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The Determinants of Taxpayer's Satisfaction of Reverse Charge System and Bank Service: Case of Korean Value-Added Tax

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ABSTRACT

Since 2008, Korea has been applying a reverse charge system (RCS) for the value-added tax (VAT) on the transactions of gold, copper, and copper scrap. Hence, this study analyzed the effects of transaction fee, adoption costs, and advice related to RCS on the satisfaction of taxpayers with the RSC and with banks that operate such a system.

The investigation involved 1813 taxpayers (proprietorships or corporates) subject to the RCS of VAT, and it adopted two approaches, namely, the ordered probit and ordinary least square regressions. Results revealed two relevant conclusions. First, transaction fees and advice related to RCS incur statistically significant negative and positive effects, respectively, on the satisfaction of taxpayers with banks that implement RCS. This finding reflects the negative satisfaction of taxpayers with the system or bank because of the charged fees, which would otherwise not have been charged if the system did not exist. Second, although RCS adoption cost exerts a statistically significant negative effect on the satisfaction of taxpayers with RCS, it does not significantly influence their satisfaction with the services of the bank. This observation indicates that the RCS adoption cost incurs a negative effect in terms of policy, but it does not negatively affect the satisfaction rates of taxpayers with banks that implement the system. This study presented helpful insights regarding the response of taxpayers toward the adoption of RCS, which does not follow the principles of VAT, and therefore contributes to improving the overall system.

Keywords: reverse charge system, VAT, bank service, satisfaction

Ⅰ. Introduction

Since 2008, Korea has been applying a reverse charge system (RCS) for the value-added tax (VAT) on gold transactions. In 2014, this system was expanded to also include the transactions of copper and copper scrap. The principle in VAT imposes that the tax charged on the buyer is paid by the seller to the tax authority. Nonetheless, with RCS, the buyer pays the tax they directly owe to the tax authority. Therefore, upon making the payment to the seller, the buyer must pay 10% of the purchase price to the National Tax Service (NTS) of the Korean government. The businesses that handle gold, copper, or copper scrap transactions to which the RCS is applied must establish an RCS account at Shinhan bank for the payment involved in the transactions and for the payment of VAT. RCS can be perceived as an exception such that it converts VAT, which is an indirect tax, into a direct tax. RCS is a system used for preventing VAT avoidance (Williams, 2001; Shankar, 2006). Meanwhile, taxpayers subject to RCS experience inconvenience and additional transaction costs. This study aims to analyze the effects of transaction fees, RCS adoption costs, and the advice of NTS or the bank on the satisfaction of Korean taxpayers subject to RCS of VAT with bank services or with RCS. As mentioned above, RCS has been implemented in Korea since 2008. By reviewing the responses of taxpayers (their satisfaction or dissatisfaction) and by analyzing the factors that lead to such responses, this study could help identify the political implications in revising RCS later on.

This study develops three hypotheses. First, transaction fees negatively affect the satisfaction of taxpayers with RCS and banks that implement RCS. Second, the costs borne to adopt RCS negatively affect such satisfaction. Third, the advice from NTS or banks regarding RCS positively affects the satisfaction of taxpayers with RCS and banks that implement such a system.

The investigation involved the businesses engaged in the transactions of gold, copper, or copper scrap as research respondents and conducted a survey. Ordinary least square (OLS) regression was performed with RCS and bank service satisfactions as dependent variables. The results of this study would have policy implications, which can present the response of taxpayers and the factors that affect such response that must be considered by NTS when revising the existing RCS.

The rest of the paper is organized into five sections. Following the Introduction, Chapter 2 explains the theoretical background of the RCS for VAT and the Korean RCS, and it develops the research hypotheses. Chapter 3 describes the study model and the selection method used for collecting the study samples. Chapter 4 presents the descriptive statistics, Pearson’s correlation, and the result of the hypothesis testing. Finally, Chapter 5 summarizes the findings.

Ⅱ. Theory Background and Hypothesis Development

2.1 Theory Background

(1) Literature Review

In 1977, Korea adopted VAT to secure the financial resources required for their economic growth. Since then, the revenue from this tax has been consistently increasing. In 2011, of the total national tax revenue of approximately KRW 159 trillion, VAT accounted for 32.5% or approximately KRW 52 trillion, taking up the largest share. VAT, along with corporate tax and individual income tax, forms the large three tax items for the tax revenue in Korea (Kim, 2013).

In principle, VAT is applied to all value-added costs generated during each stage of production or distribution of goods or services. VAT is paid by the other party, making it an indirect tax. In this case, the individuals who are required to settle such tax are different from those who actually bear the tax burden (Ugboro, 1993). In other words, with VAT, the taxpayer transfers the same amount of tax that he collected from the transaction party and hands it over to the government. Despite of being an indirect tax, the share of tax in arrears as of 2011 is 11.3%, which is higher than that of individual income tax (9%) and corporate tax (2.6%). The share of taxes in arrears that is written off amounts to 51%.

The above discussion specifies that VAT takes up a large share of the Korean government's tax revenue. Nonetheless, this tax has been a great burden with the increase of tax in arrears and those that are eventually written off. Moreover, a tax administration infrastructure has been thoroughly expanded, reaching its limit. Therefore, by considering the progress in information technology and transaction payment systems, as well as the social and economic changes, Korea adopted RCS in 2008 to improve their efficiency in collecting VAT.

The European Union (EU) legislated on November 28, 2008, Article 199 Clause 1 of Council Directive 2006/112/EC a reference for its member countries to adopt an RCS. However, even before this clause was legislated by the EU, individual countries have been operating such a system. With the legislation, the countries applying such a system became the majority. In particular, RCS was adopted by most EU member countries in the field of building construction services and recycling fuel.

(2) Reverse Charge System of VAT in Korea

The RCS for VAT is an exception from the rule of indirect tax. The purchaser of goods or services bears the burden of the tax by paying for it. In Korea, such a system has been applied since 2008 only to transactions of gold at first. However, the system was eventually expanded to include copper and copper scrap transactions in 2014. Upon making the payment for the purchase of gold, copper, or copper scrap, the taxpayer must settle a 10% of the purchase price due as VAT. Figure 1 demonstrates that (1) buyer B purchases gold, copper, or copper scrap from A. (2) B deposits the sale price into A's account in a bank, which operates an RCS. Simultaneously, 10% of the purchase price is paid into the bank account of NTS. (3) As a seller, B can sell the gold, copper, or copper scrap to C. Consequently, (4) C deposits the sale price into B's bank account, upon which he also deposits 10% of the purchase price as VAT into the bank account of NTS. The national tax authority then (2) refunds the difference

between the VAT received from B and (4) the VAT received from C into B's bank account.

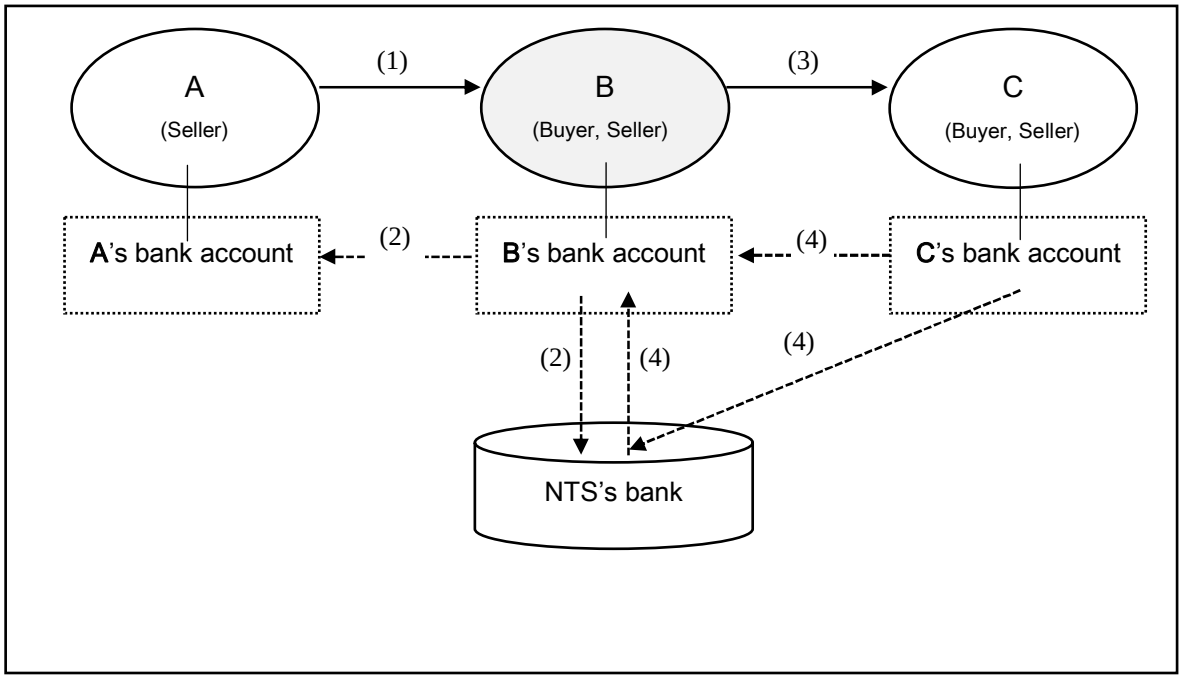

Figure 1. Flow of Transaction in Reverse Charge System of VAT in Korea

2.2 Hypothesis Development

Taxpayers must establish a dedicated account at Shinhan bank and pay or receive funds related to selling or buying gold, copper, or copper scrap through this account to apply RCS. This system has the effect of preventing the VAT avoidance by the seller for the VAT that he received from the buyer (Silvani and Baer, 1997; Shankar, 2006). That is, the VAT received from the buyer is not paid by the seller to the tax authority, but the buyer directly pays the VAT to the tax authority through his own dedicated account (Zammuto and Krakower, 1991; Michael and Stephen, 2007).

As an indirect tax, RCS is an exception to the rule of VAT. Through RCS, the tax authority can prevent VAT avoidance, thereby increasing the tax revenue of the government. However, the taxpayers subject to RCS are affected by certain factors, which in turn affect their satisfaction with RCS or RCS-related bank services. The first factor is the transaction fees resulting from the RCS for the transactions of gold, copper, or copper scrap. RCS can be applied when businesses establish an RCS account at Shinhan bank and deposit the VAT into the NTS's account. During this process, the taxpayer must pay a 0.1% fee to Shinhan bank. These fees are expected to negatively affect the satisfaction of taxpayers with RCS or bank services (Newsham et al., 2009). Based on the above discussion, the following hypothesis is developed.

Hypothesis 1.
Transaction fees are negatively related to the satisfaction of taxpayers with RCS or RCS-related bank services.

The second factor that affects the taxpayers is the costs borne to adopt RCS. Even if a system is successfully developed, its efficiency and effects can be undermined if it is not received favorably and if it does not have enough users (David, 2004; Mansoor and Tayib, 2010.). Costs might be involved in adopting RCS, such as changing one's main bank, opening an RCS account, and using internet banking. When the adoption cost of RCS is higher for the taxpayers, their satisfaction with RCS or bank services would be lower (Okpara, 2005). Accordingly, the below conclusion is drawn.

Hypothesis 2.
RCS adoption costs are negatively related to the satisfaction of taxpayers with RCS or RCS-related bank services.

The third factor that affects the taxpayers is the terms and conditions applied by NTS or the bank in using RCS. The willingness to adopt a specific system is low when it is not thoroughly understood. Similarly, a taxpayer with a lower understanding of RCS may have a lower satisfaction with it. Nonetheless, when the taxpayers are advised by NTS or the bank regarding RCS, they will have a better understanding of the system, leading to their higher satisfaction with it or with the related bank services. The below hypothesis is posited based on the above analysis.

Hypothesis 3.
Advice from NTS or bank is positively related to the satisfaction of taxpayers with RCS or RCS-related bank services.

Ⅲ. Research Design

3.1. Research Model

This study aims to analyze the effects of transaction fees, cost of adoption, and advice of NTS or the bank on the satisfaction of taxpayers with the RCS of VAT and with RCS-related banks services. The study model for the analysis is expressed in Equation (1).

In Equation (1), the dependent variables are *RCS_Satisfaction* and *Bank Satisfaction*. These variables display the satisfaction of the taxpayers with the RCS and with the bank that implements it. The hypothesis variables are *Fee*, which denotes transaction fees, *Cost* that represents the cost of adopting RCS, and the *advice* from NTS or the bank. If hypothesis 1, which states that when the transaction fees are higher, the *RCS_Satisfaction* or *Bank_Satisfaction* would be lower, is supported, β_1 will be negative. Such a result would indicate that when the transaction fees are higher for the taxpayers, their satisfaction with RCS or with the services of the bank where they have an RCS account would be lower.

If hypothesis 2, which stipulates that when the RCS adoption costs are higher for the taxpayers, their *RCS_Satisfaction* or *Bank_Satisfaction* would be lower, is accepted, β_2 will be negative. That is, the taxpayers, who paid a higher cost for changing their main bank to the one designated by NTS or who are required to conduct their transactions in cash only, would have a lower satisfaction rate. Meanwhile, if hypothesis 3, which posits that the taxpayers who receive more advice from NTS or the bank would have higher *RCS_Satisfaction* or *Bank_Satisfaction*, is supported, β_2 is positive. In this case, the taxpayers would have a better understanding of why RCS is adopted and how it is operated. Hence, they would have a positive response and higher satisfaction rate toward it.

$$RCS\_Satisfaction_{i,t} \text{ or } Bank\_Satisfaction_{i,t} = \alpha_0 + \beta_1 Fee_{i,t} + \beta_2 Cost_{i,t} + \beta_3 Advice_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 Corporation_{i,t} + \beta_6 Bank_{i,t} + \beta_7 Buyer_{i,t} + \beta \Sigma IND_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where in,
RCS_Satisfaction=satisfaction of RCS (Reverse Charge System) (Likert Scales: 1~5)
Bank_Satisfaction=satisfaction of bank service, average of three questionnaires (Likert Scales: 1~5)
Fee = the degree of burden at bank service charge (Likert Scales: 1~5)
Cost = total costs of Reverse Charge System introduction: ① less than USD 5,000, ② USD 5,000~10,000, ③ USD 10,000~15,000, ④ USD 15,000~20,000, ⑤ more than USD 20,000
Advice = 1 if the taxpayer receives advice from NTS or Bank, 0 otherwise
SIZE = sales size: ① less than USD 100,000, ② USD 100,000~1,000,000, ③ USD 1,000,000~3,000,000, ④ USD 3,000,000~5,000,000, ⑤ USD 5,000,000~7,000,000, ⑥ USD 7,000,000~9,000,000, ⑦ USD 9,000,000~15,000,000, ⑧ USD 15,000,000~30,000,000, ⑨ USD 30,000,000~50,000,000, ⑩ more than USD 50,000,000
Corporation = 1 if the taxpayer is a corporation, 0 otherwise
Bank = 1 if major bank of the taxpayer is Sin-Han bank, 0 otherwise
Buyer = 1 if major activities of the taxpayer is 'purchase' of coper scrap, 0 otherwise
ΣIND = industry dummy variables

As a controlled variable for controlling the factors that may affect the dependent variables, *SIZE* is measured in 10 stages to represent the sales of the taxpayers. For *Corporation*, a value of 1 is given if the taxpayer is a corporation; otherwise, a value of 0 is set. If the size is huge and it is a corporation, the adoption of the RCS will lead to a greater transaction transparency. The corporation will also have more human resource to operate the system and therefore will have a higher *RCS_Satisfaction*. For *Bank*, a value of 1 is given if the main bank of the taxpayers is Shinhan bank; 0 if otherwise. If the main bank is Shinhan bank, the satisfaction of the

taxpayers with the bank's services is expected to be higher. For *Buyer*, a value of 1 is given if the primary activity of the taxpayer is the 'purchase' of copper scrap; a value of 0 is given if otherwise. The taxpayers are directly affected by the adoption of an RCS and may therefore affect the dependent variables if their major business activity is the purchase of gold, copper, or copper scrap.

3.2 Sample Selection

The sample of this study included businesses, which are engaged in gold, copper, or copper scrap transactions and are subject to RCS as of August 2014. A survey was performed to collect data for the analysis. A total of 3,000 copies of the survey were mailed, of which 60.43% or 1,813 copies were completed.

Table 1 illustrates that 959 copies were received from corporations, 821 copies from general proprietorships, 24 copies from small proprietorships, 1 copy from a public institution, and 8 copies from miscellaneous entities.

Table 1. Entity Types of Sample

Entity Type	N
Totals	1,813
Corporation	959
General Proprietorship	821
Small Proprietorship	24
Public Institution	1
Miscellaneous Entities	8

Ⅳ. Empirical Results

4.1. Descriptive Statistics

Table 1 shows the descriptive statistics of the major variables in this study. The average values for the dependent variables *RCS_Satisfaction* and *Bank_Satisfaction* are 2.607 and 1.804, respectively. Accordingly, the satisfaction with RCS is higher than 2.5, whereas that with bank services is lower. This finding signifies that neither *RCS_Satisfaction* nor *Bank_Satisfaction* is high.

The average values of transaction *Fee* and RCS adoption *Cost* are 2.582 and 1.482, respectively. The value of the transaction costs is similar to that of the median value on a five-point scale. The RCS adoption *Cost* is an average of USD 7,410 (USC 5,000 × 1.482). Meanwhile, the average value of the taxpayer (*Advice*) is 0.589, indicating that approximately 1,068 taxpayers have received advice on the adoption or implementation of RCS from NTS or the bank.

The average values of *SIZE*, which represents the sales of the taxpayer, and of *Corporation* are 2.908 and 0.513, respectively. The average values for taxpayer (*Bank*) whose main bank is Shinhan bank and for those (*Buyer*) whose major activity is purchase are 0.123 and 0.336, respectively.

Table 2. Descriptive Statistics of Major Variables (N=1,813 taxpayers)

	Mean	Std.	Min	Q1	Median	Q3	Max
RCS_ Satisfaction	2.607	1.312	1	1	2	4	5
Bank_ Satisfaction	1.804	0.673	0	1.333	1.667	2	4
Fee	2.582	1.244	1	1	3	3	6
Cost	1.482	0.999	1	1	1	2	7
Advice	0.589	0.492	0	0	1	1	1
SIZE	2.908	2.344	1	1	2	4	9
Corporation	0.513	0.5	0	0	1	1	1
Bank	0.123	0.329	0	0	0	0	1
Buyer	0.336	0.472	0	0	0	1	1

Note 1) Variable definitions are as follows:
RCS_Satisfaction=satisfaction of RCS (Reverse Charge System) (Likert Scales: 1~5)
Bank_Satisfaction=satisfaction of bank service, average of three questionnaires (Likert Scales: 1~5)
Fee = the degree of burden at bank service charge (Likert Scales: 1~5)
Cost = total costs of Reverse Charge System introduction: ① less than USD 5,000, ② USD 5,000~10,000, ③ USD 10,000~15,000, ④ USD 15,000~20,000, ⑤ more than USD 20,000
Advice = 1 if the taxpayer receives advice from NTS or Bank, 0 otherwise
SIZE = sales size: ① less than USD 100,000, ② USD 100,000~1,000,000, ③ USD 1,000,000~3,000,000, ④ USD 3,000,000~5,000,000, ⑤ USD 5,000,000~7,000,000, ⑥ USD 7,000,000~9,000,000, ⑦ USD 9,000,000~15,000,000, ⑧ USD 15,000,000~30,000,000, ⑨ USD 30,000,000~50,000,000, ⑩ more than USD 50,000,000
Corporation = 1 if the taxpayer is a corporation, 0 otherwise
Bank = 1 if major bank of the taxpayer is Sin-han bank, 0 otherwise
Buyer = 1 if major activities of the taxpayer is 'purchase'of coper scrap, 0 otherwise

4.2. Correlation

Table 3 demonstrates the Pearson's correlation between the major variables. First, *RCS_Satisfaction* and *Bank_Satisfaction* are significantly positively correlated (0.103) at a 1% level. This observation indicates that the taxpayer with higher satisfaction with RCS has a higher satisfaction with bank services. The correlation between *RCS_Satisfaction* or *Bank_Satisfaction* and interest variables shows that *Fee* has a statistically significant negative correlation. This condition suggests that the taxpayers have lower satisfaction with RCS-related bank services if the transaction fee they must settle is higher. The RCS adoption costs, which are represented by *Cost*, are

significantly negatively correlated with *RCS_Satisfaction*, while no statistically significant result was observed in relation to *Bank_Satisfaction*. In other words, a taxpayer with a higher RCS adoption cost has a lower RCS satisfaction rate. Nevertheless, no correlation was determined with the taxpayers' satisfaction with bank services.

Moreover, the *Advice* from NTS or bank was determined positively related to *RCS_Satisfaction*, but not statistically significantly correlated with *Bank_Satisfaction*. This finding reveals that a taxpayer who has received more advice from NTS or bank is more likely to have a better understanding of the purposes and operations of RCS and therefore has a higher satisfaction with it. However, such *Advice* is not related to the satisfaction of taxpayers with RCS-related bank services.

Table 3. Correlation of Major Variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
(1)RCS_ Satisfaction	1							
(2)Bank_ Satisfaction	0.103‡ (0.000)	1						
(3)Fee	-0.223‡ (0.000)	-0.381‡ (0.000)	1					
(4)Cost	-0.071‡ (0.007)	0.024 (0.348)	0.05* (0.056)	1				
(5)Advice	0.121‡ (0.000)	0.098 (0.000)	-0.088‡ (0.000)	0.016 (0.526)	1			
(6)SIZE	0.170‡ (0.000)	0.010 (0.698)	-0.046 (0.066)	0.047* (0.072)	0.083‡ (0.001)	1		
(7)Corporation	0.149‡ (0.000)	0.066 (0.007)	-0.102 (0.000)	-0.018 (0.479)	0.068‡ (0.004)	0.391 (0.000)	1	
(8)Bank	0.047* (0.056)	0.175‡ (0.000)	-0.158‡ (0.000)	0.007 (0.796)	0.045* (0.053)	-0.054† (0.028)	0.065‡ (0.005)	1
(9)Buyer	0.016 (0.516)	0.005 (0.832)	0.032 (0.182)	0.083‡ (0.001)	0.083‡ (0.000)	0.047* (0.055)	-0.059* (0.010)	-0.022 (0.349)

*Note 1) ‡, †, * denote significance at 10%, 5% and 1% level based on two tailed test*
Note 2) Variable definitions are as note 1) of table 1

Meanwhile, the taxpayer's sales size (*SIZE*), *Corporation,* and *Bank* are positively correlated with *RCS_Satisfaction* at a statistically significant level. This case implies that the company with a larger size, a corporation entity, and the taxpayers whose major bank is Shinhan bank have a higher satisfaction rate with RCS. By contrast, *SIZE*, *Corporation*, and *Buyer* are not statistically significantly related to *Bank_Satisfaction*. This observation signifies that the taxpayers' size, entity, and main business activity do not affect their satisfaction with RCS-related bank services.

4.3 Multivariate Analysis

Table 4 illustrates the results of analyzing the effects of *Fee*, *Cost*, and *Advice* on *RCS_Satisfaction*. The F-stat., which shows the fitness of the model, was determined 17.18 to 19.57 at a statistically significant level, and Adj.R^2 ranged from 57.7% to 97.1%. A confirmation of the variance inflation factor (VIF) to check for the multicollinearity among variables revealed that they were all below 4. Table 4 specifies that models (1) to (3) include each of their hypothesis variables, whereas model (4) indicates the results for a model that includes all hypothesis variables.

In models (1) and (4), *Fee* is –0.218 (t-stat. = –8.08) and –0.189 (t-stat. = –6.7) at a statistically significant level, respectively. This condition implies that if the RCS transaction fees are high, the taxpayers are dissatisfied with RCS. The reason behind this case is the fact that the taxpayers have to pay a fee, which they would not have paid if there had been no RCS. Hence, the taxpayers are not satisfied with RCS. This result supports hypothesis 1.

In models (2) and (4), RCS adoption *Cost* is –0.104 (t-stat. = –3) and –0.094 (t-stat. = –2.68), respectively. This finding signifies that the taxpayers who had a higher adoption cost for RCS have a lower satisfaction rate. In other words, if these taxpayers needed to change their main bank to Shinhan bank or needed to hire a dedicated personnel to handle their RCS transactions, their satisfaction rate with RCS is lower. This result validates hypothesis 2.

In models (3) and (4), the value of *Advice*, which denotes the advice received from NTS or the bank, is 0.301 (t-stat. = 4.44) and 0.272 (t-stat. = 3.86), respectively. The taxpayers who have received advice from NTS or the bank have a higher satisfaction rate with RCS. Therefore, hypothesis 3 is verified.

Of the controlled variables, *SIZE* and *Corporation* have a significant positive coefficient in models (1) to (4). This observation demonstrates that a taxpayer with a larger sales size or is a corporation entity has a higher satisfaction rate with RCS. In other words, the entity, which has a larger size or is a corporation, benefits from adopting RCS in terms of its relationship with Shinhan bank or from the increased transparency it acquires from internet banking, thereby leading to its higher satisfaction. In contrast, no statistically significant result was obtained for *Bank* or *Buyer*. This circumstance implies that the main bank or main business activity of the taxpayers do not affect their satisfaction with RCS.

Table 4. Regression Results: Hypotheses Test Results $RCS\_Satisfaction_{i,t} = \alpha_0 + \beta_1 Fee_{i,t} + \beta_2 Cost_{i,t} + \beta_3 Advice_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 Corporation_{i,t} + \beta_6 Bank_{i,t} + \beta_7 Buyer_{i,t} + \beta \Sigma IND_{i,t} + \varepsilon_{i,t}$

Variable	(1) Fee		(2) Cost		(3) Advice		(4) Pooled	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
Intercept	2.692‡	8.7	2.157‡	6.57	2.095‡	7.32	2.439‡	6.93
Fee	-0.218‡	-8.08	-	-	-	-	-0.189‡	-6.70
Cost	-	-	-0.104‡	-3.00	-	-	-0.094‡	-2.68
Advice	-	-	-	-	0.301‡	4.44	0.272‡	3.86
SIZE	0.064‡	4.25	0.065‡	4.16	0.063‡	4.11	0.057‡	3.72
Corporation	0.195†	2.55	0.258‡	3.24	0.230‡	3.02	0.203‡	2.56
Bank	0.045	0.45	0.134	1.27	0.115	1.17	0.003	0.03
Buyer	0.084	1.13	0.065	0.86	0.065	0.90	0.071	0.91
ΣIND	Included		Included		Included		Included	
F-stat.	17.18‡		16.74‡		17.41‡		19.57‡	
Adj. R^2	0.831		0.563		0.577		0.971	

*Note 1) ‡, †, * denote significance at 10%, 5% and 1% level based on two tailed test*
Note 2) Note 2) Variable definitions are as note 1) of table 1

Table 5 specifies the effects of *Fee*, *Cost*, and *Advice* on *Bank_Satisfaction*. The F-stat. of the model varies between 14.45 and 21.96 at a statistically significant level, while Adj.R^2 ranges from 41.9% to 66.1%. Meanwhile, the VIF value is below 4, indicating no issues of multicollinearity among variables.

In models (1) and (4), *Fee* is –0.195 (t-stat. = –15.09) and –0.194 (t-stat. = –13.96), respectively. This case illustrates that the taxpayers required to pay a higher RCS transaction fee have a lower satisfaction with the services of Shinhan bank. Therefore, hypothesis 1 is supported.

In models (2) and (4), *Cost* does not show statistically significant results. This condition indicates that unlike *Fee*, RCS adoption costs are not related to bank services and therefore do not affect the satisfaction rate of taxpayers with bank services. Hence, hypothesis 2 is rejected.

In models (3) and (4), *Advice* is 0.110 (t-stat. = 3.21) and 0.044 (t-stat. = 1.99), respectively. This finding implies that the taxpayers who have received advice from NTS or Shinhan bank regarding the purposes or operations of RCS have a higher satisfaction rate toward RCS-related bank services. In this case, hypothesis 3 is verified.

The results for controlled variables show that no statistically significant finding was acquired for models (1) to (4) in terms of *SIZE*, *Corporation,* and *Buyer*. Nonetheless, *Bank* showed a statistically significant positive coefficient for all. This result signifies that if the main bank of a taxpayer is Shinhan bank, its satisfaction with RCS-related bank services is high. However, the sales size, entity, or main business activity of the taxpayer does not affect its satisfaction rate with bank services.

Table 5. Regression Results: Hypotheses Test Results $Bank\_Satisfaction_{i,t} = \alpha_0 + \beta_1 Fee_{i,t} + \beta_2 Cost_{i,t} + \beta_3 Advice_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 Corporation_{i,t} + \beta_6 Bank_{i,t} + \beta_7 Buyer_{i,t} + \beta \Sigma IND_{i,t} + \varepsilon_{i,t}$

Variable	(1) Fee		(2) Cost		(3) Advice		(4) Pooled	
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
Intercept	1.945‡	14.92	1.499‡	9.43	1.357‡	10.47	1.997‡	12.58
Fee	-0.195‡	-15.09	-	-	-	-	-0.194‡	-13.96
Cost	-	-	0.013	0.73	-	-	0.026	1.53
Advice	-	-	-	-	0.110†	3.21	0.044†	1.99
SIZE	0.003	0.05	0.004	0.47	0.002	0.02	0.002	0.22
Corporation	0.057	1.57	0.063	1.52	0.071*	1.83	0.043	1.10
Bank	0.226‡	4.76	0.365‡	6.80	0.342‡	6.86	0.239‡	4.66
Buyer	-0.002	-0.04	0.002	0.06	-0.013	-0.35	0.003	0.08
ΣIND	Included		Included		Included		Included	
F-stat.	21.96‡		14.45‡		15.96‡		16.82‡	
Adj. R^2	0.661		0.431		0.419		0.642	

*Note 1) ‡, †, * denote significance at 10%, 5% and 1% level based on two tailed test*
Note 2) Variable definitions are as note 2 of Table 4

V. Conclusion

Since 2008, Korea has been applying an RCS for VAT on gold transactions. In 2014, such a system was expanded to include copper and copper scrap transactions. The principle in VAT stipulates that the tax charged on the buyer is paid by the seller to the tax authority. With RCS, the buyer pays the tax it owes directly to the tax authority. Therefore, the buyer, upon making the payment to the seller, must pay 10% of the purchase price to NTS of the Korean government. The businesses, which handle gold, copper, or copper scrap transactions to which the RCS is applied, must establish an RCS account at Shinhan bank for the payment involved in the transactions and the payment of VAT. In this event, RCS can be considered an exception such that it converts VAT, which is an indirect tax, into a direct tax. RCS is a system used for preventing VAT avoidance. Reviewing the response of taxpayers (their satisfaction or dissatisfaction) and analyzing the factors that lead to such response will help identify the political implications in revising RCS down the road. In other words, due to the irrationality or practicality of the system, public interest might be undermined or social costs might be increased, leading to greater tax resistance. Therefore, the response of taxpayers toward the system must necessarily be reviewed to significantly improve the system. This study explored the satisfaction of taxpayers with RCS, which has been adopted in Korea since 2008, as well as their satisfaction with RCS-related bank services. The purpose of the investigation was to analyze the effects of transaction fees, RCS adoption costs, and the advice received from NTS or the bank on such satisfaction. The findings obtained are as follows:

First, taxpayers were dissatisfied with RCS when the fees were high in an RCS transaction. Such dissatisfaction can be attributed to the payment of fees that they would not have been obliged to pay if RCS was not adopted. Similarly, taxpayers indicated a higher transaction fee had a lower satisfaction rate with the services of Shin-Han bank.

Second, taxpayers with higher RCS adoption costs had lower RCS satisfaction ratings. Thus, they either had to change their main bank to Sin-Han bank or had to hire a dedicated personnel to handle RCS-related transactions, which led to higher costs that resulted in lower RCS satisfaction. Meanwhile, RCS adoption costs was not linked with the satisfaction with bank services. Changes in the main bank failed to affect bank service satisfaction.

Third, taxpayers who received more advice from NTS or banks with higher RCS satisfaction. Such advice on the purpose and operation of RCS was correlated with a higher satisfaction rate with bank services among taxpayers. The policy implications of these findings are beneficial to RCS revisions, transaction fees, and RCS adoption costs that require further reduction. Furthermore, the NTS or the bank should raise awareness on the purpose and operation of RCS as well.

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