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Published online: 01 Apr 2020.

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Debt Capital Structure and Credit Information Sharing: Evidence on Listed Firms from an Emerging Market

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ABSTRACT

This study examines the effect of credit information sharing on debt financing structure of listed firm on the Ghana Stock Exchange market between 2003 and 2013. Employing a panel data of 20 listed non-financial firms in Ghana in robust ordinary least squares, random effect and fixed effect models, findings are presented on how information sharing affect debt financing structure. Findings show that information sharing, coverage quality and the presence predominantly promote short-term debt financing options while these at the same time detract long-term debt financing options. While the positive nexus between credit information sharing and short-term debt financing confirms the information asymmetry and information sharing theories, We attribute the negative nexus between credit information sharing and long-term debt financing options to the shallow and weak nature of credit information sharing activities and institutions; hence making it difficult to permeate risks and uncertainties surrounding long-term financing options. This is an indication that credit information can increase access to debt financing for firms. These findings imply that policymakers must enact policies and laws that deepen, expand and enhance the coverage and quality of credit information in order for the full potency of information sharing can be realized on the debt financing structure of firms.

Introduction

From a corporate finance perspective, the core objective of corporate entities is to maximize the shareholders' or the firm's value. To maximize shareholder or firm value, managements and corporate managers have to: identify and select projects with positive net present values (investment decisions), select funding options that come with the least funding cost (Capital Structure decisions) and strike the right amount of balance on cash in order to reduce cost of holding cash or not having cash (networking capital decisions) (Brealey & Myers, 2003; Ross, Westerfield, & Jordan, 2008). Although these options for improving value of firms have gained much attention and have been well-researched, there are still gaps, especially on capital structure decisions in emerging markets, which needs the attention of researchers and policymakers.

Capital structure matters for all kinds of firms, including financial and non-financial, listed and unlisted, local and foreign as well as for state and privately owned firms. The purpose for which these firms need to take capital structure decisions varies from firm to firm. For instance, Amidu (2007) advanced that while nonfinancial firms' take on capital structure decisions is primarily to support the funding of machinery, plants and equipment to facilitate the pursue of new and already existing businesses, financial firms also require capital structure decisions mainly to provide liquidity support to bank clients through loans and advances. However, corporate finance literature suggests that the core objective of capital structure decisions which entails debt and equity capital financing decision is to optimally combine debt and equity financing such that the cost of financing is reduced to the barest minimum (see Brealey & Myers, 2003; Ross et al., 2008). In a similar fashion, Myers (1984) and Myers and Majluf (1984) advance that the concept of optimal capital structure is impeded by asymmetric information. Thus, the existence of information asymmetry between firms and lenders or finance providers causes the relative cost of funds to vary between the different sources of finance, which include debt and equity financing which in turn makes up the capital structure decision. The conclusion drawn from this is that information asymmetry increases the uncertainty surrounding financing options (debt and equity), making the cost of these financing options more expensive. Similar, the pecking order theory posits that firms will initially rely on internally generated funds (in the form of undistributed earnings), where there exists no information asymmetry, then turn to debt and equity financing where there exists information asymmetry to obtain additional funds or capital requirements. These show that the preference or usage of financing options largely depends on the cost of that financing option which in turn is influenced by the level of information asymmetry in the credit market. This implies that reducing information asymmetry will increase the usage and employment of debt capital financing or structure.

From the above, the study contends that credit information sharing which is a strategy to reduce information asymmetry (see Freimer & Gordon, 1965; Freixas & Rochet, 1997; Greenwald, Stiglitz, & Weiss, 1984; Stiglitz & Weiss, 1981) affect the financing decisions, especially debt capital financing decisions although not empirically examined at the nonfinancial firms' level, to the best of my research abilities. Thus, several studies investigate how credit information sharing affect the operations of suppliers of finance (banking and financial systems) (Boateng, Asongu, Akamavi, & Tchamyou, 2018; Tchamyou & Asongu, 2017; Kusi & Opoku-Mensah, 2018; Kusi, Agbloyor, Ansah-Adu, & Gyeke-Dako, 2017; Kusi, Agbloyor, Fiador & Osei, 2015, 2016a) while ignoring how credit information sharing can affect the use of debt capital financing by users or demanders of debt capital financing. Hence, the study attempts to empirically show that credit information sharing impacts the use of debt financing of listed firms on Ghana Stock Exchange (GSE) between 2003 and 2013. Furthermore, though the literature (both theoretical and empirical) is silent on how information sharing should affect short, long and total debt capital financing structure or options for users of debt finance, the study contributes to literature by providing such evidence for the first time, arguing that the effect of information sharing may vary across the different structures of debt capital financing (short-term debt financing, long-term debt financing and total debt financing). The argument is based on the term structure of interest rate (cost of debt) which states that financing provided for longer periods attracts higher interest rate (cost of debts);

hence the effect of reduced information asymmetry through information sharing may impact the debt financing options differently. Listed firms in Ghana are used for a number of reasons. First, very few studies (Abor, 2005; Amidu, 2007; Kyereboah-Coleman, 2007a) empirically dominate the capital structure literature in Ghana. Even of the very few that investigate capital structure in listed firms (see Abor, 2005), none focus on investigating debt capital financing structure and credit information sharing although there are some theoretical evidence to suggest a nexus between the two. Hence, this study contributes to the Ghanaian capital structure debate by, for the first time, providing evidence on how information sharing affect the debt financing options of listed firms. Second, Ghana commenced the sharing of credit information in 2010 (Kusi et al., 2015, 2016a, 2016b) and since then no study, to the best of our knowledge, examine how credit information sharing affect the use of debt capital financing structure in Ghana. Hence, the study takes advantage of the lack of empirical studies on the nexus between credit information sharing and use of debt capital financing options by demanders of debt finance and the introduction of credit information sharing in Ghana to provide insights into how the credit information sharing, which is an information sharing strategy, affects debt capital financing or structure, using 20 listed firms in Ghana. The rest of the paper is organized into literature review, methodology, empirical findings and discussions, robustness checks and diagnostics and conclusions and policy recommendations.

Literature review and hypothesis development

The information asymmetry theory posits that due to the lack of complete, accurate and reliable information (Freixas & Rochet, 1997; Greenwald et al., 1984), lenders will either over- or under- price the cost of finance advanced to firms or borrowers of which the former would normally and mostly occur. Thus, due to lack of transparency and the opaque nature of the credit market, the cost of debt financing is increased, which in turn reduces the use of debt financing options given the high cost of debt finance. Also, one key theory that attempts to explain capital structure and its related costs is the pecking order theory. The theory advances that firms prefer internally generated funds to debt and equity financing respectively (due to the fact that) because information asymmetry tends to increase the cost of debt and equity financing, hence leading to reduced use of these financing options (debt and equity) other than internally generated funds. This is an indication that information asymmetry affects the use of debt financing option. Similarly, Myers (1984) and Myers and Majluf (1984) state that the concept of optimal capital structure for which debt capital structure or financing is inclusive and affected by information asymmetry. They argue that information asymmetry reduces the ease of prediction and projections, hence increasing the uncertainty and riskiness of debt capital financing which then reduces the use of debt financing options. However, the credit information sharing theory (see Gehrig & Stenbacka, 2007; Kallberg & Udell, 2003; Pagano & Jappelli, 1993) which is a strategy for reducing asymmetric information may translate into improving the use of debt capital financing by users of debt financing, but this assertion is not empirically tested especially not in Africa and in Ghana, to be specific.

In terms of empirical studies, however, it is important to acknowledge earlier studies (as indicated in the introductory section) that have investigated how credit information sharing affects the operations and functioning of providers or suppliers of finance,

although limited studies exist on how credit information sharing affects the usage of debt capital financing by users of finance. Following the strand of empirical literature that show how credit information sharing affect the firm level of debt financing, Zhang (2011) employed data on publicly listed firm in Thailand between 1994 and 2005 to investigate the role of information sharing in trade credit allocation. The findings show that in the presence of credit information sharing, firms use less of trade credit and use more of bank credit, hence providing evidence that information sharing improves credit allocation and debt usage in the form of bank credit. This finding supports the view that credit information sharing improves debt usage through the reduction of cost of capital. Hence, the empirical literature review focuses on studies that investigate debt financing and information sharing.

Similarly, Doblas-Madrid and Minetti (2013) also demonstrate how sharing information in the credit market affects firm level contracts, using data on 3815 US borrowing firms. They show that information sharing reduces contractual delinquencies and defaults, especially in informationally opaque firms. This finding suggests that credit information sharing sanitizes the credit market which is a debt market and facilitates and hastens the debt financing activities. Likewise, Dierkes, Erner, Langer, and Norden (2013) investigated whether and how business credit information sharing helps to better assess the default risk of private firms in Germany using data from 2002 to 2005. Employing a probit model of 25,344 private firms, the results show that information sharing improves the quality of default prediction, especially for limited liability firms. This finding implies that debt finance users tend to use debt financing options well in the presence of information sharing and thereby improving the use of debt financing. Furthermore, Brown, Jappelli, and Pagano (2009) investigate whether information sharing among banks have affected the credit availability in transition in European countries between 2002 and 2005. Using 5717 firms from 24 transition countries in Europe, the findings show that information sharing improves availability and lower cost of credit to firms especially in opaque firms. This finding suggests that information sharing promotes the use of bank credit risk is a debt financing option. More so, Sutherland (2018) examined how credit reporting affects firm access to credit and how lenders contract with firms. Employing within firm-time and lender-time tests, the study finds that information sharing encourages lending by reducing relationship-switching costs particularly for young, small and non-default firms. Similarly, after sharing credit information lenders transition from relationship contract lending into contract maturities in new relationships which are shorter and lending to non-delinquent borrowers. These findings provide evidence that transparency in the credit market improves credit availability.

In the African context, Triki and Gajigo (2012) investigated the effect of information sharing on access to finance in 17,240 firms in 42 African countries between 2006 and 2009. Their findings show that firms in credit information sharing countries are associated with lower constraint to finance. Also, they report that credit information sharing improves the use of bank credit which feeds into the notion that bank credit which is a kind of debt financing option is improved through credit information sharing. Similarly, Tchamyou and Asongu (2017) show how information sharing impacts financial sector development in 53 African countries in the period 2004 to 2011. Employing OLS and GMM estimation models, Asongu (2017) shows that information sharing increases formal financial sector development, implying that information sharing

promotes the use of debt financing in the form of formal bank credits and loans. Besides, Asongu and Nwachukwu (2018) investigated how information sharing on financial access in 162 banks across 39 African economies between 2001 and 2011. Using instrumental variable fixed effect models with overlapping and non-overlapping bank size thresholds to control for the quiet life hypothesis and measuring financial assess as loan price and loan quantity, the results show that information sharing through private credit bureau and public credit registries have decreasing effect on loan price and increasing effect on quantity of loans granted. However, information sharing through private bureau is more effective in reducing loan prices and loan quantity. Moreover, Asongu (2017) explored the interactions between information sharing offices, the coexistence of financial sub-systems and financial access in 53 African economies between 2004 and 2011. Employing quantile regression models, the study revealed a positive association between information sharing offices and formal financial sector development at increasing levels of credit access. However, a negative linkage is reported between information sharing offices and informal financial sector development at decreasing levels of credit access. This is an indication that information sharing improves access to credit.

Following the theories and empirics discussed, it is intuitive to hypothesize that credit information sharing which is a strategy to reduce asymmetric information and search and switching cost of lenders can improve the use of debt capital financing structure. Although, literature suggests a nexus between credit information sharing and debt financing, empirical studies on the two are limited in terms of how information sharing should affect the use of debt financing by users of finance especially in Africa and in Ghana, to be precise. Following the discussions which seems to suggest a relationship between information sharing and debt capital financing, this study hypothesizes that information sharing impacts debt capital financing or structure. However, given that debt financing may take the form of short, long and total debt financing, it is not clear and less researched how information sharing may influence these kinds of debt financing options or structures. Hence, this study takes advantage of this gap and present for the first time how information sharing impacts short-term, long-term and total debt financing options using a dataset of listed firms in Ghana where information sharing has been introduced but no study to the best of our research abilities attempts to provide evidence on the link between information sharing and debt financing structures or options.

Methodology

This study employs the panel data technique to shed insights on the effect of credit information sharing on debt capital structure of listed firms in Ghana. Baltagi, Song, and Koh (2003) posits that the panel data technique presents more convincing and conclusive results than the traditional cross-sectional and time series techniques, as the panel takes advantage of the strengths and corrects for the weaknesses of both time series and cross-sectional technique. Similarly, the panel data present the ability to control for omitted variables and allow for both a long and short-run effect which controls for the weakness of cross-sectional and time series techniques (Wooldridge, 2009). Data were obtained from audited annual financial statements of 20 listed firms between 2003 and 2013. The panel data technique framework is expressed as

$$Y_{it} = \alpha_i + \gamma_t + \beta X_{it} + \varepsilon_{it} \tag{1}$$

Where: Subscript i denotes the cross sectional dimension (firm) i = 1 ... N and t denotes the time series dimension (time), t = 1 ... T; Yit is the dependent variable; α_i is scalar and constant term for all periods (t) and specific to a firm fixed effect (*i*); γ_t is the time fixed effect t; *β is a k × 1 vector of parameters to be estimated* on the independent variables for the explanatory variables; *Xit is a 1 × k vector* of observations on the independent variables comprising independent variables in the model which includes controlled variables and *Eit* which is iid is the error term.

The study employs a number of estimation strategies, including the pooled ordinary least squares (Pooled-OLS), random effects (RE) and the robust fixed effect (FE) models. In modeling debt capital financing structure, we follow the model of Amidu (2007) who studied determinants of capital structure in Ghana and modified these to suit debt capital financing which is one of the options under capital structure. Amidu's (2007) models capital structure as:

$$LEV_{it} = \beta_1 PROF_{it} + \beta_2 GRWOTH_{it} + \beta_3 TANG_{it} + \beta_4 TAX_{it} + \beta_5 RISK_{it} + \beta_6 SIZE_{it} + \varepsilon_{it} \tag{2}$$

where LEV the dependent variable represents ratio of total, short-term and long-term leverage to capital; PROFI represents profitability; GROWTH represents sale growth; TANG represents fixed assets; Tax represents taxation; RISK represents earnings variability; SIZE represents size of firm.

We modified Amidu's (2007) model by including credit information and change the measure of dependent variable (total, long-term and short-term debts to assets ratios) to reflect this study. Hence, this study adopts the debt capital structure model expressed in Equations (3–5) as:

$$TLEV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 GRWOTH_{it} + \beta_3 TANG_{it} + \beta_4 TAX_{it} + \beta_5 RISK_{it} + \beta_6 SIZE_{it} + \beta_7 CIS_{it} + \varepsilon_{it} \tag{3}$$

$$LLEV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 GRWOTH_{it} + \beta_3 TANG_{it} + \beta_4 TAX_{it} + \beta_5 RISK_{it} + \beta_6 SIZE_{it} + \beta_7 CIS_{it} + \varepsilon_{it} \tag{4}$$

$$SLEV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 GRWOTH_{it} + \beta_3 TANG_{it} + \beta_4 TAX_{it} + \beta_5 RISK_{it} + \beta_6 SIZE_{it} + \beta_7 CIS_{it} + \varepsilon_{it} \tag{5}$$

Debt capital structure (TLEV, LLEV, SLEV)

In modeling debt capital structure of listed firms, total debts to assets (TLEV), long-term debts (LLEV) to assets and short-term debts to assets (SLEV) ratios are used to measure debt capital structure of listed firms. These are used as dependent variables similar to the studies by Amidu (2007) and Abor (2005). While total debts to assets ratio capture the entire debt capital structure of listed firms, short-term to assets and

long-term to assets ratios are employed to capture short- and long-term debt structures respectively.

Credit information sharing (CIS: Info_coverage; Info_quality; Info_dummy)

Following the information asymmetry and information sharing theories, credit information sharing is a strategy through lenders, and creditors share information on clients in order to discipline their client's borrowing behavior (see Freimer & Gordon, 1965; Freixas & Rochet, 1997; Stiglitz & Weiss, 1981). That is, credit information sharing is a market disciplinary tool that shapes the borrowing behavior of participants or economic agents of an economy through the reduction in information asymmetry. It is believed that information asymmetry reduces the use of debt capital financing (due to the fact that) because information asymmetry impedes lenders from lending at a cheap rate given the uncertainties or risk of borrowing arising from lack of complete, reliable and accurate data or information. However, credit information sharing reduces information asymmetry by making information on financial market participants available and hence improve the predictive power of lenders and creditors which reduce the cost of borrowing and increase the use of debt capital financing by economic agents including firms. It is expected that credit information sharing will increase the use of debt capital financing or structure but unable to tell if it will affect the different debt structures the same way.

Information sharing data are obtained from the World Development Indicator (WDI) database and are measured as the percentage of citizenries to total adult population that have their information captured in the data base of credit information sharing institutions. Also, the quality of credit information shared index which ranges between 0 and 8 is obtained from WDI and used while a dummy which assumes a value of 1 if the economy is sharing credit information and 0 otherwise was created to capture the present of credit information sharing activities in Ghana. From Kusi et al. (2015, 2016a, 2016b) credit information sharing started in 2010. In all, three measures of credit information sharing are used to ensure consistency and reliability in the findings.

Profitability (PROF)

Profitability is identified to be key determinant of use of debt capital financing and measure with return on equity. Following the tax trade-off model, profitable firms employ more of debt capital financing since they are more likely to have a high tax burden and a low bankruptcy risk (see Ooi, 1999). However, Myers (1984) argue out a negative relationship between profitability and debt capital structure stating that profitable or successful firms do not need to depend on external finance but instead rely on internal reserves accumulated from past profits. Hence, there is a possibility of both positive and negative effects of profitability on debt capital financing.

Growth

Growth in this study is measure as the changes in sales or year on year changes in sales. Following the pecking order theory, growing firms place a great need on internal funds. As a result, firms with high growth will tend to look for external funds to finance the

growth. Following the pecking order theory, firms would first look to short-term, less secure debts then to longer-term more secure debt for their financing need. Myers (1977) concludes that a higher proportion of a firm's market value accounted for by growth opportunities has a better capacity to take on debts. Following the argument that tax deductibility of interest repayment is less important for fast growth firms since they normally have non-debt tax shield, Auerbach (1984) posits a negative effect of growth on leverage or debts. Hence, the effect of growth on debt capital financing is ambiguous.

Tax

Tax is measured as the natural log of tax amount due to be paid. From a corporate finance theory perspective, the effect of tax on financing options, which includes equity and debt financing, depends on whether the regime at a particular point in time favors the use of equity or ???equity (see Auerbach, 1984; Mackie-Mason, 1990). Thus, if tax conditions favors the use of debts, then a firm will tend to use more of debts, while if tax conditions favors the use of equity financing, then a firm will tend to use more of equity financing.

Tangibility (TANG)

Tangibility is also known as assets structure and measured as fixed assets to total assets. Fixed assets are crucial for liquidating firms and contribute greatly to a firm's ability to access debt financing, as fixed assets may serve as collateral for firms that have more fixed assets (see Myers, 1977; Smith & Warner, 1979; Stulz & Johnson, 1985). Although the majority of empirical and theoretical studies shows a positive relation between debt capital financing and asset structure, it is intuitive to argue that an increase in fixed assets reduces debt capital financing since debts are employed usually to finance capital expenditure as purchases of assets.

Risk

Risk of agency and bankruptcy costs provide incentives for firms to utilize less the tax benefits associated with the static framework model. Thus, risk exposes firms to agency and bankruptcy costs inducing firms to reduce the level of debts within its capital structure. Hence, risk is measured as the volatilities in operating profits and is expected to reduce the use of debt capital financing. Thus, firms with a relatively high-operating risk have more incentives to lower the use of debts compared to firms with more stable operating earnings (Ooi, 1999; Titman & Wessels, 1988).

Size

The size is an important determinant of capital structure of firms and it is measured as the natural log of total assets. Empirical studies argue that larger firms are less prone to bankruptcy and tend to be more diversified than smaller firms and may have more market power which can boost their survival chances (Ang, Chua, & McConnell, 1982; Smith & Warner, 1979). This follows the trade-off theory of capital structure, and hence a positive relation is expected between size and debt capital financing or structure.

Table 2 presents the summary statistics of the variables employed in this study. From the summary statistics, outliers which have the possibility to influence the consistency, efficiency and biasedness of coefficients were not observed in the dataset. The Shapiro Wilk's normality test is used to test for the normality of the data. Thus, the Shapiro Wilk's test has a null hypothesis of no normal distribution and this was rejected for all the variables, indicating that the variables were all normally distributed around their means. Similarly, the variance inflation factor (VIF) which shows the acceptability of each variable in the model is computed and reports that all the variables are fit and accepted to be in the model, given that all the variable have VIF values below the VIF maximum threshold of 10. Table 1 presents a summary of all the variables employed in this study.

Interestingly, while total debts to assets averagely constitutes 52.43% of total capital structure, short-term to assets and long-term debts to assets averagely constitutes 44.55% and 8.95%, respectively they imply that firms on the Ghana Stock Exchange in the periods under review employs more debts financing compared to equity. Specifically, firms tend to rely more on short-term debt financing structure. Information sharing coverage is on the average 3.81% implying that only 3.81% of citizenry have their data or information captured by credit information sharing institutions in Ghana. Hence, the coverage of information sharing institutions is low and needs to be improved.

Similarly, the quality of information shared is averagely 0.9394. By computation, as per the World Development Indictors it ranges between 0 and 8. Hence, given the range, it is reasonable to conclude that the quality of credit information sharing is extremely low in the period under review. Information sharing dummy is averagely 34.85%, implying that about 34.85% of the sample years were periods where credit information sharing was present or existed.

Profitability measured with ROE is averagely 8.20%, while growth measured with sales growth is averagely 12.01%. Tax and Size are logged variables and have value of 12.90 and 16.62. These values imply that tax and size of firm grew about 12.9 and 16.62 time over

Table 1. Summary of Variables.

Variable	Measurement	Source	Expected Sign
Dependent Variable			
TLEV	Total debts/total assets	Audited financial statements	
LLEV	Long-term debts/total assets	Audited financial statements	
SLEV	Short-term debts/total assets	Audited financial statements	
Regressors			
CIS Info_Coverage	Percentage of population that have their information captured in the database of information sharing institutions	World Development Indicators	+
CIS Info_Quality	Index that ranges from 0 to 8	World Development Indicators	+
CIS Info_Dummy	Dummy which assumes a value of 1 if the economy is sharing credit information and 0 otherwise	World Development Indicators	+
PROF	Net income/total equity	Audited financial statements	±
GROWTH	Year on year changes in sales	Audited financial statements	±
TANG	Fixed assets/total assets	Audited financial statements	±
TAX	Natural log of tax amount	Audited financial statements	±
RISK	Volatilities in operating profits	Audited financial statements	-
SIZE	Natural log of total assets	Audited financial statements	+

Table 2. Summary Statistics.

Variable	Obs	Mean	Std. Dev	Min	Max	SWILK	VIF
TLEV	175	0.524312	0.242081	0.044941	0.994041	3.355***	-
LLEV	171	0.089457	0.140775	0	0.752482	8.174***	-
SLEV	174	0.4455	0.220168	0.044941	0.888889	2.739***	-
INFO_COVERAGE	198	0.038131	0.065587	0	0.21	7.001***	2.15
INFO_QUALITY	198	0.939394	2.078745	0	6	5.317***	1.68
INFO_DUMMY	198	0.348485	0.477698	0	1	0.169***	2.94
ROE	173	0.082031	0.260691	−0.8917	0.65063	4.858***	1.35
GROWTH_SALE	166	0.120109	0.320251	−0.99489	0.897902	3.389**	1.13
TANG	178	0.404335	0.217426	0.027376	0.857143	4.268***	1.16
TAX	148	12.90407	2.166932	4.347047	16.28361	3.749***	2.44
RISK	177	4.995332	45.15222	−14.0769	78.005	10.927***	1.05
SIZE_TA	182	16.62498	1.773536	11.94284	19.64446	4.124***	2.37

Note. **Significance Level** – ***p < 0.01, **p < 0.05, *p < 0.1 – **Note: TLEV** – total debt financing; **LLEV** – long term debt financing; **SLEV** – short term debt financing; **ROE** – Profitability; **GROWTH_SALE** – growth in sale; **TANG** – tangibility; **TAX** – taxation; **RISK** – volatilities in profits; **SIZE_TA** – firm size; **INFO_COVERAGE** – coverage of information shared; **INFO_QUALITY** – quality of information shared; **INFO_DUMMY** – presence of information shared

the period under study. Tangibility which measure the structure of assets is averagely 40.43% implying that fixed assets constitute about 40% of total assets structure. This is an indication that firms have the majority of their assets in current or short-term assets. Risk which measures uncertainties in earnings is nearly 5, implying that earnings are 5 times more volatile over the period.

The Pearson's correlation matrix (see Appendix 1) that serves as a mechanism for checking and controlling multicollinearity is shown in Table 3. Following Wooldridge (2009), the study sets the multicollinearity threshold to 0.7 between the independent variables. Hence, the results presented in Table 3 show no evidence of multicollinearity.

Tables 4–6 present the effect of credit information sharing on the debt-financing structure of firms listed on the Ghanaian Stock Exchange between 2003 and 2013. Tables 4–6 present results from the pooled ordinary least squares, robust random effect and robust fixed effect models respectively. In each table, nine models are shown on the effect information sharing coverage, quality and dummy on total debts to assets, long-term debts to assets and short-term debts to assts.

Under information sharing coverage, it is observed that information sharing coverage has a positive nexus with short-term debts in Models 12 and 21 while information sharing coverage has a negative nexus with long-term debts in Model 2. This implies that the information sharing coverage improves the use of short-term debts but reduces the use of long-term debts for listed firms in Ghana. In terms of information sharing quality, the results confirm that information sharing quality has a positive relation with short-term debts in Models 15 and 24, while information sharing quality has a negative relation with long-term debts in Models 9 and 14. This implies that information sharing quality propels the use of short-term debts but derails the use of long-term debts for listed firms in Ghana. Furthermore, it is evident that information sharing presence has a positive nexus with short-term and total debts in Models 9, 16, 18, 25 and 27 while information sharing presence has a negative nexus with long-term debts in Model 8. This implies that the information sharing existence improves the use of short-term debts but reduces the use of long-term debts for listed firms in Ghana. These findings support the view that the information sharing promotes the use of debt financing but may do so for short-term financing and total debt finance in some instances. This finding is consistent

Table 3. Pearson's Correlation Matrix.

	1	2	3	4	5	6	7	8	9	10	11	12
TLEV (1)	1.000											
LLEV (2)	0.442*	1.000										
SLEV (3)	0.797*	−0.1504*	1.000									
ROE (4)	−0.066	−0.2562*	0.085	1.000								
GROWTH_SALE (5)	−0.046	0.004	−0.056	0.326*	1.000							
TANG (6)	0.019	0.308*	−0.1729*	−0.3239*	−0.081	1.000						
TAX (7)	−0.048	−0.1677*	0.016	0.213*	0.099	−0.032	1.000					
RISK (8)	−0.179	−0.064	−0.1516*	0.035	0.054	0.027	−0.052	1.000				
SIZE_TA (9)	0.176*	0.144*	0.124	0.295*	0.215*	−0.028	0.650*	−0.047	1.000			
INFO_COVERAGE(10)	0.088	−0.039	0.096	0.128*	−0.097	−0.018	0.234*	−0.008	0.159*	1.000		
INFO_QUALITY (11)	0.071	−0.029	0.121	0.074	−0.071	0.010	0.266*	−0.024	0.204*	0.299*	1.000	
INFO_DUMMY (12)	0.150*	−0.061	0.185*	0.162*	−0.068	−0.035	0.305*	−0.028	0.2187*	0.698*	0.563*	1.000

Note.**Significance Level** – *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ – **Note:** **TLEV** – total debt financing; **LLEV** – long term debt financing; **SLEV** – short term debt financing; **ROE** – Profitability; **GROWTH_SALE** – growth in sale; **TANG** – tangibility; **TAX** – taxation; **RISK** – volatilities in profits; **SIZE_TA** – firm size; **INFO_COVERAGE** – coverage of information shared; **INFO_QUALITY** – quality of information shared; **INFO_DUMMY** – presence of information shared

Table 4. Robust Ordinary Least Squares – Effect of Credit Information on Debt Capital Structure.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Information Sharing Coverage			Information Sharing Quality			Information Sharing Presence		
	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets
INFO_COVERAGE	0.237 (0.365)	–0.146* (0.0873)	0.332 (0.368)						
INFO_QUALITY				0.00434 (0.0113)	–0.00628*** (0.00211)	0.00755 (0.0114)			
INFO_DUMMY							0.0549 (0.0433)	–0.0316** (0.0138)	0.0736* (0.0429)
ROE	–0.00210 (0.122)	0.0841 (0.0691)	0.0207 (0.123)	0.00805 (0.123)	0.0848 (0.0673)	0.0305 (0.126)	–0.00597 (0.119)	0.0916 (0.0702)	0.00281 (0.123)
GROWTH_SALE	–0.0646 (0.0897)	0.0265 (0.0305)	–0.0707 (0.0888)	–0.0679 (0.0898)	0.0260 (0.0307)	–0.0745 (0.0893)	–0.0646 (0.0905)	0.0279 (0.0301)	–0.0737 (0.0894)
TANG	0.107 (0.127)	0.271*** (0.0803)	–0.136 (0.106)	0.0984 (0.129)	0.279*** (0.0814)	–0.150 (0.110)	0.108 (0.126)	0.271*** (0.0799)	–0.136 (0.104)
TAX1	–0.0571*** (0.0204)	–0.0312*** (0.0116)	–0.0377** (0.0189)	–0.0572*** (0.0205)	–0.0304*** (0.0116)	–0.0380** (0.0189)	–0.0594*** (0.0201)	–0.0305*** (0.0115)	–0.0394** (0.0187)
RISK1	–0.00133 (0.00176)	4.00e-05 (0.000372)	–0.00129 (0.00139)	–0.00117 (0.00185)	–6.65e-05 (0.000288)	–0.00106 (0.00151)	–0.00130 (0.00176)	1.73e-05 (0.000354)	–0.00124 (0.00140)
SIZE_TA	0.0678*** (0.0203)	0.0314*** (0.0113)	0.0450** (0.0204)	0.0674*** (0.0203)	0.0320*** (0.0113)	0.0441** (0.0205)	0.0677*** (0.0202)	0.0320*** (0.0111)	0.0436** (0.0202)
Constant	0.0588 (0.212)	–0.168 (0.119)	0.207 (0.223)	0.0751 (0.214)	–0.191 (0.121)	0.236 (0.229)	0.0811 (0.211)	–0.183 (0.115)	0.243 (0.219)
Observations	113	110	112	113	110	112	113	110	112
R-squared	0.141	0.318	0.088	0.138	0.322	0.083	0.148	0.326	0.103

Note. **Significance Level** – ***p < 0.01, **p < 0.05, *p < 0.1 – **Note: TLEV** – total debt financing; **LLEV** – long term debt financing; **SLEV** – short term debt financing; **ROE** – Profitability; **GROWTH_SALE** – growth in sale; **TANG** – tangibility; **TAX** – taxation; **RISK** – volatilities in profits; **SIZE_TA** – firm size; **INFO_COVERAGE** – coverage of information shared; **INFO_QUALITY** – quality of information shared; **INFO_DUMMY** – presence of information shared

Table 5. Robust Random Effect – Effect of Credit Information on Debt Capital Structure.

VARIABLES	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Information Sharing Coverage			Information Sharing Quality			Information Sharing Presence		
	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets
info_coverage	0.224	−0.157	0.364*						
	(0.153)	(0.134)	(0.215)						
info_quality				0.00406	−0.00755*	0.0118**			
				(0.00676)	(0.00401)	(0.00580)			
info_dummy							0.0557*	−0.0389	0.0992***
							(0.0296)	(0.0238)	(0.0379)
roe	−0.00150	0.0450	0.0563	0.0127	0.0339	0.0730	0.00323	0.0475	0.0375
	(0.158)	(0.0952)	(0.141)	(0.162)	(0.0839)	(0.144)	(0.152)	(0.0965)	(0.146)
growth_sale	−0.0338	0.0305*	−0.0579	−0.0394	0.0298*	−0.0613	−0.0287	0.0295*	−0.0513
	(0.0500)	(0.0160)	(0.0450)	(0.0563)	(0.0157)	(0.0532)	(0.0442)	(0.0167)	(0.0380)
tang	−0.0810	0.208	−0.200**	−0.0819	0.202	−0.206**	−0.0738	0.200	−0.198**
	(0.119)	(0.139)	(0.102)	(0.121)	(0.140)	(0.0927)	(0.119)	(0.140)	(0.0972)
tax1	−0.0446***	−0.0185	−0.0387***	−0.0446***	−0.0152	−0.0401***	−0.0476***	−0.0158	−0.0425***
	(0.0158)	(0.0131)	(0.0149)	(0.0153)	(0.0120)	(0.0148)	(0.0149)	(0.0120)	(0.0124)
risk1	−0.000437	0.000123	−0.000571	−0.000276	9.59e-07	−0.000287	−0.000406	0.000104	−0.000534
	(0.000418)	(0.000211)	(0.000349)	(0.000571)	(0.000104)	(0.000563)	(0.000466)	(0.000191)	(0.000425)
size_ta	0.0426*	0.0255*	0.0233	0.0436	0.0269*	0.0187	0.0308	0.0280*	0.000570
	(0.0253)	(0.0148)	(0.0259)	(0.0291)	(0.0144)	(0.0283)	(0.0258)	(0.0145)	(0.0279)
Constant	0.390	−0.201	0.608	0.377	−0.263	0.706*	0.611	−0.268*	1.016**
	(0.380)	(0.157)	(0.375)	(0.451)	(0.163)	(0.408)	(0.410)	(0.154)	(0.432)
Observations	113	110	112	113	110	112	113	110	112
Number of id	20	18	20	20	18	20	20	18	20

Note.**Significance Level** – *** p < 0.01, ** p < 0.05, * p < 0.1 – **Note: TLEV** – total debt financing; **ROE** – Profitability; **GROWTH_SALE** – growth in sale; **TANG** – tangibility; **TAX** – taxation; **RISK** – volatilities in profits; **SIZE_TA** – firm size; **INFO_COVERAGE** – coverage of information shared; **INFO_QUALITY** – quality of information shared; **INFO_DUMMY** – presence of information shared

Table 6. Robust Fixed Effect – Effect of Credit Information on Debt Capital Structure.

	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
	Information Sharing Coverage			Information Sharing Quality			Information Sharing Presence		
VARIABLES	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets	Total Debts/total Assets	Long-term Debts/total Assets	Short-term Debts/total Assets
INFO_COVERAGE	0.249	−0.186	0.403*						
	(0.152)	(0.203)	(0.215)						
INFO_QUALITY				0.00524	−0.0114	0.0148**			
				(0.00839)	(0.00795)	(0.00671)			
INFO_DUMMY							0.0696*	−0.0668	0.128***
							(0.0350)	(0.0525)	(0.0445)
ROE	−0.000857	0.00292	0.0610	0.0164	−0.00184	0.0804	0.00365	0.0229	0.0266
	(0.161)	(0.0876)	(0.150)	(0.165)	(0.0678)	(0.154)	(0.153)	(0.0937)	(0.155)
GROWTH_SALE	−0.0314	0.0364*	−0.0577	−0.0368	0.0327*	−0.0602	−0.0237	0.0297	−0.0470
	(0.0514)	(0.0184)	(0.0457)	(0.0587)	(0.0180)	(0.0551)	(0.0440)	(0.0208)	(0.0350)
TANG	−0.0826	0.136	−0.196	−0.0834	0.138	−0.199*	−0.0674	0.128	−0.180
	(0.134)	(0.149)	(0.123)	(0.136)	(0.139)	(0.112)	(0.133)	(0.137)	(0.109)
TAX1	−0.0435**	−0.0122	−0.0377**	−0.0438**	−0.0105	−0.0394**	−0.0464**	−0.0110	−0.0399**
	(0.0174)	(0.0115)	(0.0180)	(0.0169)	(0.0105)	(0.0183)	(0.0163)	(0.0104)	(0.0151)
RISK1	−0.000445	0.000212	−0.000593	−0.000263	5.32e-05	−0.000278	−0.000439	0.000244	−0.000623
	(0.000411)	(0.000224)	(0.000354)	(0.000565)	(0.000115)	(0.000576)	(0.000467)	(0.000231)	(0.000458)
SIZE_TA	0.0333	0.0350	0.00918	0.0334	0.0494	−0.00311	0.00857	0.0628	−0.0423
	(0.0348)	(0.0243)	(0.0378)	(0.0443)	(0.0331)	(0.0432)	(0.0375)	(0.0430)	(0.0412)
Constant	0.531	−0.414	0.825	0.537	−0.678	1.055	0.964	−0.885	1.693**
	(0.531)	(0.345)	(0.546)	(0.701)	(0.504)	(0.624)	(0.614)	(0.666)	(0.644)
Observations	113	110	112	113	110	112	113	110	112
R-squared	0.169	0.101	0.157	0.156	0.133	0.159	0.209	0.160	0.263
Number of id	20	18	20	20	18	20	20	18	20

Note: **Significance Level** – ***p < 0.01, **p < 0.05, *p < 0.1. **Note: TLEV:** total debt financing; **LLEV:** long term debt financing; **SLEV:** short term debt financing; **ROE:** Profitability; **GROWTH_SALE:** growth in sale; **TANG:** tangibility; **TAX:** taxation; **RISK:** volatilities in profits; **SIZE_TA:** firm size; **INFO_COVERAGE:** coverage of information shared; **INFO_QUALITY:** quality of information shared; **INFO_DUMMY:** presence of information shared.

which the information asymmetry and information sharing theories which argue that information sharing sanitizes the debt market by disciplining economic agents and reducing the risks and uncertainties surrounding debt financing; hence promoting the use of debt financing. However, given that information sharing is reported to impede the use of long-term debt financing, we argue that information sharing coverage and quality are weak and shallow and hence do not have the potency to reduce the risk and uncertainties surrounding long-term debts. It is believed that over time, as information sharing coverage and quality improves, it will gain the capacity to propel long-term usage by firms.

On the control variable variables, it is observed that growth in sale promotes the use of long-term debt by listed firms in Ghana. This finding is consistent with the earlier study of Myers (1977) who concludes that a higher proportion of a firm's market value is accounted for by growth opportunity and has the capacity to take on debts. Assets structure presents mixed but consistent results. Thus, while fixed assets structure reduce the use of short-term debt financing, it at the same time promote the use of long-term debt financing. This is not surprising, as fixed assets may serve as collateral security in seeking long-term debt financing by a firm; hence the positive relation is supported by the prior studies results (Smith & Warner, 1979; Stulz & Johnson, 1985). Consistently across the estimation models, tax appears to reduce the use of debts whether short-term, long-term or total debts. Following prior studies (see Auerbach, 1984; Mackie-Mason, 1990) which argue that the effect of tax on debt financing depends on whether the tax regime at a particular point in time. Hence, it is evident that the tax regime within the period of the study is less favorable for the use of debt financing. Size is reported to have a positive relationship with all forms of debt structures across the majority of the models estimated. Prior empirical studies argue that larger firms are less prone to bankruptcy, which induce their ability to employ more debt financing (Ang et al., 1982; Smith & Warner, 1979).

Robustness checks and diagnostics

In ensuring consistency, reliability and efficiency in the results and models estimated, a number of standard procedures were followed. First, knowing that outliers can bias the results, we screened for outliers using the summary statistic, and no evidence of outliers were detected. Second, we employed the Pearson's correlation matrix to assist in identifying and controlling for multicollinearity. We found no evidence of multicollinearity. Third, we employed a number of estimation strategies to ensure consistency and reliability in results across the different estimation strategies. We found to a large extent consistency in the results presented across the models; this indicating that the results are reliable. Fourth, we used the robust standard errors approach to control for heteroskedacity and autocorrelation (Appendix 2) to ensure that the results were efficient. Hence, the results and findings fit and good for generalization for firms listed on the Ghana Stock Exchange market.

Conclusion and policy recommendation

In this study, the effect of credit information sharing on use of debt financing structure of listed firm on the Ghana Stock Exchange market between 2003 and 2013 was tested. The study was motivated by the lack of empirical studies on how credit information sharing can affect firm level debt financing structure and take advantage of the introduction of credit information in 2010 in Ghana to shed more insights on this relationship. Employing a panel data of 20 listed non-financial firms in Ghana in robust ordinary least squares, random effect and fixed effect models findings were presented on how information sharing affect debt financing structure.

Findings show that information sharing coverage quality and presence predominantly promote short-term debt financing options while it at the same time detracts long-term debt financing options. While the positive nexus between credit information sharing and short-term debt financing confirms the information asymmetry and information sharing theories, we attribute the negative nexus between credit information sharing and long-term debt financing options to the shallow and weak nature of credit information sharing activities and institutions, hence making it difficult to permeate risks and uncertainties surrounding long-term financing options. This is an indication that credit information can increase access to debt financing for firms.

These findings have policy implication and recommendations for policymakers and researchers in Ghana. Thus, policymakers must enact policies and laws that deepen, expand and enhance the coverage and quality of credit information in order for the full potency of information sharing to be realized on debt financing structure of firms. Also, researchers are encouraged to exploit this finding using different datasets on firms in and beyond Ghana to test the consistency of these findings in other jurisdictions.

Disclosure statement

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References

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *The Journal of Risk Finance*, 6(5), 438–445.

Amidu, M. (2007). Determinants of capital structure of banks in Ghana: An empirical approach. *Baltic Journal of Management*, 2(1), 67–79.

Ang, J. S., Chua, J. H., & McConnell, J. J. (1982). The administrative costs of corporate bankruptcy: A note. *The Journal of Finance*, 37(1), 219–226.

Asongu, S., & Nwachukwu, J. (2018). Bank size, information sharing and financial access in Africa. *International Journal of Managerial Finance*, 14(2), 188–209.

Asongu, S. A. (2017). Improving financial access in Africa: Insights from information sharing and financial sector development. *Development Finance Agenda (DEFA)*, 3(3), 14–16.

Auerbach, A. J. (1984). Taxes, firm financial policy and the cost of capital: An empirical analysis. *Journal of Public Economics*, 23(1-2), 27–157.

Baltagi, B. H., Song, S. H., & Koh, W. (2003). Testing panel data regression models with spatial error correlation. *Journal of Econometrics*, *117*(1), 123–150.

Boateng, A., Asongu, S., Akamavi, R., & Tchamyou, V. (2018). Information asymmetry and market power in the African banking industry. *Journal of Multinational Financial Management*, *44*, 69–83.

Brealey, R. A., & Myers, S. C. (2003). *Capital investment and valuation*. USA: McGraw Hill Professional.

Brown, M., Jappelli, T., & Pagano, M. (2009). Information sharing and credit: Firm-level evidence from transition countries. *Journal of Financial Intermediation*, *18*(2), 151–172.

Dierkes, M., Erner, C., Langer, T., & Norden, L. (2013). Business credit information sharing and default risk of private firms. *Journal of Banking & Finance*, *37*(8), 2867–2878.

Doblas-Madrid, A., & Minetti, R. (2013). Sharing information in the credit market: Contract-level evidence from US firms. *Journal of Financial Economics*, *109*(1), 198–223.

Freimer, M., & Gordon, M. J. (1965). Why bankers ration credit. *The Quarterly Journal of Economics*, *79*(3), 397–416.

Freixas, X., & Rochet, J. C. (1997). *Microeconomics of banking* (pp. 9). Cambridge, MA: MIT Press.

Gehrig, T., & Stenbacka, R. (2007). Information sharing and lending market competition with switching costs and poaching. *European Economic Review*, *51*(1), 77–99.

Greenwald, B. C., Stiglitz, J. E., & Weiss, A. (1984). *Informational imperfections in the capital market and macro-economic fluctuations* (No. w1335). National Bureau of Economic Research.

Kallberg, J. G., & Udell, G. F. (2003). The value of private sector business credit information sharing: The US case. *Journal of Banking & Finance*, *27*(3), 449–469.

Kusi, B., Agbloyor, E., Fiador, V., & Osei, K. (2015). Half a decade of credit reference bureaus activities in Ghana: A reflection. *Africa Growth Agenda*, *2015*(Oct/Dec2015), 8–12.

Kusi, B. A., Agbloyor, E. K., Ansah-Adu, K., & Gyeke-Dako, A. (2017). Bank credit risk and credit information sharing in Africa: Does credit information sharing institutions and context matter? *Research in International Business and Finance*, *42*, 1123–1136.

Kusi, B. A., Agbloyor, E. K., Fiador, V. O., & Osei, K. A. (2016a). Does information sharing promote or detract from bank returns: Evidence from Ghana. *African Development Review*, *28* (3), 332–343.

Kusi, B. A., Agbloyor, E. K., Fiador, V. O., & Osei, K. A. (2016b). Credit referencing bureaus and bank credit risk: Evidence from Ghana. *African Finance Journal*, *18*(2), 69–92.

Kusi, B. A., & Opoku-Mensah, M. (2018). Does credit information sharing affect funding cost of banks? Evidence from African banks. *International Journal of Finance & Economics*, *23*(1), 19–28.

Kyereboah-Coleman, A. (2007a). The determinants of capital structure of microfinance institutions in Ghana. *South African Journal of Economic and Management Sciences*, *10*(2), 270–279.

Kyereboah-Coleman, A. (2007b). The impact of capital structure on the performance of microfinance institutions. *The Journal of Risk Finance*, *8*(1), 56–71.

Mackie-Mason, J. K. (1990). Do taxes affect corporate financing decisions? *The Journal of Finance*, *45*(5), 1471–1493.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, *5*(2), 147–175.

Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, *39*(3), 574–592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221.

Ooi, J. (1999). The determinants of capital structure evidence on UK property companies. *Journal of Property Investment & Finance*, *17*(5), 464–480.

Pagano, M., & Jappelli, T. (1993). Information sharing in credit markets. *The Journal of Finance*, *48* (5), 1693–1718.

Ross, S. A., Westerfield, R., & Jordan, B. D. (2008). *Fundamentals of corporate finance*. USA: Tata McGraw-Hill Education.

Smith, C. W., Jr, & Warner, J. B. (1979). Bankruptcy, secured debt, and optimal capital structure: Comment. *The Journal of Finance*, *34*(1), 247–251.

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, *71*(3), 393–410.

Stulz, R., & Johnson, H. (1985). An analysis of secured debt. *Journal of Financial Economics*, *14*(4), 501–521.

Sutherland, A. (2018). Does credit reporting lead to a decline in relationship lending? Evidence from information sharing technology. *Journal of Accounting and Economics*, *66*(1), 123–141.

Tchamyou, V. S., & Asongu, S. A. (2017). Information sharing and financial sector development in Africa. *Journal of African Business*, *18*(1), 24–49.

Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance*, *43*(1), 1–19.

Triki, T., & Gajigo, O. (2012). *Credit bureaus and registries and access to finance: New evidence from 42 African countries*. Africa: African Development Bank.

Wooldridge, J. M. (2009). *Introductory econometrics: A modern approach* (pp. 228–237). Mason, OH: South-Western Cengage Learning. ISBN 978-1-111-53104-1.

Zhang, R. (2011). The role of information sharing in trade credit distribution: Evidence from Thailand. *Asian-Pacific Economic Literature*, *25*(1), 133–149.

Appendix

Appendix 1. Breusch-Pagan/Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
Variables: fitted values of tlev

chi2(1) = 2.77
Prob > chi2 = 0.0960

Appendix 2. Wooldridge test for autocorrelation in panel data

H0: no first order autocorrelation
F(1, 14) = 0.004
Prob > F = 0.9510