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Full Length Research Paper

Taxpayers' online information privacy concerns, antecedents, and behavior intention

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More and more individual taxpayers are using the online services of commercial tax software to prepare and file their tax returns electronically. However, online tax return does have risks, especially the risk of information privacy evasion. Little research has been conducted on the linkage between taxpayers' online information privacy concerns (TOIPC) and taxpayers' behavior intentions, and factors affecting online taxpayers' information privacy concerns. This study identifies three primary dimensions for TOIPC (that is, control, awareness, collection), conducts empirical testing on the relationship between each privacy concern dimension and taxpayers' intention to use online tax software, and explores factors affecting TOIPC (age, gender, trust, perceived risk, and victim of previous privacy invasion). The results suggest that taxpayers with high privacy concern about information collection will be less willing to use online tax software to file tax. Taxpayers' perceived risks have significant positive relationship with the taxpayers' online information collection concern. Implications and future research are discussed.

Key words: Privacy concerns, online tax software, intention to use.

INTRODUCTION

More and more individual taxpayers are using the online services of commercial tax software to prepare and file their tax returns. According to the most recent data from the Internal Revenue Service (IRS, 2017), 127.3 million taxpayers (about 87.6%) e-filed their tax returns in 2016 either through tax professionals (58.5%) or self-prepared (41.5%).¹ There are many advantages in using software

to prepare and file tax return, such as calculation accuracy, improved efficiency, decreased processing costs by the Internal Revenue Service (IRS, 2017), and quick refunds (Brink and Lee, 2015). However, online tax return does have risks, especially the risk of information privacy evasion. Due to the preparation, filing, and storage of tax returns in electronic form, the security of tax return information is a critical issue (Schwartz, 2008). Schwartz states that tax preparation software, like other software, is subject to hacking, viruses, account breaches, and software failures.

A report conducted by TURSTe/National Cyber Security Alliance (NCSA, 2016), Consumer Privacy Index reveals that 92% of US internet users worry about their privacy online and 74% have limited their online activity in

¹ Those self-prepared taxpayers can efile either through tax software provider's website (online version) or tax software installed in personal computers (download/cd version). For example, TurboTax has online version or download/CD version. For online version, all information are stored in TurboTax's server. On the other hand, for download/cd version all information are stored in taxpayer's personal computer. For this study purpose, we focus on the taxpayers who prepare and file tax return through online tax software (online version).

the last year due to privacy concerns. Meanwhile, although the Internal Revenue Code regulation §301.7216-1 states there will be a criminal penalty for tax return preparers who knowingly or recklessly disclose or use tax return information for a purpose other than preparing a tax return, many tax return software companies do share taxpayers' data with affiliates or marketing partners, including taxpayers' name, address, email address, phone number, income, dependents, charitable contributions and deductions for college tuition, business losses, etc. (Murray, 2012). Taxpayers have become more anxious that their personal information may be shared, misused, disclosed to unrelated parties, and perhaps even stolen by identity thieves.

Sutton (2010) calls for more research to investigate the relationship between the use of tax software and taxpayers' behaviors. However, little research has been conducted on the linkage between taxpayers' online information privacy concerns (TOIPC) and taxpayers' behavior intentions, and factors affecting online taxpayers' information privacy concerns. One relevant study is from McLeod et al. (2008) and finds that individuals' computer expertise can increase their trust in the software system's privacy protection. In another study, Apostolou et al. (2016) demonstrate that calculative commitment and affective commitment mediate the relationship between trust in tax software and taxpayers' intention to use e-file. These initial studies focus on the impact of trust on taxpayers' intention to use tax software. Trust may be related to taxpayers' privacy concerns about using online software, but it is a totally different theoretical construct from information privacy concern. Researchers still know little about the dimensionality of TOIPC, the linkage between each dimension of TOIPC and taxpayers' behavior intention, and factors affecting taxpayers' privacy concerns about the online tax software, and intention to use online tax software. To address the inadequacies in current literature, this study provides a comprehensive examination on three dimensions of TOIPC (control, awareness, collection), conducts empirical testing on the relationship between each dimension and taxpayers' intention to use online tax software, and explores factors affecting TOIPC (e.g., age, gender, trust, perceived risk, victim of previous privacy invasion, etc).

This study makes several contributions from both academic perspective and practitioner perspective. First, this study contributes to the online privacy concern literature by investigating the taxpayers' privacy concerns about using online tax software. To our best knowledge, this study is the first to apply the IUIPC model to study the dimensionality of taxpayers' online privacy concerns. Due to the distinction in the transaction nature, the

taxpayers' attitudes (privacy concerns) and behaviors toward purchasing services from online tax software may be quite different from other types of online customers. The findings from this study confirm that in contrast to regular online customers who have privacy concerns in three aspects (information collection, control, and information policy awareness), taxpayers worry more about information collection than information control and information policy, and this worry has a significant negative impact on their intention to use online tax software.

Second, the samples used in prior studies on tax software did not distinguish on the kind of tax software: commercial online tax software (online version) or personally owned tax software (download/cd version). A taxpayer can choose to pay commercial tax software to prepare and file tax return directly online or purchase tax software and install on personal computer to prepare and file tax return. However, there is a huge difference in terms of the taxpayers' attitudes towards privacy between filing tax return through personally owned tax software and filing tax return through online commercial tax software. Online environment is much riskier than a personal computer, because all data collected by online software are saved in a third-party server and the taxpayers' information can be lost, misused and/or hacked. This study specifically focuses on the taxpayers' intention to use online tax software and finds that taxpayers' privacy concerns do affect their intention to choose online tax software to file tax return.

Third, from practitioners' perspective, the findings from this study can serve as a useful guidance for online tax software providers to understand potential customers' online information privacy concerns and initial ways to address their concerns. The results suggest taxpayers with high privacy concerns are less likely to use online tax software because of the potential perceived risks. To attract more customers, marketers should address taxpayers' perceived risk of using online tax software so that their privacy concerns about information collection are alleviated. At the same time, the findings of the study shed some lights on how to improve the taxpayer's compliance rate.

Hypothesis development

Taxpayers' online information privacy concerns and behavior intention

Information system researchers have explored and verified the dimensions of online consumer privacy concerns by conducting empirical studies (Smith et al.,

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1996; Malhotra et al., 2004). Among these studies, Malhotra et al. (2004) developed the construct model of *Internet users' information privacy concerns* (IUIPC) based on *social contract theory* (SC). SC has been used to study online customers' perceptions of fairness and justice, particularly in the context of individual customer-online vendor relationships. Since online taxpayers are a category of online consumers, we apply the IUIPC model to discuss the dimensionality of TOIPC.

The IUIPC model identifies three dimensions of online consumer privacy concerns: collection, control, and awareness. According to Malhotra et al. (2004), SC theory suggests that an online firm's collection of personally identifiable data is perceived to be fair only when the individual is granted control over the information, and the consumer is informed about the firm's intended use of the information. As a result, it is possible to characterize IUIPC in terms of three factors: collection, control, and awareness of privacy practices. The collection factor captures the central theme of equitable information exchange based on the agreed social contract. Meanwhile, the control factor represents the freedom to voice an opinion or exit the situation. Finally, the awareness factor indicates understanding about established conditions and actual practices. Following Malhotra et al. (2004), we propose that TOIPC center on the same three major dimensions: collection, control, and awareness of privacy practices.

Collection refers to the degree to which a taxpayer is concerned about the collection of personal information by online tax software companies. This collection factor is grounded on SC's principle of *distributive justice*, which relates to "the perceived fairness of outcomes that one receives" (Culnan and Bies, 2003). In an equitable exchange, taxpayers give up personal information in return for something of value after evaluating the costs and benefits associated with preparing and filing tax return online. Thus, taxpayers may have less concern and more willingness to use online tax software knowing that their information will be used fairly to help them prepare and file tax return.

Control represents the taxpayer's freedom to voice an opinion (that is, approve or deny sharing personal information for marketing purpose) or exit (that is, opt-out). This factor is related to SC's principle of procedural justice. According to the principle of procedural justice, individuals view procedures as fair when they are vested with control of the procedures (Thibaut and Walker, 1975; Tyler, 1994). In other words, taxpayers will have less concern if they believe they can exercise enough control to decide whether they want to give information and how it will be used.

Awareness of privacy practices refers to policies and procedures by which online tax software companies make taxpayers aware of how the collected information will be used. This awareness factor incorporates two types of justices: interactional and informational.

Interactional justice includes issues of transparency and propriety of information use stated during enactment of procedures. *Informational justice* relates to the possible disclosure of specified information. When taxpayers are given the specifics of how the information will be used, their perception of fairness increases, and they will have less privacy concerns.

Prior studies in information system area show that information privacy concerns affect individuals' attitudes and willingness to purchase online (Milberg et al., 2000; Stewart and Segars, 2002; Dinev and Hart, 2006). As discussed in Li and Santhanam (2008), people who have high concerns about privacy may think it is risky to provide information and therefore may react negatively to requests for personal information. That is, they may be unwilling to disclose information or terminate the transaction. In terms of tax return, those taxpayers who have high concerns of leaking personal information and/or identify theft may choose other tax return methods rather than online tax software.

In the privacy literature, a major research stream has emerged that uses intention-based theories such as theory of reasoned action (TRA) (Li and Santhanam, 2008; Liu et al., 2005; Malhotra et al., 2004) to predict outcomes of individuals' privacy concerns. According to these theories, the level of individuals' privacy concerns, as an attitude variable, has a negative effect on intentions to use internet-based services. Similarly, it can be expected that the same relationship will apply to taxpayers' online privacy concerns and their intention to use online tax software. Taxpayers with high online privacy concerns will be more hesitant and have less intention to use online tax software to prepare and file tax return. As a result, we propose the hypotheses that:

H1a: *Taxpayers with high privacy concern about information collection will be less willing to use online tax software to file tax return than will taxpayers with low privacy concerns.*

H1b: *Taxpayers with high privacy concern about information control will be less willing to use online tax software to file tax return than will taxpayers with low privacy concerns.*

H1c: *Taxpayers with high privacy concern about awareness of information policy will be less willing to use online tax software to file tax return than will taxpayers with low privacy concerns.*

Factors affecting taxpayers' online information privacy concerns

Prior studies on privacy reveal that many factors may affect online customers' privacy concerns, such as privacy experiences, privacy perceived risk, personality

differences, demographic differences, information sensitivity, and culture/climate difference (Smith et al., 2011; Bansal et al., 2010; Dinev and Hart, 2004, 2006). To have a complete understanding of individuals' perceptions to information privacy-related issues, researchers must start to address salient beliefs and contextual difference at a specific level (Li and Santhanam, 2008). In the situation such as the relation between taxpayers and tax software companies, certain factors may be identified as being sensitive to the taxpayers' online privacy concerns. In this section, we discuss some potential antecedent factors that may affect taxpayers' online privacy concerns when using online tax software.

Gender

Previous studies show that females have higher privacy concerns than their male counterparts (Sheehan, 2009; Rowan and Dehlinger, 2014). Specifically, Sheehan (2009) finds that women generally are more concerned than men about their personal privacy, and men are more likely than women to change their online behaviors when facing privacy concerns. And economics and finance literature show that women generally are more risk averse than men (Croson and Gneezy, 2009). In terms of online tax return preparation and filing, due to unpredictable online environment, female taxpayers may express higher privacy concerns than male taxpayers. As a result, we hypothesize that

H2: *Female taxpayers have higher privacy concerns than male taxpayers when using online tax software to prepare and file tax return.*

Age

Culnan (1995) finds that those consumers who were less likely to be concerned about privacy were more likely to be younger. And young generation is more exposed to the online social media and/or online shopping experience, which causes them to be less concerned about online privacy invasion. In addition, younger people generally is less conservative than the older people, which leads them to be more willingly to try new technologies, such as online tax software. Therefore, we propose that,

H3: *There is a positive relationship between age and privacy concerns in terms of using online tax software to prepare and file tax return online.*

Taxpayers' perceived risk

Perceived privacy risk has been defined as the degree to

which an individual believes that a high potential for loss is associated with the release of personal information to a firm (Featherman and Pavlou, 2003; Malhotra et al., 2004). Previous studies find that perceived risk is an antecedent to privacy concerns (Dinev and Hart, 2004, 2006). Specifically, Dinev and Hart argue that individuals who perceive the Internet as an environment in which there is a risk of other parties' opportunistic behaviors should have privacy concerns about who has access to the personal information that they disclose. In terms of online tax return, taxpayers who perceive preparing and filing tax return online as risky would express more privacy concerns of personal information being misused or stolen. Schaupp et al. (2010) found that perceived risk has a significant negative effect on intention to use an IRS endorsed e-file system. As a result, we hypothesize that:

H4: *Taxpayers with higher perceived risk about the usage of online software have higher privacy concerns than those with lower perceived risk.*

Trust

As discussed in Smith et al. (2011), literature shows that trust has a significant relationship with privacy concerns (Metzger, 2004; Xu et al., 2010; Belanger et al., 2002; Bansal et al., 2010; Chellappa, 2008; Malhotra et al., 2004). For example, Belanger et al. (2002) found that trust can reduce online consumers' privacy concerns. Similarly, taxpayers expressing trust in internet vendors should have lower online privacy concerns. Thus, we hypothesize that:

H5: *There is a negative relationship between trust and privacy concerns in terms of using online tax software to prepare and file tax return.*

Victim of previous privacy invasion

Previous studies found that there is negative relationship between privacy concern and previous privacy invasion experience. For example, Smith et al. (1996) found that individuals who have been exposed to or been the victim of personal information abuse should have stronger concerns regarding information privacy. Awad and Krishnan (2006) found that previous privacy invasions are negatively associated with willingness to be profiled online. And Bansal et al. (2010) find that previous online privacy invasion increase privacy concerns in the health industry. Using online tax software to prepare and file tax return is another type of online activity by customers. It can be expected that previous privacy invasion experience in other online activities should increase taxpayers' online privacy concerns when deciding whether or not to use online tax software. Therefore, we propose that:

H6: *Previous online privacy invasion experience increases taxpayers' privacy concerns about using online tax software.*

RESEARCH METHODOLOGY

Sample

To test our hypotheses, we employed a survey methodology. Specifically, we created a questionnaire with 25 items adapted from the related literature. Participants were 89 undergraduate students enrolled at a public university who volunteered for the survey. All the 89 students had filed tax return before, but never used the services of online tax software.² In return for volunteering, participants were given course credits. The average age of the participants is 21.12 with the range from 19 to 32. 44 participants are males and 45 are females. 11 participants claimed as accounting majors, 6 participants did not provide the major information, and the rest of the participants are non-accounting majors, such as Management, Marketing, and Business Administration.

Measurement

Appendix 1 describes each measure in details. A seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) is used to catch participant's answers to the questions.

Intention to use online tax software

Intention to use is measured by two items asking each subject's intention to use online tax software to prepare and file tax return.

Taxpayers' online information privacy concerns

Taxpayers' online information privacy concerns were measured with an adapted instrument developed by Malhotra et al. (2004). The instrument, which we refer to as TOIPC includes three dimensions: collection, control, and awareness of privacy practices. There are three questions in each dimension.

Perceived risk

The instrument of perceived risks of information disclosure online is adapted from Xu et al. (2010). Perceived risk is measured by three items.

Privacy victim

The one-item measurement for privacy victim is adopted from Smith et al. (1996). Subjects are asked "How frequently have you personally been the victim of what you felt was an improper invasion of privacy?" A seven-point Likert scale, ranging from 1 (very infrequently) to 7 (very frequently) is used.

Trust

The instrument of trust is adopted from McKnight et al. (2002) and

Hui et al. (2007). This instrument contains seven questions.

DATA ANALYSIS AND RESULTS

Validity and reliability test

The unidimensionality of the scales, validity, and reliability are evaluated via confirmatory factor analysis, as we form a priori links between item measures. Table 1 summarizes our testing results.

Good measurement model fit was hard to achieve at first due to the small sample size and the relatively larger number of variables to measure. Upon further examination of parameter estimates and other diagnostics, it became apparent that several error terms were significantly correlated. The literature suggests that problematic indicators can be eliminated, assuming content validity is not seriously impacted and the elimination action will not make appreciable differences in either the measurement or hypotheses testing results (Nahm et al., 2003). Accordingly, we delete one problematic indicator (item 3 in information policy awareness concerns) after a careful review of each. The elimination of this item is mainly due to error correlation of this item with other items in the same construct. Error correlations indicate that they share variance and possibly measure the same content.

Unidimensionality refers to the existence of a single concept underlying a group of measures (Gerbing and Anderson, 1988). Unidimensionality can be accessed via scree plots and eigenvalues (Rencher, 1995: 464). A rule of thumb is that eigenvalues greater than 1.0 for the first dimension and eigenvalues less than 1.0 for the second dimension support the existence of construct unidimensionality. As shown in Table 1, eigenvalues for each construct conform to these expected values. Therefore, it is established that the items underlying the constructs are unidimensional.

Reliability is typically assessed using Cronbach's alpha and composite reliabilities. For Cronbach's alpha, a minimum value of 0.70 is considered acceptable for existing scales and a value of 0.60 is deemed appropriate for newly developed scales (Byrne, 1998). The constructs in this study exceed the threshold values recommended in the literature (Byrne, 1998: 199); thus, they are judged to possess acceptable reliability.

Convergent validity represents how well the item measures relate to each other with respect to a common concept, and is exhibited by having significant standardized factor loadings of measures on hypothesized constructs (Anderson and Gerbing, 1988). All factor loadings in Table 1 for the constructs are significant. Therefore, convergent validity for scales is established. Discriminant validity represents how well an item measure relates to its hypothesized construct versus other constructs in the model. Discriminant validity is tested by a Chi-square test of the difference between the latent variables (Byrne, 1998). A series of pairwise Chi-

²In this stage of the research, we only include those participants who had filing experience but never used online tax software before into the study to eliminate some bias.

Table 1. Dimensionality, reliability, and validity testing results.

Construct	Eigenvalue	Cronbach's alpha	Parameter estimates (standardized factor loadings)
Behavior Intention	1.752	0.858	0.936-0.936
Information collection concerns	2.383	0.869	0.886-0.900
Information control concerns	1.753	0.639	0.649-0.823
Information policy awareness concerns	1.478	0.624	0.860-0.860
Perceived risk	2.483	0.893	0.884-0.933
Trust	3.603	0.835	0.519-0.896
Recommended values ^a	>1	>0.6	-

^aRencher (1995) and Byrne (1998).

Table 2. Regression analysis results (Dependent Variable: Intention to Use).

Independent variable	Standardized coefficients
Information Collection Concerns	-0.256*
Information Control Concerns	-0.003
Information Policy Awareness Concerns	0.197
Adjusted R ²	0.065*

**p<0.01, *p<0.05.

square tests of the difference involving two constructs is conducted. Because all of the Chi-square tests are significant at $p < 0.001$, the existence of discriminant validity for the scales is supported (Byrne, 1998: 199).

Regression analysis on the linkage between TOIPC and intention to use

Regression analysis is conducted to test hypotheses 1a to 1c by using intention-to-use as dependent variable and three dimensions of TOIPC (collection, control, and awareness) as independent variables. Table 2 presents the standardized beta weights for the predictors and the adjusted R².

The set of three dimensions of TOIPC jointly account for a statistically significant amount of variance in a firm's financial performance (adjusted R²=0.065; p -value <0.05). Specifically, the results show that there exists a statistically significant negative relationship between information collection and the intention to use online tax software (Beta=-0.256; p -value <0.05). However, the linkages between the other two privacy concern dimensions (control and awareness) and the intention to use online tax software turned out to be insignificant. Therefore, H1a is supported, and H1b and H1c are not supported.

Regression analysis on factors affecting TOIPC

Given that the testing results from our sample only

support the hypothesized relationship between information collection concerns and the intention to use online tax software, we use information collection concerns as the dependent variable, when we explore factors affecting taxpayers' online privacy concerns. Regression analysis is conducted using gender, age, perceived risk, trust, and privacy victim as the independent variables. As presented in Table 3, the results show that all independent variables are insignificant except perceived risks (Beta=0.632; p -value <0.05). Thus, H4 is supported. H2, H3, H5 and H6 are not supported.

Robust test

In order to address the concern that the findings in the study is random due to the limited sample data, we collected additional survey data in the following semester based on different group of students in the same university. 95 participants reported that they filed tax return before, but never used the services of online tax software and are included in the robust test. The test results shown in Tables 4 and 5 are consistent with the findings.

DISCUSSION

This study investigates whether online privacy concerns have any impact on the taxpayers' intention to use online tax software to prepare and file their tax return, and

Table 3. Regression analysis results (Dependent Variable: Information Collection Concerns).

Independent variable	Standardized coefficients
Gender	-0.039
Age	0.110
Perceived risk	0.632**
Privacy victim	-0.019
Trust	-0.104
Adjusted R ²	0.448**

**p<0.01, *p<0.05.

Table 4. Regression analysis results (Dependent Variable: Intention to Use).

Independent variable	Standardized coefficients
Information collection concerns	-0.481**
Information control concerns	0.112
Information policy awareness concerns	0.063
Adjusted R ²	0.248**

**p<0.01, *p<0.05.

Table 5. Regression analysis results (Dependent variable: Information collection concerns).

Independent variable	Standardized coefficients
Gender	-0.062
Age	0.095
Perceived risk	0.223**
Privacy victim	0.031
Trust	-0.035
Adjusted R ²	0.018*

**p<0.01, *p<0.05.

identities what factors that may affect TOIPC. Building on the IUIPC model developed by Malhotra et al. (2004), this study identifies three dimensions for TOIPC (collection, control, and awareness). Then we conducted empirical testing the impact of TOIPC on the taxpayers' intention to use online tax software along the three dimensions. Specifically, taxpayers with high privacy concern about information collection will be less willing to use online tax software to file tax return than will taxpayers with low privacy concerns. However, this study didn't find evidence that the other two dimensions of TOIPC information control concern and information policy awareness concern have significant effect on taxpayers' willingness to use online tax software. These findings suggest that information collection concern is the biggest concern that taxpayers have when they decide whether or not to online tax software. In addition, we investigate

the potential factors that may affect the taxpayers' privacy concerns about the collection of personal information by online tax software. Among the variables tested, only perceived risks have significant positive relationship with the taxpayer's online information collection concern, which suggests that when taxpayers perceive online preparing and filing tax return risky, they have higher privacy concerns about their personal information being misused or stolen.

As with all research, this study has limitations. First, because we surveyed the college students while they are also taxpayers, the results from this study may not be generalized to a sample of subjects with larger variance in income, age, race, culture, and education background. However, these results should shed lights on the ordinary taxpayers' behavior intention to use online tax software to prepare and file tax return. Second, as discussed in

Malhotra et al. (2004) that information privacy is a complex phenomenon, this study might not consider all potential relevant privacy variables to examine taxpayers' reactions to information privacy threats. Future research could survey the taxpayers in general with different background and income levels to investigate what factors affecting the taxpayers' decisions to choose/not choose online tax software to file tax return. Another future research might be to test if behavior intention and actual behavior are different in terms of using online tax software to file tax return as shown in this study. Although behavioral intention is a reliable predictor of actual behavior (Ajzen, 1991), there are many unpredictable factors that may affect individual's actual behavior. Future study could also investigate the interactions among factors affecting taxpayers' privacy concerns. For example, scholars can investigate the interactions between perceived risk and different dimension of trust.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Appendix 1

Research Constructs and Measures (Seven-point scales anchored with *strongly disagree* and *strongly agree*)

Intention to Use Online Tax Software

(1) Specify the extent to which you would like to use the online tax software for tax return. A seven-point Likert scale ranging from 1 = very unlikely to 7 = very likely, and another one ranging from 1 = willingly to 7 = unwillingly were used.

Taxpayer Online Information Privacy Concern (adapted from Malhotra et al. (2004)).

Collection

- (1) It usually bothers me when online tax software companies ask me for personal information.
- (2) When online tax software companies ask me for personal information, I sometimes think twice before providing it.
- (3) I'm concerned that online tax software companies are collecting too much personal information about me.

Control

- (1) Taxpayer information privacy is really a matter of taxpayers' right to exercise control and autonomy over decisions about how their information is collected, used, and shared.
- (2) Taxpayer control of personal information lies at the heart of taxpayer privacy.
- (3) I believe that taxpayer privacy is invaded when control is lost or unwillingly reduced as a result of disclosing information to unauthorized parties.

Awareness (of Privacy Practices):

- (1) Online tax software companies seeking information should disclose the way the data are collected, processed, and used.
- (2) A good privacy policy should have a clear and conspicuous disclosure.
- (3) It is very important to me that I am aware and knowledgeable about how my personal information will be used (drop).

Perceived Risk (adapted from Xu et al. (2010))

- (1) Providing the online tax software companies with my personal information would involve many unexpected problems.
- (2) It would be risky to disclose my personal information to the online tax software companies.
- (3) There would be high potential for loss in disclosing my personal information to the online tax software companies.

Trust (adapted from Modified based on McKnight et al. (2002) and Hui et al. (2007))

- (1) I feel that people are generally trustworthy.
- (2) I feel that people are generally reliable.
- (3) I am comfortable making a purchase on the Internet.
- (4) I am comfortable relying on the Internet since Internet vendors generally fulfill their agreements.
- (5) I feel that most Internet vendors are competent at serving their customers.
- (6) I feel confident that encryption and other technological advances on the Internet make it safe for me to do business there.
- (7) In general, the Internet is a safe environment in which to transact business.

Full Length Research Paper

Determinants of profit shifting by multinational companies in developing countries: A case of Rwanda

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The objective of this study is to examine the determinants of profit shifting by multinational enterprises in Rwanda. The study specifically sought to determine the extent to which finance costs, intra group transactions / services costs and royalty expense influence profit shifting by multinational companies in Rwanda. Profit shifting was measured on the basis of total cost as well as taxable income reported by multinational enterprises (MNEs). The study was guided by theory of optimal transfer prices, agency theory, and accounting theory. The study adopted a quantitative research design. The target population was 72 MNEs registered in large taxpayer office. Data were collected from the audited financial statements using documentation. Inferential statistics were used to ascertain the determinants of profit shifting. The study found out that there is a positive and significant relationship between intra group transactions / services. The study also shows that there was a negative and significant relationship between finance cost and taxable income. The study also found out that there is a negative and significant relationship between intra group transactions / services and taxable income. The study concludes that a unit change in independent variables influence the total costs as well as taxable income. The study recommends that RRA should come up with a clear law or legislation on transfer pricing.

Key words: Profit shifting, transfer pricing, multinational companies, intra group transactions, Rwanda.

INTRODUCTION

In the light of globalization, there is no country, industry and nation, which were not touched by its positive or negative externalities (Pryma, 2017). Multinational corporations are key players in the changing economic environment due to their ambiguous role in globalization process (Pryma, 2017). The relationship between multinationals and states are becoming more and more complex. One of the aspects of current interest is referred to taxation of the international corporations and particularly income tax.

Several studies have identified the creative use of transfer prices to shift profits from higher tax locations to more desirable locations. The Chinese Government's official website stated that, tax evasion through transfer pricing accounts for 60% of total tax evasion by multinational companies. A survey by Richardson and Taylor (2015) showed the association between a series of income shifting incentives including multinational transfer pricing aggressiveness, thin capitalization, intangible assets and tax haven utilization. Their

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empirical analysis was based on a sample of 286 multinational U.S. firms over the 2006-2012 periods. Their regression results showed that multinational, transfer pricing aggressiveness; thin capitalization and intangible assets are positively associated with tax haven utilization.

Using a firm-level panel dataset covering the universe of Danish exports between 1999 and 2006, Cristea and Nguyen (2016) found robust evidence for profit shifting by multinational corporations (MNC) through transfer pricing in a study entitled "Transfer pricing by multinational firms: New evidence from foreign firm ownerships". They observed that once owning an affiliate in a country with a corporate tax rate lower than in the home country, Danish multinationals reduce the unit values of their exports there between 5.7 to 9.1%, on average. This reduction corresponds to \$141 million in underreported export revenues in year 2006, which translates into a loss in tax income equal to 3.24% of Danish MNEs' tax returns.

In a 2015 survey carried out by Clausing (2015) on the effect of profit shifting on the corporate tax base in the United States and beyond reveals that using Bureau of Economic Analysis survey data on U.S. multinational corporations over the period 1983 to 2012, the analysis estimates the sensitivity of foreign incomes to tax burdens for major foreign direct investment destinations. The researcher finds that taxable income is very sensitive to corporate tax rates. Estimates of tax sensitivity are used together with data on reported foreign income to calculate how much "extra" income is booked in low-tax countries due to profit shifting; he then estimated what the tax base would be in the United States without profit shifting. He found that profit shifting was likely costing the U.S. government between \$77 and \$111 billion in corporate tax revenue by 2012, and these revenue losses have increased substantially in recent years. These findings are consistent with the stylized facts about large quantities of income booked in tax havens.

In a 2018 study carried out by Blouin et al. (2018) on "Conflicting Transfer Pricing Incentives and the Role of Coordination" revealed that either the presence of a coordinated income tax and customs enforcement regime or coordination between the income tax and customs functions alters transfer prices for these firms. Their analyses had implications for both firms and taxing authorities. Specifically, their findings suggested that MNCs might decrease their aggregate tax burdens by increasing coordination within the firm, or that governments might increase their aggregate revenues by improving coordinating enforcement across taxing authorities.

Richardson et al. (2013) revealed that tax havens may impose none, or only nominal amounts of corporate tax, have laws or administrative practices which prevent the effective exchange of information between tax authorities, and lack transparency on financial and tax arrangements (e.g. regulatory, legal and administrative provisions), and

access to financial records (OECD, 2010). Tax havens also promote tax avoidance via transfer pricing by permitting the reallocation of taxable income to low-tax jurisdictions, and by reducing the amount of domestic taxes paid on foreign income (PWC, 2011). Specifically, tax avoidance can be achieved through transfer pricing manipulation by transferring goods to countries with low income tax rates (e.g. tax havens) at the lowest possible transfer price and by transferring goods out of these countries at the highest possible transfer price. Tax havens may thus facilitate transfer pricing aggressiveness by acting as a conduit for the flow of goods and services between countries with established operations and parent firms domiciled in higher taxed countries (OECD, 2014). It is possible that utilization of tax havens may act as a substitute to transfer pricing aggressiveness in terms of achieving reduced group tax liabilities.

KPMG (2014) noted that, the adoption of profit-shifting strategies by MNEs is identified as one of the main causes of base erosion. Transfer pricing forms a significant portion of the tax planning strategies. According to the OECD (2010) report, abusive tax avoidance by MNEs raises serious issues of fairness and compliance. Transfer prices serve to determine the income of both parties involved in the cross-border transaction. The transfer price therefore tends to shape the tax base of the countries involved in cross-border transactions.

Flows of goods and services among related entities of an MNE across different tax jurisdictions are referred to as intra-firm trade and the prices at which these goods and services are transferred are called the transfer prices (OECD, 2010). Multinationals operate in different tax jurisdictions and as such the commercial transactions will be subject to different market forces which will influence the nature of relationships among them. To enhance compliance and fair distribution of the tax base among the related entities in a multinational, it is imperative that the transactions among the related entities are carried out at an arms' length set up (OECD, 2014). Failure to comply with this principle may lead to double taxation where tax authorities from both sides insist on taxing the profits generated to get their share. To avoid this, multinationals set to come up with means to reduce their tax liabilities through manipulation of transfer prices (Azemar and Corcos, 2009).

In Rwanda, most multinational enterprises make loss and their income tax payable on a self-assessment basis is very low. In addition, the controlled transaction entered into with their affiliates abroad has always gone untested to confirm whether they respected the arm's length principle. It is also a big challenge for the Rwandan tax administrations to obtain pertinent information located outside Rwanda in situations of risks assessment, audits or investigations regarding controlled cross border transactions.

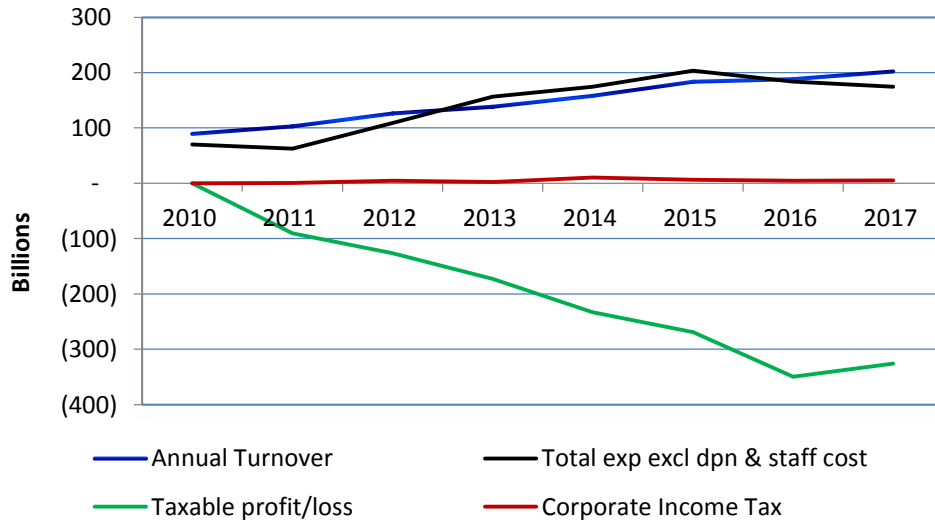


Figure 1. Income tax contribution by telecommunication sector.
Source: RRA systems, income tax returns for the periods from 2010 to 2017.

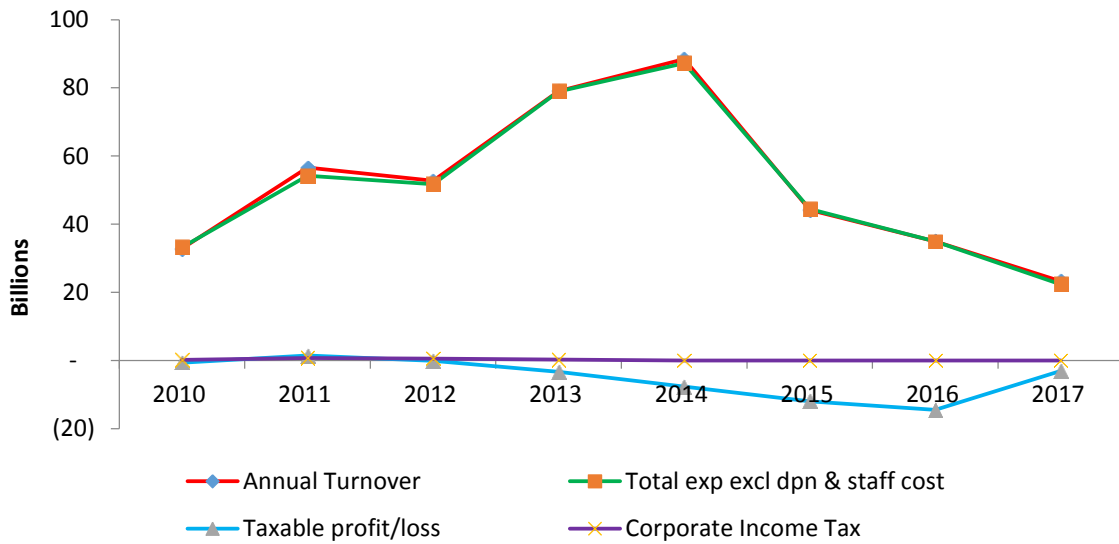


Figure 2. Income tax contribution by mining sector.
Source: RRA systems, income tax returns for the periods from 2010 to 2017.

Figures 1 and 2 show how multinational enterprises in different sectors make losses or very low profit due to untested high expenses incurred even after the expected break even period. The information used is sourced from filed income tax returns for the period from 2010 to 2017. From Figure 1 above, the telecommunication sector contributed almost no income tax to the tax administration during the periods from 2010 to 2017. It can be noted that, in some instances, expenses have exceeded the sales whereas losses have been persistent. These are all multinational enterprises whose cost and operating expenses originate from their ultimate

parents. This may be due to huge investments but also transfer prices should be tested.

Figure 2 demonstrates how the mining sector in Rwanda is less productive in terms of contribution to income tax. Sales are most of the time equal to expenses incurred. This situation is sometimes normal due to high exploration and analysis expenses. However for the companies which were established some years before 2010, they should be breaking even and getting profits or else they sell to themselves abroad. Most of the transactions taking place in this sector need to be tested and confirm whether they respect the arm's length

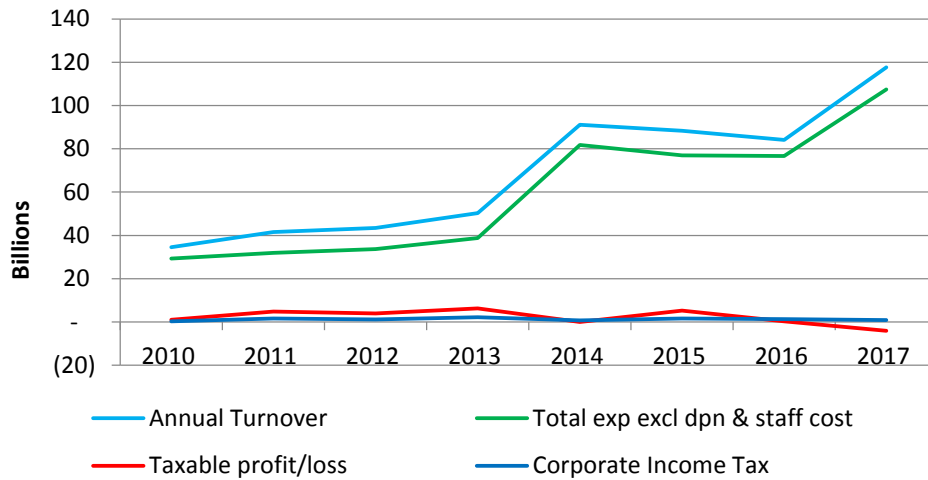


Figure 3. Income tax contribution by construction sector.
Source: RRA systems, income tax returns for the periods from 2010 to 2017.

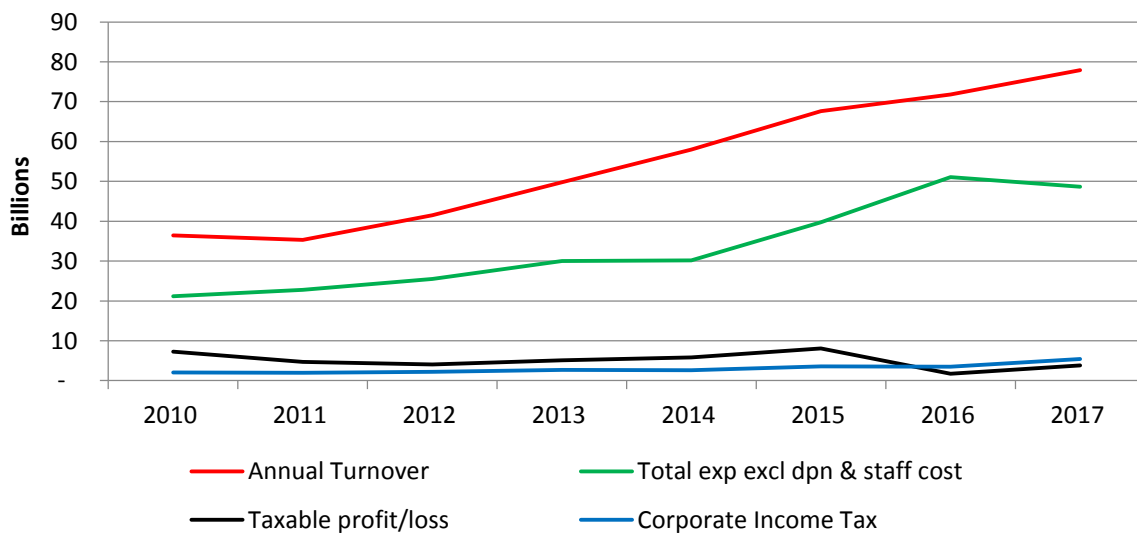


Figure 4. Income Tax Contribution by banking sector.
Source: RRA systems, income tax returns for the periods from 2010 to 2017.

principle (Figure 3). The construction sector in Rwanda is booming but it is shocking how less profitable it is and most of the companies contract with the government. In this sector, expenses grow as the turnover grows over the years. However, profits are very low and hence income tax contribution is insignificant. Most of the services and materials are imported from related parties whose prices can easily be manipulated. Construction sites in Rwanda mostly last for more than six months but the tax administration has never endeavored to determine existence of PEs in this regard so that profits attributable to such PEs can be taxed in Rwanda.

Therefore all those transactions need to be tested

(Figure 4).

The banking sector shows a growth trend in turnover/sales but profitability seems to be very low and hence income tax payable is very small. This is due to the continuous growth of expenses yet banks do not undertake huge investments other than softwares which are mainly purchased by the parent company and the cost is shared by all the group companies. The cost sharing mechanism may be not at arm's length. From all the figures elaborating each sector's contribution to income tax per year in Rwanda, one thing in common is that, most of them incurring losses for a long period may be because of huge investments but also the causes

might be profit shifting through service fees, business restructuring, transfer pricing, duplication of some expenses to mention but a few.

Readhead (2016)'s study of public finance policy in developing nations showed that although MNCs contributed to government revenue in form of taxes, they generally tend to pay much less than what they ought to pay due to long tax concession periods, transfer pricing practices, huge investment allowances, disguised public subsidies and tariff protection from the government. These companies lobby using their economic power for policies that are unfavourable for development and they can avoid local taxation and shift profits to affiliates in low tax jurisdictions. This causes a negative effect on the revenues collected by the government from taxation and therefore developing countries are unable to effectively fund their development goals.

According to Niyibizi (2017), in 2013 the value of transaction between associated enterprises was, in average 82.3% in relation to total expenses whereas in 2013, the value was 63.3%. This confirms that MNEs operating in Rwanda have business relationship with their affiliates and the question is to know if their transactions are carried at arm's length standard. Transacting with related party is not illegal at all, but the tax administration has to ensure that those transactions are at arm's length. This study therefore examines the determinants of profit shifting by multinational companies in Rwanda. The study was guided by the following research questions:

- (i) What are the determinants of taxable profits by multinational companies in Rwanda?
- (ii) What are the determinants of total costs of the multinational companies in Rwanda?

THEORETICAL AND CONCEPTUAL FRAMEWORK

Profit shifting can be in the form of tax evasion or tax avoidance. These two practices are used to reduce or avoid tax obligation. Tax evasion refers to failure to pay taxes which are legally due and therefore is a criminal offence, the variable involves practices like: deliberate non-payment of taxes due, declaration of less income, profits or gains in the returns and overstating deductions in the financial returns produce for tax purpose in order to achieve noncompliance (Uwimbabazi, 2017).

Determinants of profit shifting by multinational companies

In a global economy where MNEs play a prominent role, governments need to ensure that the taxable profits of MNEs are not artificially shifted out of their jurisdiction and that the tax base reported by MNEs in their country reflects the economic activity undertaken therein (OECD,

2010). The OECD (2010) has adopted the arm's length principle in article 9 of the OECD model tax convention to ensure that transfer prices between related companies are established on a market value basis. In this context, the principle means that prices should be the same as they would have been, had the parties to the transaction not been related to each other. This is often seen as being aimed at preventing profits being systematically deviated to lowest tax countries.

The arm's length standard is instrumental to determine how much of the profits should be attributed to one entity and, consequently, the extent of a country's tax claim on such entity. The OECD (2010) has developed thorough guidelines on how the arm's length principle should be applied in this context. Under this approach, a price is considered appropriate if it is within a range of prices that would be charged by independent parties dealing at arm's length. This is generally defined as a price that an independent buyer would pay an independent seller for an identical item under identical terms and conditions, where neither is under any compulsion to act.

Intra group transactions

According to OECD (2010), companies have the requirements to conduct their related party transactions at arm's length. This means that the conditions made or imposed between two or more CTPs in their commercial or financial relations should be similar with those which would be made between independent enterprises. Broadly, related party transactions may be grouped into four categories as follows: (i) Tangible goods: this relates to transactions involving purchase/sale of finished goods, raw materials, fixed assets, spare parts etc. (ii) Intangible property: this involves know how (professional and technical supports), trademark, trade name and (iii) Financing arrangement: this will include transactions such as loans, guarantees, cash pooling arrangements and the likes.

Existing corporate tax systems permit deduction of interest payments from the tax base, whereas equity returns to investors are not tax-deductible (Mintz, 2004). This asymmetric treatment of alternative means of financing investment offers firms a fundamental incentive to increase their reliance on debt finance (Mintz, 2004). For multinational companies this incentive is further strengthened by the opportunity to use internal debt as a means to shift profits from high-tax to low-tax countries. Most of the time, debts are in foreign currency and from there, foreign currency risk is obvious. By foreign currency risk we mean the risk that an investment's value may change due to changes in the value of two different currencies (Engel, 2015). Foreign exchange fluctuation loss on outstanding foreign currency loans is allowed as business expenditure in accordance with chapter 2,

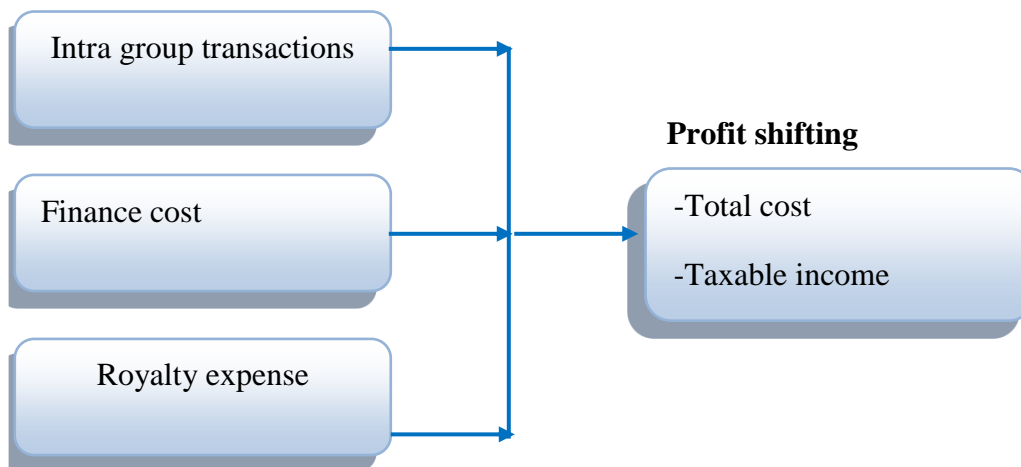


Figure 5. Conceptual framework.
Source: Author's presentation.

section 3(23) of Rwanda income tax law No 016/2018 of 13 April 2018.

Recent empirical research provides conclusive evidence that international tax differentials affect multinationals' financial structure in a way that is consistent with overall tax minimization (Desai et al., 2004; Egger et al., 2009; Huizinga et al., 2008). Moreover, while profit shifting within multinationals can occur through a variety of channels, there are clear empirical indications that the use of financial policies plays an important role in this process (Grubert, 2003; Mintz, 2004; Mintz and Smart, 2004). For this reason, international debt is suspected to be a core factor behind empirical findings that multinational firms seem to pay substantially lower taxes, as a share of pre-tax profits, as compared to nationally operating firms (Egger et al., 2010).

Intangible assets

An increasing number of MNEs' tax planning strategies imply the relocation of intangible property to low tax affiliates (Dischinger and Riedel, 2011). Others found trademark holding companies in tax havens that own and administer the group brands and licenses. Several studies have so far attempted to explain how MNEs shift intangible related profits from high tax to low tax countries. Fuest et al. (2013) discuss prominent models for IP-based profit shifting. In a nutshell, the parent transfers the right to use its intellectual property to a subsidiary located in a low tax country at a reasonable price and "reasonable tax payment" because determining the arm's length price for partially developed intangibles is quite difficult.

The other companies in the group will then pay high

tax-deductible royalties for the use of the IP held by the IP holding company. The IP holding company will pay little or no tax because it is located in a tax haven for tax purposes. For the jurisdictions where the operating companies are located there will be little or no corporation tax paid as well. According to Fuest et al. (2013), multinational corporations set up branches and subsidiaries in Africa that make a lot of profits, which are "shifted" away along such avenues.

Determinants of profit shifting

The model proposed in this study (Figure 5) was made up of variables from the tested models of the previous studies. The independent variables of the study are factors of transfer pricing while the dependent variable are profit shifting by MNEs which was measured on the basis of total cost and taxable profits/losses. Independent variables are factors of transfer pricing which contain the elements like intra group transactions / services, finance costs and royalty expenses.

According to OECD (2010), intra group transactions are financial or commercial transactions which involve two companies of the same group simultaneously. The most common example is the issuing of a sales invoice for the supply of goods and services (OECD, 2010). The company issuing the invoice will recognize a receivable in its balance sheet and revenue from the sale on the income statement whereas the purchasing company will have a payable on its balance sheet and an expense on the income statement.

Financing cost (FC), also known as the cost of finances (COF), is the cost, interest and other charges involved in the borrowing of money to build or purchase asset (Mintz, 2004). In this research, finance costs include interests,

foreign exchange losses accruing from debt finance and other financing fees involved in the borrowing of money. Royalty fee can be defined as the periodic charge that the owner of a franchised business needs to pay to remain part of the franchise system that provides branding, advertising and administrative support (OECD, 2010).

METHODOLOGY

Here shows the methods and techniques that were used in data collection.

Research design

The study adopted a quantitative research design. According to Hajase and Hajase (2003), the quantitative research design is used when the study involves analysis of numerical data. Since this study involved analysis of numerical figures relating to costs and profits, a quantitative design was considered appropriate.

Study population and sampling

The study population with regard to this study was 72 multinational companies registered on corporate income tax reported by large

taxpayer office under the domestic taxes department. This population only consisted of MNEs registered as large taxpayers. Due to the small number of the population, all companies were considered as the sample.

Data sources and research instrument

Data were gathered from audited financial statements. These included income statements, balance sheet, statement of cash flow and statement of changes in equity. Quantitative data on intra group service / transaction, foreign exchange risk and royalty expense were collected from secondary sources (audited financial statements) to measure their effect on profit shifting by MNEs in Rwanda. Also data derived from statistical abstracts (NISR) as well as data from Rwanda Revenue Authority systems were used.

Data analysis

The study used inferential statistics using the Statistical Product and Service Solutions SPSS, an IBM software (Hejase and Hejase, 2013). Data were analyzed by applying a multiple regression analysis. The use of multiple regression analysis was to investigate the extent to which independent variables are associated with dependent variables (Hejase and Hejase, 2013). The findings were presented using tables and graphs. The following multiple regression model was used to analyze the relationship between the dependent and independent variables.

$$TC = \beta_0 + \beta_1(Royl) + \beta_2(Finc) + \beta_3(Intrgrprtrans) + \dots + \varepsilon \tag{1}$$

$$TI = \beta_0 + \beta_1(Royl) + \beta_2(Finc) + \beta_3(Intrgrprtrans) + \dots + \varepsilon \tag{2}$$

Where: *TC* is total costs, *TI* is taxable income, *Royl* is royalty payment, *Finc* is financial costs, *Intrgrprtrans* is intra group transactions / services, ε is the error term, β_0 is the intercept (value of *TC* or *TI* when independent variables = 0), β_1, β_2 and β_3 are the regression coefficients included in *TC* or *TI* by each independent variable.

issues in calculating a multiple regression model. The VIF for each predictor is quite low compared to the maximum acceptable value of 5, hence absence of co-linearity among them.

RESULTS AND DISCUSSION

Multicollinearity test

In the following lines, the presence of linear relationship of all the predictors used in the model and their coefficient estimates is examined (Table 1). Variance Inflation Factor (VIF) was analyzed to test for the existence of multicollinearity. Multicollinearity occurs when “two or more independent variables (or combination of independent variables) in a multiple linear regression are highly correlated with each other” (Hejase and Hejase, 2013: 482), meaning that one can be linearly predicted from the others with a substantial degree of accuracy. This leads to problems with understanding which independent variable contributes to the variance explained in the dependent variable, as well as technical

Testing violation of the normality assumption of the error term in the model

In the line that follows, the assumption on the error terms in model is examined. These have been assumed to be normally distributed with constant variance. Reading from Figure 6 reveals that these are close to being normally distributed. In fact, the right hand side figure reveals that the standard deviation of the residual is small, since their density tends to conglomerate around the center or the mean. Hence one concludes that there has not been any violation of the normality assumption of the error terms in the model.

In this model validation, it has been confirmed that all predictors used have no linear relationship among them, that is, there are not collinear with respect to one another.

Moreover, the normality assumption on the error terms in the model has been checked and findings reveal that these are close to normal distribution. Hence the model is valid and its results can be trusted.

Table 1. Variance inflation factor values for each predictor.

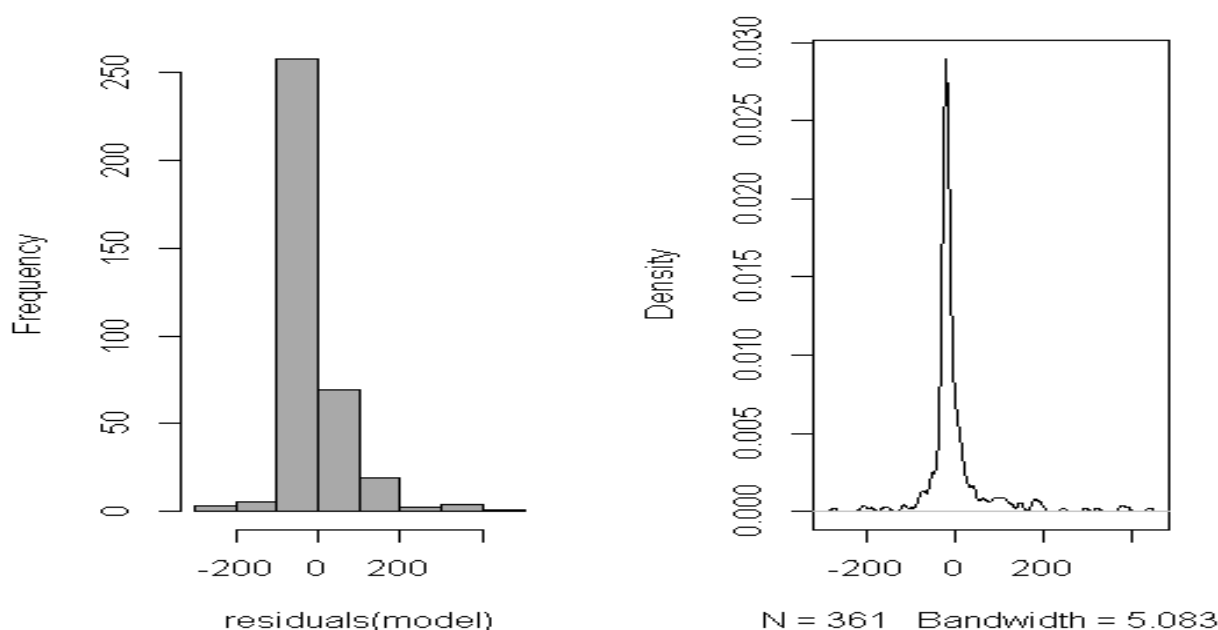
Coefficients ^a			
Model		Collinearity statistics	
		Tolerance	VIF
1	Royalties	0.953	1.049
	Finance cost	0.950	1.053
	Intragroup transactions	0.908	1.101

Source: Survey Data (2019).

Table 2. Model summary on the determinants of profit shifting.

Model	R	R Square	Adjusted R square	Std. error of the estimate
1	0.889 ^a	0.790	0.788	7859283909.46074

Source: Survey Data (2019).

**Figure 6.** Histogram and density display of the residuals generated by the model.

Determinants of profit shifting and total cost

The purpose of this study is to examine the determinants of profit shifting in multinational companies in Rwanda. Table 2 shows the correlation coefficient and the coefficient of determination. From the table the correlation coefficient is very high (0.889). This means that transfer pricing factors and total cost are highly positively correlated. The coefficient of determination is 0.790 which implies that 79% of the variation of total cost is determined by the variations in intragroup transactions,

finance charges and royalties.

ANOVA was conducted to assess whether the data are consistent with the model assumptions or not. This was done on the basis of the null hypothesis stated that “there is no difference between the model without independent variables and the model with independent variables”. From Table 3, the P-Value (0.000) is less than the significance level (0.05), thus there is enough evidence for rejecting the null hypothesis. We can therefore conclude that there is a significant statistical difference between the model without independent variables and

Table 3. Significance of the model to determine profit shifting.

Model		Sum of square	df	Mean square	F	Sig.
1	Regression	5779728517865679 × 10 ⁷	3	1926576172621893 × 10 ⁷	311.903	0.000 ^b
	Residual	15318549205238122 × 10 ⁶	248	6176834356950856 × 10 ⁴		
	Total	7311583438389491 × 10 ⁷	251			

Source: Survey data 2019, ANOVA^a Table.

Table 4. Coefficients of determinants of profit shifting.

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2004136077.975	643387036.508		3.115	0.002
	Intrgrtrans	0.995	0.037	0.818	26.834	0.000
	Financecost	1.271	0.200	0.190	6.373	0.000
	Royalties	0.567	0.462	0.036	1.226	0.221

Source: Survey Data (2019).

Table 5. Model summary (transfer pricing factors and taxable income).

Model summary				
Model	R	R square	Adjusted R square	Std. error of the estimate
1	-0.574 ^a	0.329	0.321	6773219025.88304

Source: Survey data 2019^b

the model with independent variables hence the model fits the data.

Table 4 shows the significance of the independent variables. This was done on the basis of the null hypothesis that “the independent variable has no effect on total cost”. The table shows that the P-Values for intragroup transaction/service and finance cost is (0.000) which is smaller than the significance level (0.05), thus there is enough evidence to reject the null hypothesis for these independent variables. We can therefore conclude that intragroup transaction/service and finance cost has significant effects on total cost. The coefficients of these variables are positive meaning that their increase leads to the increase in total costs. The P-Value for royalties (0.221) is greater than the significance level (0.05) we can therefore conclude that royalties has no significant effect on total costs and therefore may be removed from the equation.

The study findings agrees with Bennett (2015)'s report which says that aggressive intra group pricing especially for debt and intangibles has played a major role in corporate tax avoidance and it was one of the issues identified when the OECD released its BEPS's action plan in 2013. Also Niyibizi (2017)'s research findings

confirmed that in 2013 the value of transaction between associated enterprises was, on average, 82.3% in relation to total expenses whereas in 2013, the value was 63.3%. The study confirms that MNEs operating in Rwanda have business relationship with their affiliates and the question was to know if their transactions are carried at arm's length standard,

$$TC = 2004136077 + 1.271 (\text{Financecost}) + 0.995 (\text{Intrgrtrans}) \quad (3)$$

From the regression Equation 3, we can say that: A unit change in finance cost increases TC by 1.271 units and vice versa keeping all other variables constant. A unit change in intra group transactions / services increases TC by 0.995 units and vice versa keeping all other variables constant.

Determinants of profit shifting and taxable income in MNEs in Rwanda

Table 5 shows the correlation coefficient and the coefficient of determination. From the table the correlation

Table 6. Significance of the model.

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	55843227551001 × 10 ⁸	3	18614409183667 × 10 ⁸	40.575	0.000 ^b
	Residual	113773710012008 × 10 ⁸	248	458764959726 × 10 ⁸		
	Total	169616937563009 × 10 ⁸	251			

ANOVA^a Table.**Table 7.** Coefficients of the determinants of profit shifting.

Coefficient ^a						
Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	-998294219.941	554478164.536		-1.800	0.073
	Intrgrtrans	-136	0.032	-233	-4.269	0.000
	Financecost	-1.866	0.172	-0.579	-10.856	0.000
	Royalties	-0.054	0.398	-0.007	-0.135	0.893

Source: Survey Data (2019).

coefficient is -0.574. This means that transfer pricing factors and taxable income are negatively correlated. The coefficient of determination is 0.329 which implies that 32.9% of the variation of taxable income is determined by the variations in transfer pricing factors. This means that variations in the intragroup transaction, finance cost and royalty costs only explain 32.9% of the variation in the taxable income.

ANOVA was conducted to assess whether the data are consistent with the model assumptions or not. This was done on the basis of the null hypothesis stated that "there is no difference between the model without independent variables and the model with independent variables". Table 6 shows that P-value (0.000) is less than the significance level (0.05), thus there is enough evidence for rejecting the null hypothesis. We can therefore conclude that there is a significant statistical difference between the model without independent variables and the model with independent variables hence the model fits the data.

Table 7 shows the significance of the independent variables. This was done on the basis of the null hypothesis that "the independent variables have no effect on taxable income. The table shows that the P-Values for intragroup transaction/service and finance cost is (0.000) which is less than the significance level (0.05), thus there is enough evidence to reject the null hypothesis for these independent variables. We can therefore conclude that intragroup transaction/service and finance cost have significant effects on taxable income. The coefficients for intragroup transaction/service and finance cost are negative meaning that an increase in these variables leads to a decrease in taxable income and vice versa. The P-value for royalties (0.893) is

greater than the significance level (0.05), we can therefore conclude that royalties has no significant effect on taxable income and therefore may be removed from the equation.

The study findings agrees with Bennett (2015)'s report which says that aggressive intra group pricing especially for debt and intangibles has played a major role in corporate tax avoidance and it was one of the issues identified when the OECD released its BEPS's action plan in 2013. Also in Clausing (2015)'s report confirmed that one of the tools used by MNEs is to issue big loans to subsidiaries resulting in thin capitalization and this leads to tax avoidance. A survey by Richardson and Taylor (2015) showed the association between a series of income shifting incentives including multinationality, transfer pricing aggressiveness, thin capitalization, intangible assets and tax haven utilization,

$$TI = -998294219 - 1.866(\text{Financecost}) - 136(\text{Intrgrtrans}) \quad (4)$$

From the regression Equation 4, we can say that: A unit change in finance cost leads to a decreases of TI by 1.866 units and vice versa keeping all other variables constant. A unit change in intra group transactions / services leads to a decreases of TI by 136 units and vice versa keeping all other variables constant.

Conclusion

The study investigated the effect of transfer pricing factors on profit shifting by MNEs in Rwanda. It was conducted on taxpayers registered in large taxpayer's department. They were all registered on corporate income

tax operate. A survey was made on 72 multinational companies (registered on corporate income tax reported by large taxpayer office under the domestic taxes department) were selected. This population only consisted of MNEs registered as large taxpayers. The study used secondary data with the objectives to assess the effect of intra group transactions, to determine the effect of finance costs, to examine the effect of royalty charge and to predict profit shifting in Rwanda. Five quantitative models were tested in this research, after descriptive statistics of the data. The research findings suggest that profit shifting is highly affected by finance costs and intra group transactions / services as the greatest determining factor according to the study results.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Based on the research findings the recommendations are put forward to check on profit shifting as the tax administration strives to increase the tax compliance level of MNEs especially on corporate income tax so as to be able to raise to the government the required tax revenue to finance national expenditure. The recommendations from this study include but are not limited to:

(i) RRA should look at the loopholes that are in current ITA especially on thin capitalization rule which sets limit on interest deductible on loan from related parties that is currently set at 4:1 the amount of equity. This should be the same on foreign exchange losses accruing from interest bearing loans as well as free interest loans. This will limit the finance costs normally claimed by MNEs.

(ii) RRA should closely follow up on the Rwanda treaty policy as regards selecting who to conclude a treaty with, when to conclude it, what to forego, what to achieve from the concluded treaty and when to terminate a treaty. There is also the need to closely monitor the country's treaty network for RRA to better understand how the tax base is being narrowed and/ or expanded.

(iii) The tax administration has to have in place a clear mechanism of accessing current information regarding international taxation where most multinationals post information regarding their businesses. Those include data bases to mention, but a few. Information exchange tools and procedure will be an important aspect to be taken into consideration at an earlier stage since information needed during the audit process cannot be available only within the country (Rwanda).

(iv) There should be a focus on the use of intangible property by Rwandan subsidiaries of foreign MNEs to ensure that no royalties are paid above what would be paid under an arm's length consideration.

(v) RRA should put in place the transfer pricing guidelines that will guide MNEs on how to prepare and keep contemporaneous transfer pricing documentation. The preparation and maintenance of transfer pricing

documentation will show that the related party transactions are conducted at arm's length and will facilitate reviews by tax authorities and therefore help resolve any transfer pricing issues that may arise.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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