving to express affection is a traditional in the culture of many countries, especially those in Asia.

While in other legal transactions, the specific terms of the agreement are clearly specified, in corrupt transactions, the terms will always retain a certain level of ambiguity. This allows the parties, if the act is uncovered, can explain the relationship as merely exchanging gifts, with no other benefits involved.

2.2.3 The monitoring and enforcement costs

The benefits of the other parties in a corrupt transaction is often difficult to exchange simultaneously [1]. Therefore, to ensure that the transaction is executed according to the agreement, the parties would have to spend time, effort and money for monitor and enforcement activities. This idea can be illustrated by the following scenarios.

Scenario 1: The traffic law violator bribed the traffic police to ignore their faults or reduce the penalty. In this case, the benefits of the violator and the police was exchanged almost simultaneously, so that the monitoring and enforcement costs was minimalized.

Scenario 2: The patient bribed the doctor to receive better medical treatments. In this case, the patient received the benefits after giving the money (the doctor received the benefits before the patient) and when the duration of the treatment was long, the monitoring and enforcement costs for the patient could be considerably large.

The characteristic of simultaneously benefit exchanging is critical for the existence of MC [3]. The explanation is that in MC transactions, the information that each party had about each other is very limited, prolonging the duration of the transaction meant that the risks of opportunistic behaviors of each party will increase. In this aspect, PC is the preferred form. The certain level of acquaintance between involved parties will act as a mechanism to keep the corrupt activities relatively stable.

2.3 Safeguarding Mechanism of Corruption

Due to the existence of several kinds of transaction costs, any exchange will require some forms of safeguarding mechanism. If legal transactions are protected by the rule of law and the court, illegal transactions, corruption includes, do not process these kinds of protection. Several forms of informal institutional mechanism are the keys to maintain the stability of corrupt transactions, those factors that comprises the safeguarding mechanism of corruption include: (i) hostages; (ii) reputation; (iii) repetition; (iv) trust and (v) reciprocity [1,3,12]. This study focuses on the latter 2 factors.

2.3.1 Trust

In a corrupt transaction, trust is not only the factors that helps the involved parties coordinate more effectively, it also acts as the foundation to ensured that the parties would not have opportunistic behaviors after the completion of the contracts. However, according to [13], trust need to be classified into 2 different forms: generalized trust and particularized trust.

Generalized trust is the ability of an individual to trust strangers. Generalized trust implies ethical virtues, a person with high generalized trust thinks that other people also share the same system of ethical values. Nations with high level of generalized trust also have low level regarding the perception of corruption [3,13]. In contrast, particularized trust is the trust on those people with similar elements (such as relatives, friends, colleagues, people from the same hometown...), this kind of trust is based on past experiences of each individual. Particularized trust does not imply an ethical virtue; it reflects the rationality of an individual in making social interactions. Unlike generalized trust, particularized trust is a factor that promote corruption [3,14].

However, at the individual level, the impact of generalized trust on the probability of corruption is not clearly proved. Using experimental approach, [15] concluded that generalized trust had a positive impact on corruption in those countries with low level of corrupt perception (such as Japan and the Netherlands), while in those countries with high level of corrupt perception (such as China and Italy) no such relationship could be identified.

2.3.2 Reciprocity

Reciprocity could mean either positive or negative responses. Positive reciprocity includes those situations when an individual does something that is beneficial to another person, he is expected to return the favor. On the contrary, negative reciprocity is when an individual does something that is detrimental to another person, his expected the other to retaliate. Expectation of reciprocity is an important informal mechanism that helps keep the stability of the corrupt transactions, because of these 2 reasons:

Firstly, while in those legal transaction, the involved parties are usually bounded by clear and specific terms and conditions of the written contracts, in corrupt transaction, due

to their apparent illegality, the parties are bounded loosely conflicts between parties are more likely to happen [1,3].

Secondly, the exchanges of benefits in a corrupt transaction is usually not occurred simultaneously, so expectation of reciprocity can act as a mechanism to prevent opportunistic behaviors. Using experimental approach, [16] showed that uncertainty on the expectation of reciprocity was a major element that prevent the success of corrupt transactions. Individuals with high level of expectation of reciprocity is more prone to engage in corrupt activities.

Expectation of reciprocity is rooted in the trust and the social interactions of each individual, in other words, particularized trust is the foundation of expectation of reciprocity [14]. The combination of trust and expectation of reciprocity comprise the network of social relationships, such as *guanxi* in China or *blat* in Russia [1]. This results explains the high level of stability of parochial corrupt transactions, when the engaged parties are clearly identified and connected to a mutual network of social interactions.

2.3 Hypotheses Development

In this study, we focused on corruption acts in the interactions between medical personnel and services users, in the form of unofficial payments. From the perspective of the service users, the authors aimed to address the following questions:

- What roles that other kinds of social capital play as a protection mechanism against corruption in public healthcare services?
- What factors decided the differences between MC and PC?
- Did PC have a higher level of stability in comparison with MC?

Due to not being protected by the official mechanisms such as the law and the courts, corrupted transactions need to be stabilized by unofficial social mechanisms. Other types of social capital, including trust and expectation of reciprocity, play an important role in the implementation of this function. In this study, with the differentiation between generalized and particularized trust, the hypotheses being tested are:

- Hypothesis 1a: Higher level of generalized trust will decrease the risk of corruption.
- Hypothesis 1b: Higher level of particularized trust will increase the risk of corruption.

Regarding the role of the expectation of reciprocity, the hypothesis being tested is:

- Hypothesis 1c: Higher level of expectation of reciprocity will increase the risk of corruption.

Corrupt transaction is a kind of identity-specific transactions, and PC had a higher level of stability compared to MC, due to the fact that in parochial corrupt transactions, the engaged parties was connected in a network of social relationship that will effectively reduce the transaction costs. Therefore, the objectives of this study will not only address the decision whether or not to engage in an act of corruption, but also to explain the selection of the forms of corruption: MC or PC.

To be able to participate in PC, the service users must have an involvement in a network of social relationship, in order to connect to the medical personnel. This relationship might not exist beforehand, but it can be developed. For example: the patient might not be acquainted to anyone at the medical facility, but when necessary he could still utilize his network of personal relationship (from relatives, friends, colleagues...) to contact the medical personnel. The authors suspected that the incentive of the service users to utilize the network of personal relationship depended on certain characteristics of their medical demand, including: (i) the use of health insurance; (ii) the frequency of medical visits; and (iii) the form of medical visits.

The use of health insurance: In Vietnam, the use of health insurance is regulated according to the level of hospital. The proportion of payment from the insurance agency will be lower if the patients did not visit the right hospital (registered on the insurance cards). This implied that if the patients used their health insurance, they would be heavily limited in their selection of hospital; in other words, they would be locked-in to the facility that they registered when they paid for the health insurance. In these situations, the service users will have an incentive to establish a relationship with the personnel of the medical facility. Therefore, the hypothesis being tested is:

- Hypothesis 2a: The use of health insurance when visiting medical facilities will increase the risk of PC more than MC.

The frequency of medical visits and the risk of corruption had a link through 2 separate channels. Firstly, people with high frequency of service usage will improve on their illegality skills, or more specifically, they will know exactly when, to whom and how to make unofficial payments. Secondly, higher frequency of medical visits would effectively reduce the risk of denouncement from the patients, for they would be afraid of negative retaliation from the side of the medical facility's staff. For PC, high frequency of medical visits would also help the patient to create a social relationship with the medical personnel. Based on that premise, the authors developed the following hypothesis:

- Hypothesis 2b: Higher frequency of medical visits will increase the risk of PC more than MC.

The form of medical visit: Basically, medical visits could be classified into 2 forms: inpatient and outpatient. Inpatient treatments are often associated with more acute forms of disease that required urgent interventions. Therefore, outpatients generally have more options for their medical treatments. Due to this reason, utilizing a personal relationship might be the better choice for outpatients. The hypothesis being tested in this study is:

- Hypothesis 2c: Outpatients have higher risk of PC than MC.

From the perspective of the service users, the stability of a corrupted transaction is evaluated by 3 criteria: (i) the tolerance toward corruption; (ii) the level of assurance when using medical services; and (iii) the level of initiative of medical personnel in demanding unofficial payments. These factors had the function of preventing engaged parties to have opportunistic behaviors when the transactions were in process or after it had completed. To assess the level of stability of PC compared with MC, these hypotheses will be tested:

- Hypothesis 3a: Participation in PC have a positive relationship with the level of tolerance toward corruption.
- Hypothesis 3b: Participation in PC have a positive relationship with the level of

assurance when using public healthcare services.

- Hypothesis 3c: Participation in PC have a negative relationship with the level of initiative of medical personnel in demanding unofficial payments.

3. DATA AND METHODOLOGY

3.1 Surveying Method

3.1.1 Sampling method

The targeted population of the study was all the individuals that used various forms of public healthcare services in Vietnam. To ensure that the sample correctly and unbiasedly reflected the studied population, the team members of the study had attempted to diversify the forms of data collection, so that the respondents of the survey represented different socio-economic spectrum of the participants in public healthcare facilities. Specifically, the electronic questionnaires were disseminated using various social networks (which represented the younger part of the population), through the email lists of some companies and organizations. The questionnaires in paper forms were distributed in some hospital, government agencies and private businesses.

After the process of collecting data and filtering the invalid observations, the sample that was employed in the study consisted of 274 observations. Of those, the average age of the survey respondents was approximately 37 years old (the oldest was 81 years old while the youngest was 15 years old); 50.73% of the observations were male; 60.58% were employ in the public sector; 60.58% visited the public healthcare facilities as an outpatient and 77.01% had health insurance.

3.1.2 The Survey questions

The questions of the survey were developed based on presented theoretical framework, with the main reference sources were the other surveys with similar objectives conducted internationally, such as the Life in Transition Survey II from EBRD (2010), the World Value Survey Wave 6 from the World Values Survey Association (2014) or the German Socio-Economic Panel (SOEP) from DIW (2014).

On the presentation of those questions, the questionnaire consisted of two main types of

question. The first type was objective multiple choice question, in which the respondent chose the most appropriate answer for their own situations. The second type was the perception question, in which the respondents stated how their subjectively feel regarding some statements (in this sense, perception was understood as the opinion of agrees or disagree with a mentioned clauses), the data was then coded into integer number ranging from 1 (Strongly disagree) to 5 (Strongly agree).

3.1.3 Questions to determine the forms of corruption: MC or PC

One of the key emphases of this study was to distinguished between the 2 forms of corruptions (or the use of unofficial payment) in medical services in public health facilities, which is MC and PC with distinctive characteristics. In the questionnaire, these variables were defined as follows:

The existent of MC is identified through the question: *"In addition to the official hospital bills, did you give other money/gifts to medical personnel?"*

The existent of PC is identified through the question: *"Did you take advantages of personal relationship to influence those who are responsible for the medical services?"*

Both questions were multiple-choice question with the 2 possible answers of **Yes** and **No**, based on the results of the two questions, each observation is determined to be in one of the 3 states:

1. Do not engage in any corrupt activities, if the answers were No on both questions.
2. Engage in MC, if the answer was Yes in the first question and No in the second one (which mean those who didn't take advantages of personal relationship).
3. Engage in PC, if the answer was Yes in the second question (the answer to the first question could be either Yes or No)

In the sample, 75 healthcare users were uncorrupted, 46 engaged in MC and 153 identified as PC participants.

3.1.4 Questions to measure generalized trust

In our questionnaire, to ensure the stability and reliability of the results, this variable was identified through 2 separated questions with different wording, in which the respondents

stated their opinion (how strongly they agreed/disagreed) with the statement:

"Generally speaking, I can trust the people that I am not acquainted with"

And

"Generally speaking, I don't have a skeptical attitude toward the people that I am not acquainted with"

3.1.5 Questions to measure particularized trust

In this questionnaire, this variable was identified through 4 separated questions which represented 4 different kinds of relationship that could become the foundation of particularized trust, which is the relationship with family members, friends, colleagues and with people from the same hometown. Specifically, the respondents were asked to state their opinion (how strongly they agreed/disagreed) with the statements:

"Generally speaking, I can trust the people from my own family"

"Generally speaking, I can trust my friends"

"Generally speaking, I can trust my colleagues"

And

"Generally speaking, I can trust the people from my hometown"

3.1.6 Questions to measure reciprocity

Reciprocity (or expectation about returning gestures) is widely considered to be one of the key foundations of trust and had been suggest in the literature of having a significant relationship with corruption activities. [17] measured reciprocity using 2 different tools: (1) using subjective questionnaire and (2) using behavior experiments in the laboratory; the results indicated that the responds from the questionnaire reflected quite correctly the attitude of the respondents, and corresponded strongly with the behaviors observed through the lab experiments.

In this questionnaire, based on the aforementioned study, the reciprocity variable this variable was identified through 2 separated questions with different wording, in which the respondents stated their opinion (how strongly they agreed/disagreed) with the statement:

"If somebody did something that was beneficial to me, I will be willing to return the favor, even if this wasn't agree in advance"

And

"If I did something that was beneficial to somebody, I would expect them to return the favor"

3.1.7 Questions to measure tolerance toward corruption

The level of tolerance toward corruption reflect the attitude of individuals in a society regarding the phenomenon of corruption: from the opinion of completely opposing any forms of corruption (zero tolerance of corruption) to the opinion of considering corruption as a normal aspect of social reality and finding the reasons to justify the behaviors of the engaged parties. Tolerance toward corruption need to be distinguished with the perception of the existent of corruption. This variable is identified through the question: *"In our society, do you think paying bribes is justified based on the poor public services that are provided?"*, the expectation here was that those with higher tolerance toward corruption will be less likely to percept the existents of corruption but also be more likely to participate in corrupt activities [18].

In this questionnaire, the tolerance toward corruption variable was identified through 2 separated questions with different wording, in which the respondents stated their opinion (how strongly they agreed/disagreed) with the statement:

"Generally speaking, with the current situation in Vietnam, it is acceptable and justifiable that the patients gave money/gifts to medical personnel"

And

"Generally speaking, with the current situation in Vietnam, it is acceptable and justifiable that the medical personnel received money/gifts from patients"

3.1.8 Questions to measure the level of assurance when using public healthcare services

The level of assurance when using public healthcare services is one of the key factor that helps ensure the stability of the corruption deals, as it will serve as a measure to prevent

opportunistic behaviors that might lead to the failure of the corruption contract. In the Life in Transition Survey II from EBRD (2010), the degree of assurance when using public healthcare services is considered as one of the various dimensions of particularized trust.

In this questionnaire, the level of assurance when using public healthcare services variable was identified through the statement:

"I felt assured when I visited the public healthcare facilities"

3.1.9 Question to measure the level of initiative of medical personnel in demanding unofficial payment

Beside the tolerance toward corruption and the level of assurance when using public healthcare services, the level of initiative of medical personnel in demanding unofficial payment is also one of the key factor that maintained the stability of the PC transactions. In this questionnaire, this variable is identified using a dummy variable with 2 value of Yes and No, taken from the answers to the multiple-choice question *"The reason that you gave money/gifts to medical personnel are:"*

In which, if the answers are either:

"The medical personnel directly demanded payment"

Or

"The medical personnel indirectly demanded through talks, attitudes, gestures"

Then the level of initiative variable value is set to Yes. While if the answers are either:

"The medical personnel did not demand or suggest, but you know that it was necessary to make payment"

Or

"The medical personnel did not demand or suggest, but you gave money/gifts to show gratitude"

Or

"You actively gave money/gift to receive faster and better medical services"

Then the level of initiative variable value is set to No.

Table 1. Quantitative models specification

Number of model	Quantitative Method	Dependent variable	Independent variables	Control variables
1	Logit	Corrupt	Gentrust Gentrust2 Partrust Recip	Age Gender Income Edu Treatform Insur Freq
2	Multinomial Logit	Mcorrupt	Treatform Insur Freq	Age Gender Income Edu
3a	Ordered Logit	Tolerance	Mcorrupt	Age Gender Income Edu
3b	Ordered Logit	Assur	Mcorrupt	Age Gender Income Edu
3c	Logit	Active	Mcorrupt	Age Gender Income Edu

3.2 Quantitative Models Specification

These models were developed by the study in the attempt to find empirical evidence for the hypotheses stated in the theoretical framework.

Models 1: Logit regression models to determine the effect of generalized trust, particularized trust and reciprocity to the decision whether to participate in corruption activities.

Model 2: Multinomial logit regression model to determine the effect of using health insurance, the frequency of medical visits and the form of medical care (outpatient/inpatient) to choosing the form of corruption.

Model 3a: Ordered logit regression model to determine the effect of participation in

PC to the level of tolerance toward corruption.

Model 3b: Ordered logit regression model to determine the effect of participation in PC to the level of assurance when using public healthcare services.

Model 3c: Logit regression model to determine the effect of participation in PC to the level of initiative of medical personnel in demanding unofficial payments.

The specification of each of the models is listed in detail in the following Table 1.

Details about the definitions and the measurement of the variables employed in the models was described in the following Table 2.

Table 2. Variables description

Variable name	Definition	Measurement
Corrupt	Decision whether to participate in corruption activities	Binary variable, took the value of 1 if answer Yes to the question of "Using personal relationship" or the question of "Giving money/gifts to medical personnel", took the value of 0 otherwise
Mcorrupt	Decision whether to participate in MC or PC activities	multinomial variable, took the value of 0 if did not participate in corruption, took the value of 1 if only giving money/gift, took the value of 2 if using personal relationship
Tolerance	Level of tolerance toward corruption	The mean value from the answers to the two questions regarding the level of tolerance toward corruption
Assur	Level of assurance when using public healthcare services	Value from the opinion to the statement: "I felt assured when I visited the public healthcare facilities"
Active	The level of initiative of medical personnel in demanding unofficial payment	Binary variable, took the values of 0 or 1 from the answer to the multiple-choice question regarding "Reasons that you gave money/gifts to medical personnel", 1 if the medical personnel was active in demanding unofficial payment, 0 if otherwise
Gentrust	Generalized trust	The mean value from the answers to the two questions regarding generalized trust
Gentrust2	The square of generalized trust	The square of the variable <i>gentrust</i>
Partrust	Particularized trust	The mean value from the answers to the four questions regarding particularize trust in the questionnaire
Recip	Reciprocity	The mean value from the answers to the two questions regarding reciprocity trust in the questionnaire
Age	Age	The age of the respondent
Gender	Gender	Dummy variable, took the value of 1 if the

Variable name	Definition	Measurement
		respondent is male, took the value of 2 if the respondent is female
Income	Income	Dummy variable, took the value of 0 if the respondent's monthly income is "Under 5 million dong", took the value of 1 if the respondent's monthly income is "From 5 million to 10 million dong", took the value of 2 if the respondent's monthly income is "More than 10 million dong"
Edu	Education	Dummy variable, took the value of 0 if the respondent's education is "High school graduate", took the value of 1 if the respondent's education is "Under graduation study", took the value of 2 if the respondent's monthly income is "Graduation study"
Treatform	Form of medical care	Dummy variable, took the value of 0 if the respondent is an outpatient, took the value of 1 if the respondent is an inpatient
Insur	Use of health insurance	Dummy variable, took the value of 0 if the respondent use health insurance, took the value of 1 if the respondent does not use health insurance
Freq	Frequency of medical visits	Dummy variable, took the value of 0 if the respondent's number of visits during the last 12 months are 1 times, took the value of 1 if the number are more than 1 but less than 10 times and took the value of 2 if the number are more than 10 times

4. RESULTS AND DISCUSSION

4.1 Estimation Results

Model 1: Investigated the effect of several independent variables including *gentrust*, *gentrust2*, *partrust* and *recip* on the dependent variable *corrupt*. In order to avoid missing any information that the sample data had to offer, the study incorporated several model specifications with different combinations of independent variables. The regression results are summarized in Table 3.

In models 1, as there existed a suspected nonlinear relationship between the generalized trust variable *gentrust* and the decision to participate in corruption variable *corrupt*, which meant the direction and the magnitude of this relationship might vary upon the value of the variable *gentrust*, the study had included the squared value of the variable *gentrust* into the model as the variable *gentrust2* to seek evidence for this hypothesis. However, in most the model

that incorporate *gentrust2* as an independent variable, the coefficient estimates of this variable were statistically insignificant with the exception in the case of model 1d and 1f, where the estimated coefficients were negative and have weak statistical significance at the 10% level.

For the *gentrust* variable, in all variations of model 1, its coefficient estimates were positive as well as were statistically significant at the 5% level. The implication is that when generalized trust (the trust in everyone in a society) level increases, the probability of engaging in corruption activities also increases. The results appear to provide evidence to refuse Hypothesis 1a.

However, in the 2 models in which the coefficient estimates of the variable *gentrust2* were statistically significant, which is model 1d and model 1f, the estimates for the variable *gentrust2* were negative and the estimates for the variable *gentrust* were positive. This suggest that the impact of *gentrust* on *corruption* started as a positive impact, but with diminishing marginal

value. The turning point, after which the total effect of the generalized trust variables (*gentrust* and *gentrust2*) were negative, are when *gentrust* equal 10.13 in model 1d and 3.19 in model 1f. Therefore, in the model 1f, the turning point in in the possible range of *gentrust* and might imply the existent of a nonlinear relationship between *gentrust* and *corruption*.

With the limitation of the sample size employed in the study, this result is clearly not a strong evidence that can be used to refute the established theory. However, this result bought about some interesting remarks regarding the relationship between generalized trust and corruption in the environment of Vietnamese public healthcare services, which will be further discussed in the latter parts of the study.

The quantitative models of the study seek a positive relationship between particularized trust (the variable *partrust*) and the probability to engage in corruption. This could be understood that when an individual only trusted in other who were similar to themselves (which is distinguished from generalized trust), this individual will be more likely to make unofficial payment. However, in all tested model variations, the coefficient estimates of the variable *partrust* were statistically insignificant. Therefore, the quantitative analysis of this study cannot offer evidence about the relationship between particularize trust and the decision whether to participate in corruption activities of an individual. Hence, the Hypothesis 1b is not supported by the data.

Model 1c, 1d, 1e and 1f interested in the impact of the variable *recip*, which is collected from the answer to the 2 questions regarding expectation of an individual about reciprocity after doing another a favor (or receiving a favor from another). This is one of key factors that determine the stability of the corruption deal. In all the 4 models that incorporate the variable *recip*, its coefficient estimations are all strongly statistically significant at 1% level and are positive. The suggestion of this results is that, other things remain constant, when the expectation of reciprocity increased, an individual will be more likely to engage in corruption activities. This result agreed with the theoretical analysis and provided evidence that supported Hypothesis 1c.

Model 2: Multinomial logit regression model to determine the effect of using health insurance,

the frequency of medical visits and the form of medical care (outpatient/inpatient) to choosing the form of corruption.

In this model, the main concern of the study is about the decision of an individual to pick one of the two forms of corruption (MC or PC). Therefore, the group that only participate in MC was assigned as the comparison group.

In Model 2, the study focused on the coefficient estimates of the case when the individual participated in PC. This estimates in this situation indicated the impact of certain factors to the probability that an individual decided to choose the form of corruption as PC, instead of participating in MC.

The variable *insur*, regarding the use of health insurance, had a positive and statistically significant at the 5% level coefficient estimate. This result implied that the use of health insurance in medical care will increase the probability of engaging in PC instead of MC. This is in agreement with the previous theoretical analysis and provide evidence to Hypothesis 2a. When the patient is locked in to a certain public healthcare facility (which they must registered on the health insurance certificate), they will have more incentive to take advantages of the relationship that they can create with medical personnel for corruption opportunities.

The results of model 2 also showed that the frequency of medical visits variable *freq's* coefficient estimate was positive and statistically significant at the 5% level. This suggest that the more times an individual visited public healthcare facilities for medical care (usually those with chronic diseases and must maintain frequent visits to the healthcare for a considerable period), the higher the risk that this individual would participate in PC (instead of MC). This result is complied with Hypothesis 2b of the previous theoretical analysis.

The form of medical treatment variable *treatform* in this model have a negative coefficient estimate as well as was statistically significant at 5% level. This result indicated that outpatients were more likely to engage in PC (instead of MC) than inpatient. This result agreed with the study's theoretical framework regarding the transaction cost of the corruption deal and provided evidence to support Hypothesis 2c. The activeness of the outpatient gave them more incentive to seek and make use of personal relationship to help them receive better and faster medical treatment.

Table 3. Estimation results of models 1

Variable name	Model 1a	Model 1b	Model 1c	Model 1d	Model 1e	Model 1f
Gentrust	0.571 (0.188)***	1.831(0.909)**	0.519(0.195)***	2.026(0.947)**	0.478(0.186)***	2.054(0.946)**
Gentrust2		-0.257(0.180)		-0.10(0.189)*		-0.322(0.187)*
Partrust	-0.145(0.289)	-0.112(0.291)	-0.220(0.305)	-0.164(0.308)		
Recip			0.679(0.217)***	0.704(0.219)***	0.667(0.216)***	0.698(0.218)***
Control variables						
Age	-0.017(0.012)	-0.017(0.012)	-0.013(0.012)	-0.014(0.012)	-0.014(0.012)	-0.014(0.012)
Gender	-0.122(0.297)	-0.116(0.299)	-0.071(0.304)	-0.064(0.306)	-0.074(0.303)	-0.066(0.306)
Income						
From 5 to 10 million dong	-0.359(0.347)	-0.374(.0347)	-0.316(0.355)	-0.331(0.355)	-0.332(0.354)	-0.343(0.354)
More than 10 million dong	0.536(0.495)	0.538(0.495)	0.624(0.517)	0.624(0.517)	0.598(0.514)	0.607(0.514)
Edu						
Undergraduate study	0.263(0.415)	0.256(0.415)	0.367(0.423)	0.350(0.344)	0.387(0.422)	0.362(0.423)
Graduate study	0.580(0.535)	0.572(0.535)	0.583(0.550)	0.551(0.551)	0.600(0.548)	0.561(0.549)
Treatform	0.403(0.335)	0.413(0.336)	0.421(0.343)	0.436(0.344)	0.426(0.342)	0.439(0.344)
Insur	0.275(0.356)	0.263(0.359)	0.432(0.368)	0.433(0.374)	0.461(0.365)	0.456(0.371)
Freq	0.205(0.238)	0.231(0.241)	0.117(0.243)	0.145(0.247)	0.140(0.242)	0.163(0.245)
<i>Intercept</i>	0.137(1.315)	-1.359(1.697)	-2.426(0.243)	-4.349(2.012)	-3.074(1.308)	-4.909(1.726)
<i>Hosmer-Lemeshow test</i>	Chi2 = 3.62 P = .88	Chi2 = 4.46 P = .81	Chi2 = 5.96 P = .65	Chi2 = 5.90 P = .65	Chi2 = 7.51 P = .48	Chi2 = 4.45 P = .81
<i>AIC</i>	1.168	1.168	1.138	1.136	1.133	1.129
<i>BIC</i>	-1.167	-1.163	-1.172	-1.169	-1.177	-1.174

Note: * P<0.1; ** P<0.05; *** P<0.01

Table 4. Estimation results of models 2

Independent variables	Do not participate in any form of corruption		Participate in parochial corruption	
	Coefficient estimation	Z-statistic	Coefficient Estimation	Z-statistic
Treatform	-1.287	-2.880***	-0.976	-2.430**
Insur	0.411	0.860	0.908	1.970**
Freq	0.536	1.520	0.905	2.750***
Control variables				
Age	0.019	1.180	0.005	0.300
Gender	0.343	0.840	0.158	0.410
Income				
From 5 to 10 million dong	0.953	1.990**	0.708	1.570
More than 10 million dong	0.736	0.990	1.495	2.280**
Edu				
Undergraduate study	-0.121	-0.240	0.564	1.140
Graduate study	-0.056	-0.080	0.932	1.360
Intercept	-1.194	-1.100	-1.120	-1.080
Goodness of fit statistics				
	<i>McFadden's R2</i>	0.111	<i>McFadden's Adj R2</i>	-0.023
	<i>AIC</i>	2.005	<i>BIC</i>	-858.634

Note: * $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$

Model 3a: Ordered logit regression model to determine the effect of participation in PC to the level of tolerance toward corruption.

In the models 3a, 3b and 3c, the form of corruption variable *mcorrupt* acted as an independent variable, instead of being the dependent variable as in the previous models. In the ordered logit regression model 3a, the coefficient estimate of the PC variable *PC* (which is a dummy variable created from the variable *mcorrupt* correspond with the participation in PC) was positive as well as was statistically significant at the 1% level. This implied that once engage in PC (the form of corruption that took

advantage of personal relationship), an individual would have more tolerance and acceptance toward the behavior of corruption. This results agreed with the study's theoretical analysis and supported Hypothesis 3a.

Regarding the MC form (represented by the dummy variable MC), in this case, the variable's coefficient estimates was also positive and had a weak statistical significance at the 10% level. It showed that engagement in MC (making unofficial payment) also had a positive influence on the level of tolerance toward corruption, but the magnitude of the impact was not clearly stated as in the case of PC.

Table 5. Estimation results of models 3a, 3b, 3c

Independent variable	Dependent variable		
	Tolerance Model 3a	Assur Model 3b	Active Model 3c
Mcorrupt			
MC	0.640 (0.341)*	0.342 (0.352)	(MC as base group)
PC	1.107 (0.268)***	0.556 (0.266)**	-0.963 (0.387)**
Control variable			
Age	-0.015 (0.009)	0.015 (0.009)*	0.008 (0.013)
Gender	0.321 (0.223)	-0.341 (0.228)	-0.007 (0.330)
Income			
From 5 to 10 million dong	-0.194 (0.279)	-0.799 (0.277)***	0.284 (0.435)
More than 10 million dong	0.271 (0.338)	-1.302 (0.352)***	0.561 (0.491)
Edu			
Undergraduate study	0.533 (0.328)	-0.142 (0.321)	-0.577 (0.486)
Graduate study	0.334 (0.402)	-0.173 (0.401)	-0.905 (0.608)

Note: * $P < 0.1$; ** $P < 0.05$; *** $P < 0.01$

Model 3b: Ordered logit regression model to determine the effect of participation in PC to the level of assurance when using public healthcare services.

In the model 3b, the coefficient estimate of the PC variable *PC* is positive and statistically significant at the 5% level. This implied that the participation in PC (which meant successfully establishing a relationship with the medical personnel) will make an individual become more assured and comfortable in using public healthcare services. This conclusion is consistent with the theoretical framework and supported Hypothesis 3b. This confirmation was meaningful to the study of corrupt behaviors, because this assurance not only acted as a reason for individuals to engage in the act of corruption but also played an important role in keeping the corrupt transactions stable.

Dissimilar to model 3a, in model 3b the coefficient estimate of the MC variable *MC* is not statistically significant. Therefore, with this sample, the study could not offer analysis on the impact of MC to the assurance of the patients in using public medical services.

Model 3c: Logit regression model to determine the effect of participation in PC to the level of initiative of medical personnel in demanding unofficial payment.

Model 3c was only computed for a subset of the sample data, which included observations that engage in corruption activities (either in market or parochial form). Specifically, model 3c was calculated with a sample of 199 observations.

In Model 3c, the coefficient estimate of the PC variable *PC* is negative and is statistically significant at the 5% level. This results implied that when parochial corrupt transactions were more pervasive, it also decreased the level of initiative of medical personnel in demanding unofficial payment. This finding was also consistent with the theoretical analysis of TCE and provided evidence for Hypothesis 3c.

4.1 Further Discussions of the Research Findings

Informal social mechanism, with its foundation being the various kinds of social capital, including trust and reciprocity, act as a layer of protection against corruption. But contrary to the theoretical predictions, this study found that generalized

trust processed a positive relationship with corruption. Moreover, in the empirical models, the study could not find statistically significant evidence regarding the relationship between particularized trust and corruption. This phenomenon could be explained as follows.

Firstly, other studies that provided evidence of a negative relationship between generalized trust and corruption all employed nation-wide datasets and concentrated on the perception of corruption; while this study use data on a personal level and focused on the corruption experience.

Secondly, this study concentrated on a very specific subset of corruption activities, which is corruption in the field of public medical service, which had some unique characteristics, one of which is that the services users had to put their full trust in the hand of the service providers.

The results of the study indicated that the unique characteristics of public healthcare services such as the use of health insurance, the frequency and the form of medical visits are the factors that affected the choice of the service users to choose market or PC. Additionally, quantitative analysis also showed that parochial corrupt transactions processed higher level of internal stability than MC, due to the fact that people who engaged in PC have higher level of initiative, assurance and tolerance toward corruption. This results confirmed the hypotheses that the network of social relationship had the function of stabilizing corrupt transactions.

One limitation of this study is the use of questionnaire in measuring the level of trust and expectation of reciprocity. The advantage of this method is that it is easier to gather a large sample, however, the relative reliability of the data might not be very high, due to the multidimensionality of the concept. Another approach, employed in [16], is the method of experimental economics, in which trust was measured through observed behaviors in simulation games. This could be the suggestion for the team to pursue in our further studies.

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

Employing the approach of transaction cost economics, the results of the studied showed that trust and expectation of reciprocity acts as a protection of the corrupt transactions. This implied that even the positive social capital can

also be the motivating factors for a negative phenomenon. Therefore, developing solutions for anti-corruption should take into account the unique socio-cultural characteristics of the Vietnamese people.

The survey showed that corruption in the public healthcare services in Vietnam exist in both forms: market corruption and parochial corruption. Quantitative analysis suggested that parochial corruption had a higher level of stability compared with market corruption. This results implied that parochial corruption will be more difficult to detect and deal with because the probability of denouncement will be relatively small. Additionally, unofficial payment in public healthcare services is classified as petty and according-to-the-rule corruption. Along with the fact that the service users can take the active role in engaging in a corrupt transaction, it is very difficult to prove that the acts of corruption existed. Giving money/gifts to medical personnel might simply be interpreted as a showing of gratitude.

From these analysis, the authors suggest the following policy recommendations:

- First, the anti-corruption measures in public healthcare services should not only focus of sanctions against medical personnel, but there should be penalties to the service users for the acts of giving bribes.
- Second, the government needs to develop communication policies with the objective of changing the attitude of the public regarding the acts of corruption, in order to create an environment of zero tolerance toward corruption, from the sides of both the service users and the service providers.
- Third, because it cannot be depended on the parties involved to denounce the act of corruption after they are locked-in to the transactions, the authors believe that the policy makers should encourage the participation of civil society organizations in the process of monitoring and controlling corruption.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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