A G D I Working Paper

WP/20/028

Financial Sector Transparency and Net Interest Margins: Should the Private or Public Sector lead Financial Sector Transparency?[1]

Forthcoming: Research in International Business and Finance

Baah A. Kusi
Department of Banking and Finance,
Central University
&
Department of Finance
University of Ghana Business School
E-mail: baahkusi@gmail.com

Elikplimi K. Agbloyor
Department of Finance
University of Ghana Business School
&
University of Stellenbosch
E-mail: ekagbloyor@gmail.com

Agyapomaa Gyeke-Dako
Department of Finance, University of Ghana Business School
E-mail: afuagyekedako@yahoo.co.uk

Simplice A. Asongu
African Governance and Development Institute
&
Department of Economics, University of South Africa
E-mails: asongusimplice@yahoo.com, asongus@afridev.org

[1] This working paper also appears in the Development Bank of Nigeria Working Paper Series.

2020 African Governance and Development Institute WP/20/028

Research Department

Financial Sector Transparency and Net Interest Margins: Should the Private or Public Sector lead Financial Sector Transparency?

Baah A. Kusi, Elikplimi K. Agbloyor, Agyapomaa Gyeke-Dako & Simplice A. Asongu

January 2020

Abstract

This study examines the effect of private and public sector led financial sector transparency on bank interest margins across eighty-six economies. Using a two-step dynamic system generalized method of moments, least square dummy variables, fixed effects and bootstrap quantile panel models between 2005 and 2016, the findings of the two-step GMM are reported as follows. First, results reveal that financial sector transparency whether led by private or public sector reduces interest margins. Second, while no statistical evidence was found on which of the two (private or public sector led transparency) is more effective in dealing with bank interest margins, public sector-led financial transparency is found to be more consistent in reducing bank interest margins across many more economies. Third, the study shows that the effect of financial sector transparency is visible at lower and middle levels of bank interest margins implying that economies with lower and moderately high bank interest margin level can benefit more from policies targeted at improving transparency in the financial sector. These findings imply that the sampled countries must enact policies and laws that deepen and expand financial sector transparency in order to potentially reduce bank interest margins for the good of banking market participants and society at large.

Keywords: Financial Sector Transparency; Net Interest margins; Private Sector; Public Sector

Introduction

Financial institutions especially banks across the world perform functions such as mobilization of savings and deposits, evaluation of viable and value-adding projects, allocation and distribution of loans and credit, and monitoring financial market participants. These activities have been shown in the literature to promote economic growth and development (see Gamra, 2009; Bekaert et al., 2005; Beck and Levine, 2004). However, these functions performed by financial institutions, specifically, banks are obstructed and impeded by lack of information and data arising from information asymmetry in financial markets (Kusi, Agbloyor, Ansah-Adu and Gyeke-Dako, 2017; 2016). Information asymmetry has adverse effects on financial markets. First, it obstructs financial sector transparency in the credit market, resulting in adverse selection and moral hazard, and, second, the lack of accurate, reliable and complete information causes credit rationing (Park, Brandt and Giles, 2003; Besanko and Thakor, 1987; Stiglitz and Weiss, 1981; Freimer and Gordon, 1965), high credit risk and instability (Kusi, Agbloyor, Ansah-Adu and Gyeke-Dako, 2017; Kusi, Agbloyor, Fiador and Osei, 2016), uncertainty and inaccuracy in lending decisions (Asongu and Odhiambo, 2019; Barth, Lin, Lin and Song, 2009; Kallberg and Udell, 2003; Barron and Staten, 2003; Galindo and Miller, 2001). Thus, by reducing information asymmetry which enhances financial sector transparency, the effective and efficient functioning and operations of banks is improved. The essence of financial sector transparency has led most developing economies to set up private and public information sharing institutions (See Asongu, Anyanwu and Tchamyou, 2017; Tchamyou and Asongu, 2017).

One critical factor that sums up the financial intermediation role played by banks is the net interest margins, otherwise called bank spread or mark up (see Allen, 1988). Net interest margin is popularly defined as the difference between interest income (loan price) and interest expense (deposit price) (Carbo, Humphrey, Maudos and Molyneux, 2009; Allen, 1988). Although several studies (both empirical and theoretical)[2] have assessed the role and determinants of net interest margins of banks, the conceptualization of net interest margins has varied among studies. While Gyeke-Dako, Agbloyor, Turkson and Baffour (2018), Mensah and Abor (2014) and Naceur (2003) conceptualize net interest margins as cost arising from the existence of the financial intermediation process (social cost of financial intermediation) borne by financial market participants and the entire society or economy, Carbo, Humphrey, Maudos and Molyneux (2009) conceptualize net interest margins as an indicator of the competitiveness of the banking system arguing

[2] See (Ho and Saunders, 1981; McShane and Sharpe, 1985; Allen, 1988; Angbazo, 1997; Maudos and de Guevara, 2004; Carbó and Rodriguez, 2007; Brock & Rojas-Suarez, 2000; Demirguc-Kunt and Huizinga, 1999; Naceur, 2003; Beck et al., 2009; Garza-García, 2010; Hamadi et al., 2012; Tarus et al., 2012; Were and Wambua, 2014).

that in a competitive banking market, banks do not have the luxury or market power to price interest income or revenue far above their interest expenses; hence, the latter argument suggests narrow margins for banks. Similarly, Dietrich and Wanzenried (2011), Kasman, Tunc and Okan (2010) and Naceur and Goaied (2008) have also conceptualized net interest margins as a profitability indicator for banks. Amidst the different conceptualization of net interest margins, net interest margin remains a key factor that tends to summarize in a snapshot the financial intermediation activity of financial intermediaries. Obviously, the different conceptualization of interest margins provides a sense of the complex nature of its drivers (Carbo, Humphrey, Maudos and Molyneux, 2009). That is, while net interest margins remain important and well researched in the finance literature, there is a huge complexity on its determinants, which heavily depend on household or firm conditions (such as discount rate, loan-servicing ratios, standard of living), industry conditions (competition and structure of the industry) and macroeconomic conditions such as economic growth, unemployment rate and inflation; hence making it difficult to fully capture net interest margins in totality.

Existent empirical literature report that interest margins are wide (Were and Wambua, 2014; Garr and Coleman, 2013; Athanasoglou et al., 2008; 2006) especially in developing economies and have serious implications for economies and financial market participants. For instance, Islam and Nishiyama (2016) advance that very high and volatile interest margins have severe devastating implications for bank management and can create distrust among participants of the banking market, leading to possible credit risk crises and instability in the banking market (Dwumfour, 2017; Islam and Nishiyama, 2016).Thus, very high and volatile interest margins may render bank participants incapable of honoring debt-servicing obligations, slow down borrowing and economic activities leading to possible banking challenges. As a result of the critical nature of net interest margins and implications for banking, Hawtrey and Liang (2008) advocate for regular updates on the knowledge, monitoring and tracking of determinants of net interest margins so as to aid policymakers in managing net interest margins to send the right and positive signals to investors and other banking market participants.

Given the advice of Hawtrey and Liang (2008), it is not surprising to find many studies that explore the determinants of bank interest margins across economies. Despite the numerous empirical studies on bank interest margins, the nexus between net interest margins and financial sector transparency is sparse in the empirical literature although theoretical literature suggests that financial sector transparency or reduced information asymmetry lowers net interest margins. The argument of this study on the existence of a

relationship between net interest margins and financial sector transparency follows theories and empirical studies. First, empirical literature (see Maudos and Fernandez de Guevara, 2004; Hawtrey and Liang, 2008) argues that bank credit risk exposure resulting from information asymmetry and lack of transparency in the financial market force banks to charge high premiums on loans to make up for credit losses leading to wide net interest margins. Similarly, Asongu (2017) and Asongu, le Roux, Nwachukwu and Pyke (2019) find that information sharing which enhances financial sector transparency reduces loan price; hence lowers margins. Also, Kusi and Mensah (2018) show that financial sector transparency through credit information sharing reduces the funding cost of banks leading to lower loan prices and bank interest margins. Given the empirical findings of prior studies, the study hypothesizes that financial sector transparency may reduce the net interest margins since the bank funding cost, credit risk and loan prices which increase interest margins are reduced and eroded by financial sector transparency. It is worthwhile to note that transparency in the form information provision by regulators may not only relevant for banking market participants but also relevant for stock market participants (Corbet, Dunne and Larkin, 2019).

From a theoretical perspective (information asymmetry and information sharing theories), enhancing financial sector transparency through credit information sharing erodes information asymmetry, leading to reduced uncertainties in bank lending and improvements in the predictive power of banks in lending decision making (Stiglitz and Weiss, 1981; 1987; 1992;Freimer and Gordon, 1965; Freixas and Rochet, 1997). From the above empirical and theoretical discussions, the study takes the advantage of the lack of empirical studies on the nexus between financial sector transparency and net interest margins despite theoretical and empirical justification of this relationship and contends that financial sector transparency through credit information sharing reduces net interest margins. Also, following prior empirical studies (Kusi and Mensah, 2018; Asongu, 2017; Kusi et al., 2017) that advance that financial sector transparency through credit information sharing institution can be led by either the private or public sector, the study also attempts to provide empirical evidence on which of the two (private sector-led transparency or public sector-led transparency) is most effective in reducing interest margins knowing that the features of private and public led financial sector transparency are different (see Barron and Staten, 2003; Galindo and Miller, 2001;Pagano and Jappelli, 1993; Jappelli and Pagano, 2002; Miller, 2003) and can affect their effectiveness and efficient operation.

This study's attempt to establish the effect of financial sector transparency on bank net interest margin contributes to the literature in a number of ways. First, the study to the best of our knowledge is the first to

present international evidence on the nexus between financial sector transparency and bank interest margins. Second, the study documents for the first time to the best of our knowledge, evidence on whether private or public sector led financial sector transparency is more effective and robust in dealing with bank interest margins which has the potential to distort trust and operations of the banking sector. Third, the study provides continental and threshold analyses to deepen the knowledge on financial sector transparency and bank interest margins. The rest of the study is organized as follows. After this introduction is an overview of financial sector transparency and interest margins, followed by a literature review and insights into the methodology. The empirical results and discussion section is followed by another section on conclusions and policy implications.

Theoretical Underpinnings: Financial Intermediation, Information Sharing and Net Interest margins

The literature on net interest margins is argued to stem from the dealership or the financial intermediation theory (also known as dealership theory) (see Ho and Saunders, 1981; Maudos and Fernandez de Guevara, 2004). The theory advances that banks are match makers who link deficit spending units to surplus spending units to make a gain. Thus, banks receive deposits at random intervals and subsequently utilize the deposits to satisfy stochastically received loan demands from credit market participants. Under the theory (financial intermediation theory), banks are risk-averse but value maximizers who profit from matchmaking business. To ensure their profit maximization objective is reached, they set loan and deposit prices in a manner that reduces their risk exposure in the matchmaking business. Thus, given the uncertainty and risky nature of the lending business arising from information asymmetry and lack of transparency in the financial market, banks price their loan relatively higher than normal in order to safeguard themselves against default and interest rate risks (Williams, 2007). This implies that information asymmetry and lack of transparency in the financial market widens the net interest margin given that banks price their loans higher above normal to deal with the risks associated with their business.

Similarly, following the information sharing theory (Stiglitz and Weiss, 1981; 1987; Freimer and Gordon, 1965) which hinges on the information asymmetry theory, Luoto, McIntosh and Wydick (2007) advance that information sharing sanitizes the financial market by reducing risk in two ways: one, through the screening effect, and, two, through the incentive or motivational effect. The screening effect states that as banks or lenders share credit information among themselves, they enhance their predictive power by being able to screen out bad financial participants (lemons) from good financial participants (diamonds) (see Kusi, Agbloyor, Ansah-Adu and Gyeke-Dako, 2017; Asongu and Odhiambo, 2018) which reduces lender adverse

selection errors. This mitigates the level of riskiness in the financial market. On the other hand, the motivational or incentive effect states that due to the sharing of credit information among banks or lenders and denial for accessing credit in the future, financial market participants are pressured to honor and be truthful towards the financial commitments since default and non-compliance of participants are reported and affect the rating of defaulters (see Kusi and Opoku-Mensah, 2018). Thus, in both cases (screen and incentive effects), the riskiness in the financial market is reduced. This enables lender certainty in predictions and operations and lowers the premium charged for unanticipated riskiness of the financial system.

It is believed that the banks price or charge their loans relatively higher than normal in order to safeguard themselves against default and interest rate risks (Williams, 2007) which arise due to lack of transparency in the financial market. Therefore, acknowledging all the complexities surrounding net interest margins, it is hypothesized that improving financial sector transparency through credit information sharing can help reduce financial market riskiness which may translate into reduced bank interest margins. Furthermore, following the dealership or financial intermediation theory which advances that the intermediation process is done under uncertainty and characterized by several risks, improving transparency may lead to certainty in the intermediation process resulting in lower charges (interest rate) in the financial intermediation process.

Interestingly, existent literature (Houston, Lin, Lin and Ma, 2010; Djankov, McLiesh and Shleifer, 2007; Miller, 2003; Tchamyou, 2019) argues that information sharing can be done through either public credit registries or private credit bureaus. Thus, while the public credit registries are owned and managed by public sector agents (central banks), the private credit bureaus are managed and owned by the private sector. Miller (2003) advances key and critical differences between public credit registries and private credit bureaus (see Appendix 6); stating that private credit bureaus are more effective compared to public credit registries given that they are normally owned and managed by the private sector, well-resourced, and cover wider and more detailed credit information. More recently, Goodell, Goyal and Hasan (2020) confirms the assertion of Miller (2003) by showing that for-profit firms which are usually private firms are more inclined to be transparent compared to nonprofit firms which are usually public firms.

Empirical Literature Review and Hypothesis development

From an empirical perspective, the study finds numerous studies that investigate determinants of net interest margins. However, no study to the best of our research knowledge investigates the link between net interest margins and financial sector transparency. Hence, the empirical justification for positing the existence of this relation between net interest margin and financial sector transparency is rooted in a number of studies by Kusi and Mensah (2018), Kusi et al. (2017; 2016), Asongu (2017) and Asongu, le Roux, Nwachukwu and Pyke (2019). First, Kusi and Mensah (2018) investigated how transparency in the credit market through credit information sharing affects the funding cost of 233 banks in 17 African countries between 2006 and 2012. Employing two-step generalized methods of moment models, they show that transparency through coverage, presence and quality of private and public information sharing institutions reduce funding cost of banks. Specifically, the effect of transparency through credit information sharing on bank funding cost was more significant for transparency through private credit bureaus. Following, the cost minimization concept, a reduction in the funding cost of firms should translate into lower pricing of goods and services. Likewise, the study contends that a reduction in the funding cost of banks through transparency in the financial market should translate into lower loan prices; however there is no empirical evidence to this effect. Second, a strand of literature shows that transparency through credit information sharing reduces credit risk of banks. For instance, Kusi, Agbloyor, Ansah-Adu and Gyeke-Dako (2017) examined the effect of credit information sharing which is a financial sector transparency measure on credit risk of banks in low and high income economies in Africa between 2006 and 2012. Employing Prais-Winsten regression model on 548 bank-year observations, they report that transparency through credit information sharing is crucial for reducing credit risk and even more importantly in lowering income economies. Similar studies (including Doblas-Madrid and Minetti, 2013; Behr and Sonnekalb, 2012; Bennardo, Pagano and Piccolo, 2009; Brown, Jappelli and Pagano, 2009; Luoto, McIntosh and Wydick, 2007; Powell, Majnoni, Miller and Mylenko, 2004) confirm this finding. Again, Buyukkarabacak and Valev (2012) showed using a comprehensive cross-country between 1975 and 2006 that credit information sharing which is a financial sector transparency measure reduces the likelihood of banking crises. Following the financial intermediation or dealership theory, banks manage credit risk and crises by passing on defaults to borrowers through the premium they charge on loans; leading to higher loan prices. The present study argues that since transparency in the financial market through credit information sharing reduces credit risk and crises, it may also reduce the passage of default and crises costs to borrowers through the pricing of loans; hence translate into reduced net interest margins.

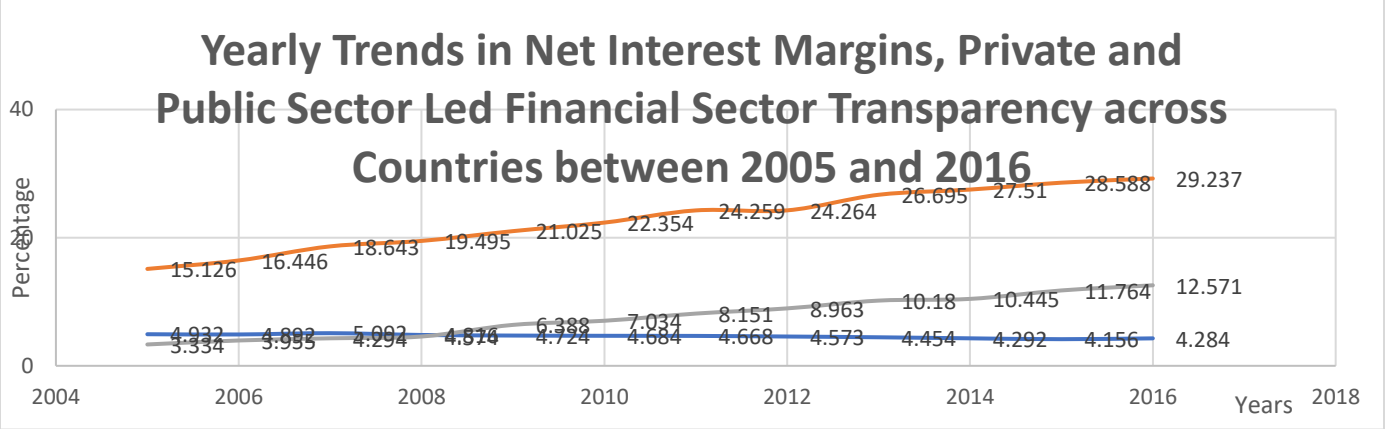
Third, Asongu (2017) examined the effect of financial sector transparency through credit information sharing offices on bank loan prices in Africa. Employing generalized method of moments and instrumental quantile models in a panel data of 162 banks in 42 African economies, the results show that information sharing offices which promote financial sector transparency reduce loan price through private and public credit information sharing offices. Asongu, le Roux, Nwachukwu and Pyke (2019) similarly investigated the relationship between loan prices and quality and information sharing offices which are financial sector transparency enforcement institutions. Employing generalized method of moment and instrumental quantile models in a panel data of 162 banks in 42 African economies between 2002 and 2011, the results show that information sharing offices (which promote financial sector transparency) through information and communication technology reduce loan price and improve loan quantity. Based on this strand of empirical literature that shows that financial sector transparency reduces loan prices, the present study contends that reduced loan prices resulting from improved financial sector transparency may translate into lower net interest margins. More recently, Andries, Nistor and Sprincean (2020) examined the effect of central bank transparency on systemic risk in emerging banking markets in Central and Eastern Europe. Using a panel of 34 banks between 2005 and 2012, their results show that central bank transparency contributes positively and significantly to financial institutions systemic risk. On the contrary, increase in central bank transparency rather reduced idiosyncratic risk of banks. From their finding, it is clear that central bank transparency is beneficial from a micro-prudential perspective but creates incentives for financial institutions to engage in risky activities through herd behavior. .

Given the theoretical and empirical discussions on the ability of financial sector transparency through credit information sharing to reduce credit risk, banking crises and loan prices, it is obvious that these may lead to lower net interest margins although extant literature has not advanced to this stage. Hence, based on the discussions on prior theories and empirical literature, this study contends that financial sector transparency through credit information sharing should lead to lower net interest margins. Furthermore, given that financial sector transparency may be led by the private or public sector, we again hypothesize following Asongu (2017), Tchamyou (2019), and Asongu, le Roux, Nwachukwu and Pyke (2019), that public sector-led financial sector transparency should have a larger effect on reducing bank spreads given its ease of accessibility relative to private sector-led financial sector transparency. Hence, the present study investigates the effect of financial sector transparency on net interest margins using cross-country data covering countries in Africa, Europe, Asia, Northern and Southern America.

Overview of Financial Sector Transparency and Net Interest margins

This section presents an overview of financial sector transparency and net interest margins across countries between 2005 and 2016. Financial sector transparency is measured as private credit bureau coverage (orange line) and public credit registry coverage (ash line) which are credit information sharing variables that offer transparency in the credit or banking market. While private credit bureau coverage and public credit registry coverage measures financial sector transparency led by the private sector and public sector respectively, net interest margin is the difference between bank interest income and interest expense.

Figure 1: Yearly Trends in Net Interest Margins, Private and Public Sector Led Financial Sector Transparency across Countries between 2005 and 2016



Sources: By Authors based on data from World Development Indicators and Global Financial Development Database. ***Note:*** *bank net interest margins (Blue Line); private sector led financial transparency (Orange Line);* ***Public****-public sector led financial sector transparency (Ash Line) –* ***Note*** *- The data on private credit bureau coverage and public credit registry coverage were obtained from the World Development Indicators database whilst the net interest margin data was obtained from the Global Financial Development database.*

From Figure 1, it is observed that private sector-led transparency (Orange line) represented by private credit bureau has progressively improved from 15.13% in 2005 to 29.24% in 2016, implying that availability and coverage of credit information through the private sector in the credit market which enhances transparency has improved consistently between 2005 and 2016. A similar trend is apparent in public credit bureau coverage (ash line) which measures public sector-led financial transparency between 2005 and 2016. Thus, public sector-led financial transparency consistently improves from 3.33% in 2005 to 12.57% in 2016 implying that availability and coverage of credit information in the credit market which enhances transparency has improved remarkably between 2005 and 2017. However, it is important to note

that private sector-led financial sector transparency is higher and has improved more compared to public sector-led financial sector transparency. Interestingly, it is observed that net interest margin (blue line) declines slowly especially after 2007 when the recent global financial crises started. Thus, while net interest margin is highest (5.09%) in 2007, it declines to 4.28% in 2016 implying that net interest margin which represents the spread has consistently decreased from 2005 to 2016.

Table 1: Trends in Net Interest Margins, Private and Public sector led Financial Sector Transparency across Regions

	North & South America			Africa			Europe			Asia and Oceania		
Year	NIM	PRIVATE	PUBLIC	NIM	PRIVATE	PUBLIC	NIM	PRIVATE	PUBLIC	NIM	PRIVATE	PUBLIC
2005	5.366	23.837	5.847	6.863	3.489	1.187	3.413	26.024	4.6	4.417	12.08	1.972
2006	5.364	27.517	6.963	6.849	3.457	1.328	3.294	28.403	6.203	4.317	12.194	2.664
2007	5.578	31.851	7.516	7.155	4.31	1.445	3.235	32.22	6.888	4.635	12.947	2.871
2008	5.566	30.765	8.584	6.362	4.579	1.698	2.97	33.785	8.471	4.532	14.716	3.937
2009	5.534	33.042	9.613	6.238	4.685	1.783	3.144	35.155	11.762	4.151	16.986	4.159
2010	5.332	33.606	9.539	6.095	4.93	2.198	3.063	38.343	13.238	4.341	18.243	4.769
2011	5.481	32.794	8.944	6.126	5.313	2.526	2.965	43.156	15.349	4.226	20.276	6.712
2012	5.257	33.44	9.972	6.065	5.473	3.361	2.885	41.55	16.327	4.213	21.594	7.326
2013	5.145	40.146	12.84	5.981	6.062	3.372	2.783	44.298	16.967	4.005	22.564	9.143
2014	5.294	41.906	12.754	5.649	5.972	3.474	2.644	44.007	18.262	3.869	24.488	8.943
2015	4.948	43.017	12.503	5.987	6.473	4.512	2.416	45.684	21.062	3.494	25.971	10.434
2016	5.223	44.166	13.286	6.234	7.139	5.696	2.622	47.922	21.773	3.32	25.018	10.991
Average	**5.341**	**34.674**	**9.863**	**6.300**	**5.157**	**2.715**	**2.953**	**38.379**	**13.409**	**4.127**	**18.923**	**6.160**

*Sources: Computed by Authors based on data from World Development Indicators and Global Financial Development Database - **Note** – **NIM-**bank net interest margins; **Private-**private sector led financial transparency; **Public**-public sector led financial sector transparency*

Even when the data is split into North and South America, Africa, Europe and Asia and Oceania regions in Table 1, similar trends and patterns are observed as in Figure 1. Thus, on average, financial sector transparency whether led by private and public sector improved, while net interest margins declined on the average across the regions (see Table 1). Interestingly, it is observed that the European region which reported the highest average private and public sector led financial sector transparency of 38.38% and 13.41% respectively, also reported the lowest net interest margin of 2.95%, while the African region which reported the lowest average private and public sector led financial sector transparency of 5.16% and 2.72% respectively also reported the highest net interest margins of 6.3%. Observing these patterns where financial sector transparency improves while bank spread declines in the same period, it is intuitive to enquire if the decline in net interest margin is traceable to the increase in financial sector transparency,

and, if so which financial sector transparency (private or public sector led transparency) is more responsible for the decline. Indeed, Figure 1 and Table 1, provide preliminary evidence of a negative relationship between financial sector transparency and net interest margins. That is, as financial sector transparency improved overtime, net interest margins correspondingly fell across the world and various continental groupings. Consequently, formal econometric analysis in the next sections will seek to isolate the effect of financial sector transparency on bank interest margins.

Methodology

A panel data strategy is employed to attain the objective of establishing the effect of financial sector transparency through credit information sharing institutions on bank interest spreads. Following Brooks (2008) and Baltagi, Song and Koh (2003), panel data is deemed to be more reliable, accurate and consistent compared to the traditional time series and cross-sectional data strategies. They argue that panel data strategy captures both time and entity dimensions of data while time series and cross sectional data strategies capture time and entity dimensions of data only, respectively. Hence, panel data strategy provides more convincing and accurate results. Data used is obtained from the World Development Indicators and the Global Financial Development Database between 2005 and 2016. Specifically, while the bank related variables are obtained from Global Financial Development Database, the financial sector transparency variables are obtained from World Development Indicators. Both database house yearly country-level macroeconomic and financial variables. The data covers eighty-six economies across the globe. We provide details on the variables in Table 2, and additional insights into the databases and variables in Appendix 7. Following the panel framework, we express the general panel form as:

$$Y_{i,t} = \alpha_{ij} + \gamma_{tj} + \beta X_{i,t} + \varepsilon_{i,t} \ldots\ldots\ldots (Eq.\ 1),$$

where, subscript i signifies the cross sectional dimension (country) i=1. . . *N* and t signifies the time series dimension (time), t=1…T; $Y_{it}$is the dependent variable; $\alpha_i$is scalar and constant term for all periods (t) and specific to a country's 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; *Xit is a 1*× k vector of observations on the independent variables comprising of input variables in the model which includes controlled variables and ε*it* which is iid is the error term.

Estimation strategy

In this study, the robust fixed effect, bootstrap quantile, least square dummy variable corrected bias (LSDVC) and two-step generalized method of moments are used for the estimations. Following the Breusch and Pagan (1980) (see Appendix 1) Lagrange multiplier test for random effects, the results provided evidence for the use of generalized least squares models ahead of ordinary least squares. Furthermore, the Hausman (1978) (see Appendix 2) test justified the selection and use of the fixed effect models. To correct for heteroscedasticity (see Appendix 3) and autocorrelation (Appendix 4) problems in the fixed effect models, the robust standard errors approach is used. Furthermore, Nguyen (2012) suggests a potential endogeneity (simultaneity problem) arising from joint determination between net interest margins and non-interest income (see Arellano and Bond, 1991; Arellano and Bover, 1995). Also, the dynamic term in the model correlates with the fixed effect component in the error term leading to another form of endogeneity. Therefore, the GMM is an appropriate technique to control for such possible endogeneity faced in this study. Given the presence of heteroscedasticity and autocorrelation, Blundell and Bond (1998) and Winmeijer (2005) show that the two-step generalized method of moments estimation technique, unlike the one-step generalized method of moments estimation technique provides the opportunity to control and correct for both heteroscedasticity and autocorrelation problems. Hence, in accordance with contemporary GMM-centric literature (Tchamyou, 2020; Tchamyou, Erreygers and Cassimon, 2019), the two-step generalized method of moments estimation technique is the preferred technique for this study. To shed more insights into financial sector transparency and bank interest margins, bootstrap quantile regression models are used to investigate at which level of bank interest margin is financial sector transparency most effective in dealing with bank interest margins. The quantile regression model is robust to outliers (Koenker, 2005; Cade & Noon, 2003), provides more detailed information on sample (Wei, Pere &Koenker, 2006) and avoids the parametric distribution assumptions of the error process (Koenker, 2005; Cade & Noon, 2003). The study models net interest margins following the study of Tarus, Chekol and Mutwol (2012). Hence, the net interest margin models to be estimated are:

$$NIM_{i,t} = \beta_{0+} \beta_1 NIM_{i,t-1} + \beta_2 PRIVATE\text{-}TRANS_{i,t} + \beta_3 COST\text{-}INCOME_{i,t} + \beta_4 NONPERFORM_{i,t} + \beta_5 INFL_{i,t} + \beta_6 GDPGROWTH_{ij,t} + {}_+ \beta_7 BANKCON_{i,t} + \beta_8 BANKDIV_{i,t} + \beta_9 RRATE_{i,t} + \beta_9 FINCRISES_t + \varepsilon_{ij,t} \quad \textbf{(Eq. 2 – PrivateSectorLed Financial Transparency),}$$

$$NIM_{i,t} = \beta_{0+} \beta_1 NIM_{i,t-1} + \beta_2 PUBBLIC\text{-}TRANS_{i,t} + \beta_3 COST\text{-}INCOME_{i,t} + \beta_4 NONPERFORM_{i,t} + \beta_5 INFL_{i,t} + \beta_6 GDPGROWTH_{ij,t} + {}_{+}\beta_7 BANKCON_{i,t} + \beta_8 BANKDIV_{i,t} + \beta_9 RRATE_{i,t} + \beta_9 FINCRISES_t + \varepsilon_{ij,t} \quad \textbf{(Eq. 3-Public SectorLed Financial Transparency)},$$

$$NIM_{i,t} = \beta_{0+} \beta_1 NIM_{i,t-1} + \beta_2 PRIVATE\text{-}TRANS_{i,t} + \beta_3 PRIVATE\text{-}TRANS_{i,t} ++ \beta_4 COST\text{-}INCOME_{i,t} + \beta_5 NONPERFORM_{i,t} + \beta_6 INFL_{i,t} + \beta_7 GDPGROWTH_{ij,t} + {}_{+}\beta_8 BANKCON_{i,t} + \beta_9 BANKDIV_{i,t} + \beta_{10} FINCRISES_t + \beta_9 RRATE_{i,t} + \varepsilon_{ij,t} \quad \textbf{(Eq. 4 –Private and Public SectorLed Financial Transparency)}$$

Definition and Selection of Variables

Net Interest Margins (NIM)

Net interest margin is used as a dependent variable. It is measured as the difference between bank interest income (loan price) and bank interest expense divided by total assets (see Carbo et al, 2009). Allen (1988) also refers to net interest margins as bank spread or mark-up. Net interest margin is founded on the dealership or financial intermediation theory where, the spread summarizes the profit to the banks, competitiveness of the banking sector and cost of the intermediation process to the society (financial market participants) or economy.

Financial Sector Transparency (PRIVATE-TRANS and PUBLIC-TRANS)

Financial sector transparency is an indication of reduced information asymmetry in the credit market. It is measured by credit information sharing through private and public credit information sharing institution coverages. Both private and public credit information sharing institutions provide valuable information that sanitizes the banking market; hence improving certainty and assurance in credit allocation (Asongu, 2017; Asongu, le Roux, Nwachukwu and Pyke, 2019; Buyukkarabacak and Valev, 2012; Djankov, McLiesh and Shleifer, 2007) and recovery of loans and asset quality in banking business (Kusi et al., 2017; 2016; Dobls-Madrid and Minetti, 2013; Behr and Sonnekalb, 2012; Houston, Lin, Lin and Ma, 2010). Through certainty and assurance offered by financial sector transparency, mark-ups on premium margins resulting from uncertainties and credit risk exposures are minimized. This translates into lower bank interest margins; hence financial sector transparency reduces bank interest margins. However, we expect public sector-led financial sector transparency to have a larger effect on bank interest margins given its ease of accessibility relative to private sector-led financial sector transparency.

Operating Cost to Income (COST-INCOME)

Operating cost to income is an efficiency measure which is deemed to capture the variations in bank interest margins. Measured as operating expenses to total operating income. Higher values of this ratio depict lower efficiency while lower values depict higher efficiency (Tarus et al., 2012; Carbo and Rodrigues, 2007). A positive relationship is expected between interest margins and this efficiency measure show that banks pass on their operating cost to the depositors and lenders through the deposits and lending rates (see Tarus et al., 2012; Maudos and Fernandez de Guevara, 2004; Abreu and Mendes, 2003); making the margins wider. Similarly, following cost and pricing strategies in business, costs are considered as major factors in determining prices of products or services. From a banking perspective, a bank incurring high operating costs would like to pass it onto their clients in order to cover their operating cost (Maria and Agoraki, 2010; Martinez, Peria and Mody, 2004). Hence, a positive relationship between margins and operating cost to income is rational and intuitive.

Credit Risk (NONPERFORM)

Credit risk is measured as nonperforming loans to total loans and advances. This captures the portion of loans that go bad and are irrecoverable. Following prior studies (see Tarus et al., 2012; Angbazo, 1997), credit risk is expected to have a positive effect on bank interest margins. The argument is that credit risk is an indication of loans at risk which require capital to correct defaulted client contractual obligations. Hence, higher risk from more credit risk and the capital required to correct the default forces banks to increase the cost of loan prices as compensation for assuming more risk (Maudos and Fernandez de Guevara, 2004; Drako, 2002). However, a negative relationship could exist between credit risk and margins as bad loans reduce the possible margins bank can make on their loans; hence a reducing effect on bank interest margins.

Inflation (INFL)

Inflation is measured with the consumer price index and depicts the degree of stability or volatilities in an economy. The relationship between bank interest margins and inflation is not straight forward given that prior studies (see Rasiah, 2010; Perry, 1992) argue that this nexus largely depends on banks' ability to anticipate inflationary movement. Thus, where banks fully anticipate inflation and so set loan prices to pass it on to the clients, a positive nexus is expected. However, where banks are slow and sluggish in anticipating inflation and fail to set loan prices that capture inflation, a negative nexus is expected. In this

present study, a positive effect is expected between inflation and bank interest margins as banks are likely to pass on the risk of inflation to their clients through the lending rate. .

Gross Domestic Product Growth (GDPGROWTH)

Gross domestic product growth is an indicator of economic conditions and welfare of citizens in an economy. It is believed that the welfare of citizens affect the demand and supply of bank products and services like deposits and loans which impact bank interest margins. The nexus between bank interest margins and economic growth is ambiguous in the empirical literature. Those studies (Islam and Nishiyama, 2016; Tarus et al., 2012; Demirguc-Kunt et al., 2004) that found a negative nexus argue that improved economic growth represents enhanced welfare and signals ability to honor credit or loan obligations. Hence, it prompts banks to reduce the premium charged on defaults leading to reduced bank interest margins. However, the studies that found positive effect of gross domestic product growth rate on bank interest margins (Claessens, Demirguc-Kunt and Huizinga, 2001) argue that improved welfare signals ability to pay and service credit obligations; hence resulting in increased bank interest margins because of a higher ability to service loans (or pay loan interest) during economic growth periods.

Bank Concentration (BANKCON)

Bank concentration is used as an indicator of financial structure of the banking sector and measured as the total assets of the largest top three banks to total banking assets of all banks. From the literature there are contrasting views on the relationship between bank interest margins and concentration. De Haaan and Poghosyan (2012) and Tarus et al. (2012) found a negative effect of concentration on bank interest margins arguing that regulators have easier tasks of monitoring banks in a concentrated banking market because there are fewer banks. Hence, in such markets bank interest margins are lower given the ability of regulators to monitor the fewer banks in the industry. However, majority of studies (see Islam and Nishiyama, 2016; Maudos and Fernandez de Guevara, 2004; Saunders and Schumacher, 2000) found a positive nexus between bank interest margins and concentration arguing that concentration increases market power of the fewer banks in the industry; hence inducing the monopolistic power of banks to charge higher loan prices and earn higher interest margins or spread. Hence, the relationship between bank interest margins and concentration could be positive or negative.

Bank-Noninterest Income (BANKDIV)

Bank noninterest income represents diversification and earnings from outside core banking business. It is measured as noninterest income to total income. Following the literature (for instance Stiroh, 2004), a deviation from the core banking business which results in interest margins will reduce the interest margins. Hence, a negative relationship is expected between non-interest income and bank interest margins.

Table 2: Description and Summary of Variables

Symbols	Names	Measurements	Expected Signs	Sources
NIM	Net Interest Margins	[Interest Income - Interest Expense]/total Assets		Global Financial Development
PRIVATE-TRAN	Private Sector Financial Sector Transparency	Percentage of Adult Population covered by private bureaus	-	World Development Indicators
PUBLIC-TRAN	Public Sector Financial Sector Transparency	Percentage of Adult Population covered by public registries	-	World Development Indicators
COST-INCOME	Cost Efficiency	Operational cost/total income	+	Global Financial Development
NONPERFORM	Credit Risk	nonperforming loans/total loans and advances	+/-	Global Financial Development
INFL	Inflation	Consumer Price Index	+/-	World Development Indicators
GDPGROWTH	Gross Domestic Product Growth	[Current GDP-Previous GDP]/Previous GDP	+/-	World Development Indicators
BANKCON	Bank Concentration	Total Assets of Largest Three Banks/ Total Industry Assets	+	Global Financial Development
BANKDIV	Bank Diversification	Non-interest income/ total income	-	Global Financial Development
RRATE	Real Interest Rate	Lending Rate-Inflation	+	Computed by Authors
FINCRISES	Financial Crises	Dummy which assumes a value of 1 for years 2007, 2008 and 2009 and 0 otherwise	-	Capture Authors Following Dietrich and Wanzeried, 2011; Goddard, Molyneux and Wilson, 2009

Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank diversification; FINCRISES-2007-2009 financial crises; RRATE-real interest Rate

Real Interest Rate (RRATE)

Real interest rate is used to capture price of loans or credit advanced by banks. It is computed as lending rate less inflation and is expected to increase interest margins. Thus, banks rely on interest rate to generate of their interest income and hence a positive relationship is expected between real interest rate and interest margins. This expectation is in accordance with prior studies including Saunders and Schumacher (2000) and Wong (1997).

Financial Crises (FINCRISES)

Financial crises capture the effect of the recent 2007-2009 global financial crises. The financial crises are deemed to have impacted the financial intermediation process across the global especially in Europe (Goddard, Molyneux and Wilson, 2009). The expectation is that financial crises undermine the ability of banks to earn higher margins because the ability to pay and service loans reduces during financial crises periods; leading to reduced bank interest margins.

Empirical results and Discussions

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 which has a null hypothesis of no normal distribution was rejected for all the variables indicating that the variables were all normally distributed around their means. Similarly, from the same table, the variance inflation factor (VIF) which indicates the acceptability of each variable shows that all the variables are accepted in the model, given that none of the VIF values exceeded the maximum threshold of 10.

The Pearson's correlation matrix that serves as a mechanism for checking and controlling multicollinearity is shown in Table 4. Following Kennedy (2008), independent variables are deemed to be multicollinear when the correlational value exceeds 0.7. Hence, the results presented in Table 4 shows no evidence of multicollinearity. Furthermore, from Table 3 (see VIF column) which provides evidence of acceptability of the variables in the models estimated, we find evidence that all the variables are accepted and fit to be in the model.

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max	SWILK	VIF
nim	3631	4.799	3.088	.032	23.32	13.21***	
private-trans	2418	23.133	34.134	0	100	12.71***	1.49
public-trans	2418	8.065	17.222	0	100	15.48***	1.09
cost-income	3291	56.37	14.72	19.988	100	4.09***	1.46
nonperform	2008	7.281	7.553	.01	74.1	14.19***	1.24
inf	4498	7.39	11.346	-18.109	98.773	17.97***	1.90
gdpgrwoth	5334	3.592	5.97	-64.047	88.958	16.99***	1.17
bankcon	3143	70.474	20.081	18.39	100	8.71***	1.12
bankdiv	3325	38.878	14.977	1.425	93.701	9.87***	1.36
rrate	1783	6.459	8.458	-67.264	62.618	13.62***	1.82
fincrises	5778	.074	.262	0	1	6.87***	1.09

Significance Levels: *** p<0.01, ** p<0.05, * p<0.1 – values are in percentages - *Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank diversification; FINCRISES-2007-2009 financial crises*

Table 4: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) nim	1.000										
(2) PrivateTrans	-0.289*	1.000									
(3) PublicTrans	-0.135*	0.006	1.000								
(4) cost-Income	0.105*	0.064*	0.013	1.000							
(5) nonperform	0.200*	-0.206*	-0.076*	0.093*	1.000						
(6) infl	0.341*	-0.190*	-0.069*	0.063*	0.157*	1.000					
(7) gdpgrowth	0.090*	-0.127*	-0.062*	-0.114*	-0.111*	-0.011	1.000				
(8) bankcon	0.030*	-0.117*	-0.134*	-0.077*	0.020	0.027	-0.009	1.000			
(9) bankdiv	-0.108*	-0.024	-0.133*	0.155*	0.086*	0.110*	0.043*	0.099*	1.000		
(10) fincrises	0.016	-0.050*	-0.080*	-0.061*	-0.152*	0.022	0.067*	0.000	0.014	1.000	
(11) rrate	0.281*	-0.102*	-0.002	0.139*	0.122*	-0.335*	0.050*	0.028	0.011	-0.112*	1.000

Significance Level: *** p<0.01, ** p<0.05, * p<0.1*Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank;diversification;FINCRISES-2007-2009;financialcrises;*RRATE-real interest real

In Tables 5, 6, 7, 8 and 9, the study reports the effect of private and public sector led financial sector transparency using eight-six economies across the globe between 2005 and 2016. Specifically, Table 5 reports evidence on the effect of private and public sector led financial sector transparency on bank interest margins using fixed effects and two-step generalized method of moments in the full sample, while Table 6 reports the threshold effect of private and public sector-led financial sector transparency at different levels (quantiles .25, .50, .75 and .95) of bank interest margins using bootstrap quantile regression models for the full sample. However, Table 7 reports the effect of both private and public sector led financial sector

transparency on bank interest margins across four (4) continents using fixed effects and two-step generalized method of moments, Tables 8 and 9 report the effect of both private and public sector led financial sector transparency on bank interest margins respectively across four (4) continents using fixed effects and two-step generalized method of moments. The discussions on the results and findings largely focus on the Two-Sep GMM while the bootstrap quantile regressions are discussed briefly to determine the threshold effect of financial sector transparency on bank interest margins.

Table 5: Effect of Financial Sector Transparency on Net Interest margins – Full Sample

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Fixed Effect Models			Wo-Step GMM Models		
VARIABLES	Private-Trans	Public-Trans	Both	Private-Trans	Public-Trans	Both
LNIM				0.386***	0.401***	0.411***
				(0.0774)	(0.0809)	(0.0747)
Private-Trans	-0.00680		-0.00658	-0.00767**		-0.00772**
	(0.00426)		(0.00424)	(0.00335)		(0.00320)
Public-Trans		-0.00890	-0.00834		-0.0100*	-0.0115**
		(0.00599)	(0.00571)		(0.00530)	(0.00544)
Cost-Income	-0.00381	-0.00603	-0.00450	0.0260**	0.0195*	0.0225*
	(0.0103)	(0.0104)	(0.0102)	(0.0112)	(0.00992)	(0.0113)
nonperform	-0.0239	-0.0212	-0.0213	-0.0176	-0.00674	-0.0170
	(0.0169)	(0.0170)	(0.0169)	(0.0159)	(0.0156)	(0.0158)
Infl	0.0977***	0.104***	0.0950***	0.127***	0.144***	0.123***
	(0.0292)	(0.0300)	(0.0311)	(0.0233)	(0.0246)	(0.0233)
gdpgrowth	0.0235*	0.0258*	0.0218*	0.0304*	0.0396*	0.0264
	(0.0130)	(0.0134)	(0.0123)	(0.0174)	(0.0216)	(0.0165)
bankcon	-0.00436	-0.00369	-0.00578	-0.000640	-0.00153	-0.00381
	(0.00830)	(0.00865)	(0.00843)	(0.00435)	(0.00430)	(0.00461)
bankdiv	-0.0408***	-0.0402***	-0.0420***	-0.0278***	-0.0288***	-0.0284***
	(0.0105)	(0.0112)	(0.0107)	(0.00866)	(0.00842)	(0.00872)
fincrises	-0.0572	-0.0832	-0.0776	-0.0852	-0.132	-0.133
	(0.0815)	(0.0887)	(0.0875)	(0.0963)	(0.0952)	(0.0928)
rrate	0.0819***	0.0870***	0.0781**	0.0907***	0.101***	0.0838***
	(0.0292)	(0.0297)	(0.0306)	(0.0247)	(0.0248)	(0.0250)
Constant	6.154***	5.961***	6.423***	1.465**	1.419**	1.939***
	(0.793)	(0.803)	(0.800)	(0.566)	(0.571)	(0.626)
F-Stats	5.59(0.000)	5.11(0.000)	4.87(0.000)	29.98(0.000)	23.02(0.000)	27.92(0.000)
Observations	603	603	603	603	603	603
R-squared	0.178	0.174	0.183			
Number of ccode	86	86	86	86	86	86
Instruments				28	28	29
AR (1)				-4.14(0.000)	-4.01(0.000)	-4.17(0.000)
AR (2)				-0.71(0.487)	-0.75(0.452)	-0.65(0.517)
Sargan				24.63(0.103)	23.33(0.139)	23.52(0.131)

Hansen	12.90(0.743)	12.47(0.771)	13.74(0.685)

Robust standard errors in parentheses -*** p<0.01, ** p<0.05, * p<0.1- *Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank diversification; FINCRISES-2007-2009 financial crises, RRATE-real interest rate*

From the results in Table 5, there is evidence to suggest that financial sector transparency impedes wide bank interest margins. Specifically, the two-step GMM results in Table 5 suggest that financial sector transparency through credit information sharing coverage reduce bank interest margins in the full sample. Thus, private and public sector led financial sector transparency (see Models 4 and 5) reduces bank interest margins to the benefit of the society and participants of the banking market. This finding confirms that financial sector transparency whether through the private or public sector dampens bank interest margins. Observing from the results in Models 4, 5 and 6, the reducing effect of financial sector transparency on bank interest margin is larger when transparency in the financial sector is led by the public sector. However, the difference in the coefficients of private and public sector-led transparency is confirmed to be insignificant following the Z-statistics approach of Van Beers and Zand (2014) and Clogg, Petkova and Cheng (1995) (see Appendix 9). Hence, no statistical evidence is obtained to support the observed difference in the coefficients of public and private sector led transparency. Thus, insufficient statistical evidence to confirm the effectiveness of public sector-led transparency over private sector-led transparency. This finding contradicts the study of Asongu (2017) and Asongu, le Roux, Nwachukwu and Pyke (2019) who report that transparency through public credit information sharing institutions are more effective. Similarly, further analyses in Table 6 using bootstrap quantile regressions show that both private and public sector led financial sector transparency reduce bank interest margins to the benefit of the society and participants of the banking market (see Models 7-18). However, the reducing effect of financial sector transparency is seen in the lower and mid-quantiles (25th, 50th and 75th quantiles). Interestingly, private sector-led transparency is reported to be more consistent in reducing bank interest margins across quantiles employed. This however implies that economies can rely on both public and private sector led transparencies to reduce bank interest margins.

Further attempts in Tables 7, 8 and 9 show the continental level effect of financial sector transparency on bank interest margins. In Table 7 where the effect of both private and public sector led financial sector transparency is employed, it is interesting to observe that bank interest margins in Africa (see Model 24) is reduced when both private and public sector lead financial sector transparency are included in the model although the effect is higher for public sector led financial sector transparency. Similarly, it is evident that

bank interest margin in Europe (see Model 25) and North and South America (Model 23) is reduced by financial sector transparency led by the public sector. More so, in Tables 8 and 9 where private and public sector financial sector transparency are used respectively, it is observed that bank interest margins is reduced by financial sector transparency led by the private sector in Africa (Model 32) and Asia and Oceania (Model 34) while bank interest margins is reduced by financial sector transparency led by the public sector in North and South America (39), Africa (40) and Europe (Model 41).

These show that financial sector transparency is crucial for lowering the bank interest margin which is cost to financial market participants but gains to banks. However, while both private and public sector led transparencies may reduce bank interest margins, public sector-led financial sector transparency is more consistent and significant in reducing bank interest margins. Thus, improved financial sector transparency, whether through private or public sector, translates into reduced bank interest margins. These findings confirm prior studies (Kusi and Mensah, 2018; Kusi et al., 2017; 2016; Asongu, 2017; Asongu, le Roux, Nwachukwu and Pyke, 2019) that show that financial sector transparency through credit information sharing improves banking sector activities. This study argues that financial sector transparency reduces bank interest margins because its ability to reduce information asymmetry, banking uncertainties and premium margin which have the potential to increase bank margins.

On the control variables, cost-income ratio which indicates cost efficiency is positively and significantly related to bank interest margins in the full sample (Models 4, 5 and 6) and also in Africa (Models 24, 32 and 40). Thus, banks pass on the inefficient cost to their client through the rates they charge. This finding is in line with the results of prior studies (Tarus et al., 2012; Maudos and Fernandez de Guevara, 2004; Abreu and Mendes, 2003). Also, nonperforming loans although did not show any significant effect on bank interest margins in Table 5, it reported a significant negative effect on bank interest margins in Africa (Models 24 and 32). This finding implies that in Africa nonperforming loans impede the wider bank interest margins. The significant negative effect of credit risk on bank interest margin confirms prior studies (Tarus et al., 2012; Angbazo, 1997).

From the macroeconomic perspective, inflation is positive and significantly related to bank interest margin in the full sample (see Models 4, 5, 6), Africa (Model 32 and 40), North and South America (Models 23, 31 and 39), Europe (Models 25 and 41) and Asia and Oceania (Models 26, 34 and 42). Hence, following Rasiah (2010) the positive relation is explained as banks in an attempt to avoid the risk of inflation capture and transmit inflation risk to their client through their margins; hence the positive significant relationship.

Similarly, gross domestic product growth rate positively and significantly increased bank interest margin in the full sample (Models 4 and 5), Africa (Model 32) and Asia and Oceania (Models 26, 34 and 42). However, in Europe (Models 25 and 33), a negative relationship is reported between gross domestic product growth rate and bank interest margins. Thus, following Claessens, Demirguc-Kunt and Huizinga (2001) the study argues that improved gross domestic product growth (which indicates improved welfare) signals ability to pay and service credit obligations; hence resulting in increased bank interest margins because of increased ability to service loans during higher growth periods. On the other hand, the negative effect could be explained following prior studies (Islam and Nishiyama, 2016; Tarus et al., 2012; Demirguc-Kunt et al., 2004) that argue that economic growth represents enhanced welfare and hence pressures banks to lower interest charges in order to attract clients during economic growth era.

Interestingly, while the study finds no significant relation between bank concentration and bank interest margins in the full sample (Models 4, 5 and 6), a significant positive relationship is evident between bank concentration and bank interest margins in Asia and Oceania (Model 26 and 34) and Europe (Model 33). Hence, following Islam and Nishiyama (2016), Maudos and Fernandez de Guevara (2004) and Saunders and Schumacher (2000) the positive relation between bank concentration and bank interest margin is argued as: concentration increases market power of the fewer banks in the industry; hence inducing the monopolistic power of banks to charge higher loan prices and earn higher interest margins or spread. More so bank diversification is reported to reduce bank interest margins in the full sample (Models 4, 5 and 6), Europe (Models 25, 33 and 41), North and South America (Model 23, 31 and 39) and Africa (Models 24, 32 and 40). Likewise, the study shows that the 2007-2009 financial crises reduced bank interest margins in Asia and Oceania (Models 26 and 42) but increased bank interest margins in America (Model 31). This finding is not surprising given that prior studies (see Goddard, Molyneux and Wilson, 2009) have found both positive and negative effect of financial crises on bank margins. Finally, real interest rate is found to be positively and significantly related to bank interest margins in North and South America (Models 23, 31 and 39) and Asia and Oceania (Models 26, 34 and 42). This finding confirms the prior expectation of this study and also the findings of prior studies (Saunders and Schumacher, 2000; Wong, 1997).

.

Table 6: Threshold Effect of Financial Sector Transparency on Net Interest Margins – Full Sample

	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Qunatiles	0.25	0.50	0.75	.95	0.25	0.50	0.75	0.95	0.25	0.50	0.75	0.95
VARIABLES	PrivateTrans	PrivateTrans	PrivateTrans	PrivateTrans	PublicTrans	PublicTrans	PublicTrans	PublicTrans	Both	Both	Both	Both
Private-Trans	-0.00836***	-0.00891***	-0.00645**	-0.00212					-0.00830***	-0.00898***	-0.00817**	-0.00145
	(0.00224)	(0.00235)	(0.00287)	(0.00702)					(0.00222)	(0.00254)	(0.00358)	(0.00638)
Public-Trans					0.00368	-0.00527*	-0.0145***	-0.0235	0.00187	-0.00718	-0.0155**	-0.0228
					(0.00448)	(0.00309)	(0.00531)	(0.0148)	(0.00481)	(0.00498)	(0.00626)	(0.0150)
Cost-Income	0.0328***	0.0499***	0.0486***	0.0917***	0.0312***	0.0341***	0.0443***	0.0931***	0.0341***	0.0469***	0.0499***	0.0939***
	(0.00579)	(0.00997)	(0.00837)	(0.0183)	(0.00574)	(0.00856)	(0.00751)	(0.0134)	(0.00783)	(0.00908)	(0.00816)	(0.0177)
nonperform	-0.0256	-0.0217	0.0264	0.0645	0.00413	-0.00923	0.0394**	0.0537*	-0.0255	-0.0202	0.0213	0.0573
	(0.0178)	(0.0168)	(0.0185)	(0.0393)	(0.0146)	(0.0183)	(0.0158)	(0.0309)	(0.0191)	(0.0248)	(0.0240)	(0.0476)
infl	0.233***	0.302***	0.374***	0.359***	0.231***	0.345***	0.370***	0.377***	0.231***	0.306***	0.352***	0.366***
	(0.0203)	(0.0208)	(0.0205)	(0.0434)	(0.0248)	(0.0195)	(0.0213)	(0.0473)	(0.0202)	(0.0173)	(0.0256)	(0.0514)
gdpgrowth	0.0725***	0.0674**	0.0652**	0.0741*	0.116***	0.0873***	0.0839***	0.0725	0.0714**	0.0688**	0.0683***	0.0717***
	(0.0204)	(0.0264)	(0.0301)	(0.0436)	(0.0252)	(0.0277)	(0.0298)	(0.0456)	(0.0311)	(0.0331)	(0.0197)	(0.0268)
bankcon	-0.00796**	-0.00146	0.00544	0.0168	-0.00928**	-0.00658	-0.000217	0.0150	-0.00732*	-0.00156	0.00215	0.0162*
	(0.00405)	(0.00412)	(0.00441)	(0.0127)	(0.00456)	(0.00416)	(0.00592)	(0.00983)	(0.00400)	(0.00538)	(0.00493)	(0.00918)
bankdiv	-0.0396***	-0.0360***	-0.0261***	-0.0552***	-0.0384***	-0.0344***	-0.0428***	-0.0544***	-0.0395***	-0.0352***	-0.0335***	-0.055***
	(0.00584)	(0.00751)	(0.00963)	(0.0192)	(0.00527)	(0.00763)	(0.00896)	(0.0163)	(0.00653)	(0.00812)	(0.0118)	(0.011)
fincrises	-0.0720	-0.187	-0.501*	-0.889*	-0.220	-0.132	-0.463**	-0.839	-0.0519	-0.210	-0.469*	-0.864
	(0.173)	(0.230)	(0.262)	(0.501)	(0.207)	(0.195)	(0.235)	(0.697)	(0.155)	(0.156)	(0.269)	(0.620)
rrate	0.203***	0.254***	0.303***	0.311***	0.195***	0.279***	0.304***	0.327***	0.201***	0.254***	0.291***	0.319***
	(0.0196)	(0.0173)	(0.0235)	(0.0525)	(0.0177)	(0.0250)	(0.0282)	(0.0455)	(0.0293)	(0.0240)	(0.0312)	(0.0432)
Constant	1.509***	0.315	-0.341	-0.575	0.970***	0.679	0.656	-0.752	1.401**	0.464	0.463	-0.711
	(0.481)	(0.507)	(0.576)	(1.475)	(0.373)	(0.523)	(0.628)	(1.162)	(0.561)	(0.495)	(0.634)	(1.188)
Pseudo R^2	0.343	0.404	0.427	0.417	0.332	0.397	0.427	0.426	0.343	0.406	0.433	0.426
Observations	603	603	603	603	603	603	603	603	603	603	603	603

Standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1 - *Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank diversification; FINCRISES-2007-2009 financial crises; RRATE-real interest rate*

Table 7: Effect of Financial Sector Transparency across Regional Continents – Both Private and Public Sector Led

	Model 19	Model 20	Model 21	Model 22	Model 23	Model 24	Model 25	Model 26
	Fixed Effect Models				Two-Step GMM Models			
VARIABLES	North & South American	Africa	Europe	Asia & Oceania	North & South American	Africa	Europe	Asia & Oceania
L.NIM					0.473***	0.0512	0.777***	0.567***
					(0.148)	(0.141)	(0.0601)	(0.143)
PrivateTrans	0.000145	-0.0153	-0.0112	0.00145	0.00503	-0.0385***	-0.00181	-0.00231
	(0.00700)	(0.00924)	(0.00673)	(0.0135)	(0.00533)	(0.0118)	(0.00184)	(0.00226)
Public-Trans	-0.00618	-0.0843	-0.0125	-0.0249	-0.00647**	-0.402**	-0.00687*	-0.000151
	(0.00548)	(0.121)	(0.0128)	(0.0206)	(0.00268)	(0.185)	(0.00363)	(0.00607)
Cost-Income	0.0117	0.0333	-0.0148	-0.00749	0.0158	0.129***	-0.00404	-0.000837
	(0.0118)	(0.0283)	(0.0145)	(0.0168)	(0.0165)	(0.0347)	(0.00532)	(0.00655)
Nonperform	-0.0982***	0.00959	-0.0133	0.00660	-0.0454	-0.0790*	-0.00353	-0.0171
	(0.0304)	(0.0396)	(0.0299)	(0.0765)	(0.0438)	(0.0384)	(0.00888)	(0.0339)
Infl	0.0738*	0.000847	0.128*	0.119*	0.0726***	0.0266	0.0704***	0.122***
	(0.0400)	(0.0587)	(0.0680)	(0.0653)	(0.0239)	(0.0461)	(0.0234)	(0.0359)
gdpgrowth	-0.0685	-0.00928	0.0291	0.0412*	-0.0508	0.00242	-0.0385*	0.0339**
	(0.0487)	(0.0221)	(0.0371)	(0.0239)	(0.0513)	(0.0451)	(0.0222)	(0.0160)
Bankcon	-0.0123	-0.0192	-0.00735	-0.00474	0.00271	0.00416	0.000396	0.00725*
	(0.00822)	(0.0469)	(0.00860)	(0.0153)	(0.00614)	(0.0149)	(0.00472)	(0.00419)
bankdiv	-0.0297***	-0.100***	-0.0330*	-0.0263	-0.0326***	-0.115***	-0.0108**	0.00156
	(0.00711)	(0.0258)	(0.0174)	(0.0241)	(0.00840)	(0.0313)	(0.00498)	(0.0138)
fincrises	0.307	0.143	-0.218	-0.134	0.188	0.0449	0.0264	-0.270*
	(0.180)	(0.251)	(0.235)	(0.172)	(0.148)	(0.271)	(0.130)	(0.146)
rrate	0.0592	0.0233	0.108	0.101	0.0524*	0.00917	0.0421	0.123***
	(0.0381)	(0.0448)	(0.0780)	(0.0630)	(0.0265)	(0.0373)	(0.0273)	(0.0377)
Constant	6.728***	10.10**	6.344***	4.163***	2.440*	4.126	1.149**	-0.0670
	(1.151)	(4.664)	(1.039)	(1.445)	(1.306)	(2.418)	(0.475)	(0.751)
F-Stats	25.98(0.00)	20.01(0.000)	6.66(0.000)	4.35(0.000)	11.98(0.000)	26.39(0.000)	383.13(0.000)	124.44(0.000)
Observations	133	112	167	191	133	112	167	191
R-squared	0.238	0.405	0.287	0.116				
Number of ccode	17	18	22	29	17	18	22	29
Instruments					15	17	14	21
AR (1)					-2.26(0.024)	-1.82(0.069)	-1.92(0.055)	-1.86(0.063)
AR (2)					0.39(0.697)	-0.56(0.575)	-1.22(0.224)	-1.42(0.154)
Sargan					0.64(0.888)	20.80(0.001)	1.14(0.565)	19.71(0.020)
Hansen					0.68(0.878)	6.09(0.298)	0.98(0.612)	9.65(0.379)

Robust standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1 - *Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank diversification; FINCRISES-2007-2009 financial crises, RRATE-real interest rate*

Table 8: Effect of Financial Sector Transparency across Regional Continents –Private Sector Led

	Model 27	Model 28	Model 29	Model 30	Model 31	Model 32	Model 33	Model 34
	Fixed Effect Models				Two-Step GMM Models			
VARIABLES	North & South American	Africa	Europe	Asia and Oceania	North & South American	Africa	Europe	Asia and Oceania
L.NIM					0.418**	0.629***	0.934***	0.500***
					(0.160)	(0.165)	(0.246)	(0.0792)
PrivateTrans	-0.000631	-0.0182**	-0.0101	-0.000329	0.00339	-0.0213**	-0.00165	-0.00323*
	(0.00719)	(0.00766)	(0.00653)	(0.0150)	(0.00639)	(0.00941)	(0.00368)	(0.00186)
Cost-Income	0.00982	0.0352	-0.0129	-0.0101	0.0114	0.0412*	-0.0202**	-0.00182
	(0.0132)	(0.0290)	(0.0148)	(0.0165)	(0.0151)	(0.0231)	(0.00818)	(0.00663)
Nonperform	-0.0881**	0.0136	-0.0218	0.0140	-0.0370	-0.0409**	-0.00216	-0.0246
	(0.0312)	(0.0378)	(0.0268)	(0.0769)	(0.0438)	(0.0176)	(0.00978)	(0.0304)
Infl	0.0749*	0.000869	0.128**	0.130**	0.0680**	0.0696**	0.0668	0.132***
	(0.0395)	(0.0570)	(0.0591)	(0.0626)	(0.0262)	(0.0251)	(0.0446)	(0.0394)
gdpgrowth	-0.0631	-0.00740	0.0376	0.0423*	-0.0540	0.0282**	-0.0531**	0.0283*
	(0.0505)	(0.0218)	(0.0351)	(0.0224)	(0.0367)	(0.0129)	(0.0216)	(0.0144)
Bankcon	-0.0132	-0.0218	-0.00461	-0.00293	6.22e-05	0.00116	0.0206**	0.00784*
	(0.00809)	(0.0468)	(0.00956)	(0.0139)	(0.00534)	(0.00591)	(0.00837)	(0.00442)
bankdiv	-0.0281***	-0.0978***	-0.0327*	-0.0207	-0.0300***	-0.0526***	-0.0203*	-0.00113
	(0.00782)	(0.0252)	(0.0166)	(0.0246)	(0.00704)	(0.0177)	(0.0115)	(0.0130)
fincrises	0.330*	0.153	-0.176	-0.114	0.228*	0.121	0.115	-0.238
	(0.170)	(0.244)	(0.238)	(0.162)	(0.130)	(0.344)	(0.155)	(0.167)
rrate	0.0601	0.0207	0.115	0.113*	0.0480*	0.0121	0.0472	0.138***
	(0.0375)	(0.0435)	(0.0700)	(0.0601)	(0.0264)	(0.0146)	(0.0496)	(0.0313)
Constant	6.720***	10.04**	5.907***	3.698***	3.136**	1.886	0.511	0.209
	(1.189)	(4.691)	(0.896)	(1.184)	(1.472)	(1.296)	(1.497)	(0.570)
F-Stats	24.46(0.000)	16.66(0.000)	3.01(0.018)	5.71(0.000)	176.46(0.000)	69.24(0.000)	20.86(0.000)	91.80(0.000)
Observations	133	112	167	191	133	112	167	191
R-squared	0.232	0.402	0.273	0.100				
Number of ccode	17	18	22	29	17	18	22	29
Instruments					16	12	12	18
AR (1)					-2.46(0.014)	-2.24(0.025)	-1.89(0.059)	-2.40(0.016)
AR (2)					0.54(0.588)	-0.23(0.817)	-1.13(0.260)	-1.52(0.130)
Sargan					1.89(0.865)	0.53(0.465)	0.41(0.520)	17.39(0.021)
Hansen					1.83(0.872)	0.34(0.560)	0.10(0.757)	6.04(0.536)

Robust standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1 - *Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank diversification; FINCRISES-2007-2009 financial crises, RRATE-real interest rate*

Table 9: Effect of Financial Sector Transparency across Regional Continents – Public Sector Led

	Model 35	Model 36	Model 37	Model 38	Model 39	Model 40	Model 41	Model 42
	Fixed Effect Models				Two-Step GMM Models			
VARIABLES	North & South American	Africa	Europe	Asia and Oceania	North & South American	Africa	Europe	Asia & Oceania
L.NIM					0.769	0.356	0.618***	0.565***
					(0.488)	(0.211)	(0.196)	(0.148)
Public-Trans	-0.00614	-0.106	-0.00918	-0.0245	-0.00574*	-0.288**	-0.00810*	0.00197
	(0.00564)	(0.116)	(0.0122)	(0.0217)	(0.00304)	(0.127)	(0.00454)	(0.00488)
Cost-Income	0.0117	0.0344	-0.0186	-0.00711	0.0150	0.0787***	-0.00283	-0.00294
	(0.0118)	(0.0278)	(0.0156)	(0.0160)	(0.0168)	(0.0268)	(0.00726)	(0.00648)
Nonperform	-0.0981***	0.0155	-0.0220	0.00517	-0.00388	-0.00953	-0.00689	-0.00780
	(0.0304)	(0.0396)	(0.0283)	(0.0707)	(0.0779)	(0.0221)	(0.0139)	(0.0357)
Infl	0.0736*	0.00139	0.139*	0.119*	0.0611***	0.0838**	0.114*	0.129***
	(0.0348)	(0.0556)	(0.0674)	(0.0651)	(0.0155)	(0.0372)	(0.0571)	(0.0369)
gdpgrowth	-0.0686	-0.00857	0.0473	0.0404	-0.0435	0.0243	-0.00876	0.0381**
	(0.0485)	(0.0222)	(0.0314)	(0.0270)	(0.0452)	(0.0180)	(0.0356)	(0.0183)
Bankcon	-0.0123	-0.0215	-0.00915	-0.00588	0.00890	-0.00104	-0.00532	0.00693
	(0.00823)	(0.0460)	(0.00970)	(0.0171)	(0.0123)	(0.00871)	(0.00750)	(0.00439)
bankdiv	-0.0298***	-0.100***	-0.0284	-0.0262	-0.0333***	-0.0970***	-0.0175*	0.00282
	(0.00642)	(0.0257)	(0.0173)	(0.0239)	(0.00690)	(0.0256)	(0.00913)	(0.0143)
fincrises	0.308	0.156	-0.275	-0.143	0.119	0.00295	-0.0102	-0.270*
	(0.183)	(0.249)	(0.224)	(0.167)	(0.129)	(0.280)	(0.166)	(0.155)
rrate	0.0589*	0.0233	0.121	0.101	0.0357*	0.0330	0.0882	0.127***
	(0.0329)	(0.0412)	(0.0777)	(0.0632)	(0.0202)	(0.0263)	(0.0675)	(0.0388)
Constant	6.739***	9.978**	5.951***	4.278***	0.652	2.943*	1.845**	-0.186
	(0.898)	(4.518)	(1.070)	(1.499)	(3.676)	(1.509)	(0.877)	(0.726)
F-Stats	24.84(0.000)	8.68(0.000)	10.75(0.000)	4.70(0.000)	8.62(0.000)	67.58(0.000)	135.93(0.000)	98.93(0.000)
Observations	133	112	167	191	133	112	167	191
R-squared	0.238	0.401	0.250	0.116				
Number of ccode	17	18	22	29	17	18	22	29
Instruments					13	13	12	20
AR (1)					-1.74(0.08)	-2.01(0.044)	-1.75(0.081)	-1.84(0.066)
AR (2)					0.41(0.683)	-1.13(0.258)	-1.27(0.203)	-1.38(0.169)
Sargan					0.21(0.900)	0.33(0.846)	0.14(0.709)	20.17(0.017)
Hansen					0.11(0.946)	0.15(0.929)	0.14(0.705)	9.64(0.380)

Robust standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1 - *Note: NIM-bank interest margin; PRIVATE-TRANS-financial sector transparency led by private sector; PUBLIC-TRANS- financial sector transparency led by public sector; COST-INCOM-cost efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-gross domestic product growth; BANKCON-bank concentration; BANKDIV-bank diversification; FINCRISES-2007-2009 financial crises; RRATE-real interest rate*

Robustness Checks and Diagnostics

To ensure consistency, reliability and efficiency of the models, a number of tests and actions were undertaken. First, outlier effects were screened for and controlled by the use of quantile regression models which are more robust in dealing with outlier effects. As a result, all outliers are detected and deleted; hence no outliers. Second, Pearson's Correlation (Table 4) and Variance Inflation Factor (VIF) (Table 3) were also employed to check for multicollinearity and acceptability of variables used in the models. Following Kennedy (2008) who set the threshold of multicollinearity to 0.7, there was no evidence of multicollinearity while the VIF confirm eligibility of all the variables employed. Third, we employ the Breusch and Pagan Lagrangian multiplier test for random effects to justify the use of either ordinary least squares (OLS) or random effect generalized least squares (see Appendix 1) models. Given that the null hypothesis of the Breusch and Pagan Lagrangian multiplier test indicates preference for OLS, the study rejects the null hypothesis concluding that the alternate hypothesis which indicates the GLS is preferred is true. Fourth, as a means of selecting the appropriate GLS models for our models, the Hausman test is used to make a choice between fixed and random effects models. The results from the Hausman test (see Appendix 2) indicate a rejection of the null hypothesis (Ho: difference in coefficients not systematic) implying that the fixed effects is preferred to the random effects. Fifth, we check for autocorrelation (Appendix 3) and heteroscedasticity (see Appendix 4) and found evidence of autocorrelation and heteroscedasticity; hence we employ robust standard random models to ensure consistent, efficient, reliable and unbiased results. Sixth, given the possibility on endogeneity and the presence of autocorrelation and heteroscedasticity, the study employs the two-step system generalized method of moments to control for endogeneity, autocorrelation and heteroscedasticity. Seventh, the study employs least square dummy variable corrected bias models (see Appendix 10 and 11) to enable the study control for possible Nickell bias (see Dang, Kim and Shin, 2015; Flannery and Hankins, 2013) and bootstrap quantile regression models to ensure reliability and consistency in our sample. However, while the fixed effect and LSDVC models do not report significant nexus between financial sector transparency and bank interest margins, the study relies on the two-step GMM which produces significant nexus between financial sector transparency and bank interest margins for interpretation of the results. Hence, to a very large extent, the signs of the variables in Tables are consistent across the models indicating the consistency and reliability of the results and findings. Hence, our models are good and fit for generalization.

Conclusions, Policy Implications and Recommendations

This study attempts to establish the effect of financial sector transparency on bank net interest margins across eighty-six economies between 2005 and 2016. The study is motivated by the lack of empirical evidence on how financial sector transparency affects bank net interest margins despite intuitive and theoretical suggestions of a nexus between the two. It is against this back ground that this study provides evidence on the link between financial sector transparency and interest margins using two-step system generalized method of moments and quantile regression models.

Overall, it is evident that financial sector transparency dampens bank interest margins across economies. Thus, financial sector transparency whether led by the private or public sector reduces bank interest margins. Specifically, the study finds that financial sector transparency led by the public sector is more consistent and reliable in reducing bank interest margins in many more economies. Furthermore, both private and public sector led financial sector transparency are effective at reducing bank interest margins at lower and middle levels. Even at the continental level, results show that both private and public sector led financial sector transparency are effective at reducing bank interest margins in African economies while private led financial sector transparency is effective at reducing bank interest margins in Asian and Oceanian economies. However, in North and South America and Europe public sector-led financial sector transparency is effective at reducing bank interest margins.

From the above findings, policymakers including parliaments, bank managements and bank regulators and their allied agencies must enact policies and laws that deepen and expand financial sector transparency through credit information sharing in order to reduce bank interest margins for the good of banking market participants. Also, economies must be selective in the establishment and expansion of financial sector transparency through credit information sharing since public sector-led financial sector transparency is more consistent and persistent in reducing bank interest margins in many more economies. Hence, the enactment of policies and laws must be strategically done to promote the consistency, reliability, effectiveness and efficiency of both private and public sector led financial sector transparency depending on the continent in which an economy finds itself.

References

Abreu, M., & Mendes, V. (2003). Do macro-financial variables matter for European bank interest margins and profitability? *Financial Management Association International*.

Allen, L. (1988). The determinants of bank interest margins: a note. *Journal of Financial and Quantitative analysis*, *23*(2), 231-235.

Andrieş, A. M., Nistor, S., &Sprincean, N. (2020). The impact of central bank transparency on systemic risk—Evidence from Central and Eastern Europe. *Research in International Business and Finance*, *51*.

Angbazo, L. (1997). Commercial bank net interest margins, default risk, interest-rate risk, and off-balance sheet banking. *Journal of Banking & Finance*, *21*(1), 55-87.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, *58*(2), 277-297.

Arellano, M., &Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, *68*(1), 29-51.

Asongu, S. A. (2017). The effect of reducing information asymmetry on loan price and quantity in the African banking industry. *Research in International Business and Finance*, *41*, 185-197.

Asongu, S. A., Anyanwu, J. C., &Tchamyou, V. S. (2017). Technology-driven information sharing and conditional financial development in Africa. *Information Technology for Development*, 1-30.

Asongu, S., Le Roux, S., Nwachukwu, J., & Pyke, C. (2019). Reducing Information Asymmetry with ICT: A critical review of loan price and quantity effects in Africa. *International Journal of Managerial Finance*.

Asongu, S. A., Le Roux, S., &Tchamyou, V. S. (2019). Essential information sharing thresholds for reducing market power in financial access: a study of the African banking industry. *Journal of Banking Regulation*, *20*(1), 34-50.

Asongu, S. A., &Odhiambo, N. M., (2018). Information asymmetry, financialization, and financial access, International Finance, 21(3), 297-315.

Asongu, S. A., &Odhiambo, N. M. (2019). Challenges of doing business in Africa: a systematic review. *Journal of African Business*, *20*(2), 259-268.

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of international financial Markets, Institutions and Money*, *18*(2), 121-136.

Athanasoglou, P., Delis, M., &Staikouras, C. (2006). Determinants of bank profitability in the South Eastern European region.

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.

Barron, J. M., & Staten, M. (2003). The value of comprehensive credit reports: Lessons from the US experience. *Credit reporting systems and the international economy*, *8*, 273-310.

Barth, J. R., Lin, C., Lin, P., & Song, F. M. (2009). Corruption in bank lending to firms: Cross-country micro evidence on the beneficial role of competition and information sharing. *Journal of Financial Economics*, *91*(3), 361-388.

Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking & Finance*, *28*(3), 423-442.

Behr, P., &Sonnekalb, S. (2012). The effect of information sharing between lenders on access to credit, cost of credit, and loan performance–Evidence from a credit registry introduction. *Journal of Banking & Finance*, *36*(11), 3017-3032.

Bekaert, G., Harvey, C. R., &Lundblad, C. (2005). Does financial liberalization spur growth?.*Journal of Financial economics*, *77*(1), 3-55.

Ben Naceur, S., &Goaied, M. (2008). The determinants of commercial bank interest margin and profitability: evidence from Tunisia. *Frontiers in Finance and Economics*, *5*(1), 106-130.

Bennardo, A., Pagano, M., & Piccolo, S. (2009). Multiple-Bank Lending. *Creditor Rights and Information Sharing, CEPR DP7186*.

Besanko, D., &Thakor, A. V. (1987). Collateral and rationing: sorting equilibria in monopolistic and competitive credit markets. *International economic review*, 671-689.

Besanko, D., &Thakor, A. V. (1987). Competitive equilibrium in the credit market under asymmetric information. *Journal of Economic Theory*, *42*(1), 167-182.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, *87*(1), 115-143.

Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The review of economic studies*, *47*(1), 239-253.

Brooks, C. (2008). Introductory Econometrics for Finance, 2008.

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.

Bruno, G. S. (2005). Approximating the bias of the LSDV estimator for dynamic unbalanced panel data models. *Economics letters*, *87*(3), 361-366.

Büyükkarabacak, B., &Valev, N. (2012). Credit information sharing and banking crises: An empirical investigation. *Journal of Macroeconomics*, *34*(3), 788-800.

Carbó, S., Humphrey, D., Maudos, J., &Molyneux, P. (2009). Cross-country comparisons of competition and pricing power in European banking. *Journal of International Money and Finance*, *28*(1), 115-134.

Claessens, S., Demirgüç-Kunt, A., & Huizinga, H. (2001). How does foreign entry affect domestic banking markets?.*Journal of Banking & Finance*, *25*(5), 891-911.

Clogg, C. C., Petkova, E., & Cheng, T. (1995). Reply to Allison: More on comparing regression coefficients. *American Journal of Sociology*, *100*(5), 1305-1312.

Corbet, S., Dunne, J. J., & Larkin, C. (2019). Quantitative easing announcements and high-frequency stock market volatility: Evidence from the United States. *Research in International Business and Finance*, *48*, 321-334.

Dang, V. A., Kim, M., & Shin, Y. (2015). In search of robust methods for dynamic panel data models in empirical corporate finance. *Journal of Banking & Finance*, *53*, 84-98.

De Haan, J., &Poghosyan, T. (2012). Bank size, market concentration, and bank earnings volatility in the US. *Journal of International Financial Markets, Institutions and Money*, *22*(1), 35-54.

Demirgüç-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: some international evidence. The World Bank Economic Review, 13(2), 379-408.

Demirgüç-Kunt, A., Love, I., &Maksimovic, V. (2004). *Business environment and the incorporation decision*. The World Bank.

Dietrich, A., &Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions and Money*, *21*(3), 307-327.

Djankov, S., McLiesh, C., & Shleifer, A. (2007). Private credit in 129 countries. *Journal of financial Economics*, *84*(2), 299-329.

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.

Flannery, M. J., & Hankins, K. W. (2013). Estimating dynamic panel models in corporate finance. *Journal of Corporate Finance*, *19*, 1-19.

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

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 (Vol. 2). *MIT press Cambridge, MA. Retrieved on*, *17*(04), 2014.

Galindo, A., & Miller, M. (2001, March). Can credit registries reduce credit constraints? Empirical evidence on the role of credit registries in firm investment decisions. In *Annual Meetings of the Inter-American Development Bank, Santiago Chile*.

Gamra, S. B. (2009). Does financial liberalization matter for emerging East Asian economies growth? Some new evidence. *International Review of Economics & Finance*, *18*(3), 392-403.

Garr, D. K., &Kyereboah-Coleman, A. (2013). Macroeconomic and industry determinants of interest rate spread-empirical evidence. *Developing Country Studies*, *3*(12), 2225-0565.

Goddard, J., Molyneux, P., & Wilson, J. O. (2009). The crisis in UK banking. *Public Money & Management*, *29*(5), 277-284.

Goddard, J., Molyneux, P., & Wilson, J. O. (2009). The financial crisis in Europe: evolution, policy responses and lessons for the future. *Journal of financial regulation and compliance*, *17*(4), 362-380.

Goodell, J. W., Goyal, A., & Hasan, I. (2020). Comparing financial transparency between for-profit and nonprofit suppliers of public goods: Evidence from microfinance. *Journal of International Financial Markets, Institutions and Money*, *64*, 101146.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the econometric society*, 1251-1271.

Hawtrey, K., & Liang, H. (2008). Bank interest margins in OECD countries. *The North American Journal of Economics and Finance*, *19*(3), 249-260.

Houston, J. F., Lin, C., Lin, P., & Ma, Y. (2010). Creditor rights, information sharing, and bank risk taking. *Journal of financial Economics*, *96*(3), 485-512.

Islam, M. S., &Nishiyama, S. I. (2016). The determinants of bank net interest margins: A panel evidence from South Asian countries. *Research in International Business and Finance*, *37*, 501-514.

Jappelli, T., & Pagano, M. (2002). Information sharing, lending and defaults: Cross-country evidence. *Journal of Banking & Finance*, *26*(10), 2017-2045.

Kallberg, J. G., &Udell, G. F. (2003). Private business information exchange in the United States. *Credit Reporting Systems and the International Economy, by Margaret J. Miller*, 203-228.

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.

Kasman, A., Tunc, G., Vardar, G., &Okan, B. (2010). Consolidation and commercial bank net interest margins: Evidence from the old and new European Union members and candidate countries. *Economic Modelling*, *27*(3), 648-655.

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.

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. (2016). Credit referencing bureaus and bank credit risk: evidence from Ghana. *African Finance Journal*, *18*(2), 69-92.

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

Luoto, J., McIntosh, C., &Wydick, B. (2007). Credit information systems in less developed countries: A test with microfinance in Guatemala. *Economic Development and Cultural Change*, *55*(2), 313-334.

Maria, K., &Agoraki, K. M. (2010). The determinants of net interest margin during transition, department of accounting and finance.

Maudos, J., & De Guevara, J. F. (2004). Factors explaining the interest margin in the banking sectors of the European Union. *Journal of Banking & Finance*, *28*(9), 2259-2281.

Miller, M. J. (Ed.). (2003). *Credit reporting systems and the international economy*. Mit Press.

Mody, A., &Peria, M. S. M. (2004). *How foreign participation and market concentration impact bank spreads: evidence from Latin America* (Vol. 3210). World Bank Publications.

Nguyen, J. (2012). The relationship between net interest margin and noninterest income using a system estimation approach. *Journal of Banking & Finance*, *36*(9), 2429-2437.

O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & quantity*, *41*(5), 673-690.

Pagano, M., &Jappelli, T. (1993). Information sharing in credit markets. *The journal of finance*, *48*(5), 1693-1718.

Park, A., Brandt, L., & Giles, J. (2003). Competition under credit rationing: theory and evidence from rural China. *Journal of Development Economics*, *71*(2), 463-495.

Powell, A., Mylenko, N., Miller, M., &Majnoni, G. (2004). Improving credit information, bank regulation and supervision: On the role and design of public credit registries. Policy Research Working paper 3443, The World Bank.

Saunders, A., & Schumacher, L. (2000). The determinants of bank interest rate margins: an international study. *Journal of international Money and Finance*, *19*(6), 813-832.

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

Stiglitz, J. E., & Weiss, A. (1987). Credit rationing: reply. *The American economic review*, *77*(1), 228-231.

Stiglitz, J. E., & Weiss, A. (1992). Asymmetric information in credit markets and its implications for macro-economics. *Oxford Economic Papers*, *44*(4), 694-724.

Stiroh, K. J. (2004). Diversification in banking: Is noninterest income the answer?.*Journal of Money, Credit, and Banking*, *36*(5), 853-882.

Stiroh, K. J. (2004). Do community banks benefit from diversification?.*Journal of Financial Services Research*, *25*(2-3), 135-160.

Tarus, D. K., Chekol, Y. B., &Mutwol, M. (2012). Determinants of net interest margins of commercial banks in Kenya: a panel study. *Procedia Economics and Finance*, *2*, 199-208.

Tchamyou, V. S., (2020). "Education, Lifelong learning, Inequality and Financial access: Evidence from African countries". *Contemporary Social Science*. DOI: 10.1080/21582041.2018.1433314.

Tchamyou, V. S., (2019)."The Role of Information Sharing in Modulating the Effect of Financial Access on Inequality", *Journal of African Business*, 20(3), pp. 317-338.

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

Tchamyou, V. S., Erreygers, G., &Cassimon, D., (2019). "Inequality, ICT And Financial Access in Africa", *Technological Forecasting and Social Change*, 139(February): 169-184.

Van Beers, C., &Zand, F. (2014). R&D cooperation, partner diversity, and innovation performance: an empirical analysis. *Journal of Product Innovation Management*, *31*(2), 292-312.

Were, M., &Wambua, J. (2014). What factors drive interest rate spread of commercial banks? Empirical evidence from Kenya. *Review of Development Finance*, *4*(2), 73-82.

Wichers, C. R. (1975). The detection of multicollinearity: A comment. *The Review of Economics and Statistics*, 366-368.

Williams, B., (2007). Factors Determining Net Interest Margins in Australia: Domestic and Foreign Banks, New York University Salomon Center, Financial Markets, Institutions & Instruments, 16, (3), 145-165.

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of econometrics*, *126*(1), 25-51.

Wong, K. P. (1997). On the determinants of bank interest margins under credit and interest rate risks. *Journal of Banking & Finance*, *21*(2), 251-271.

Appendix

Appendix1: Breusch and Pagan Lagrangian multiplier test for random effects

Breusch and Pagan Lagrangian multiplier test for random effects
nim[ccode,t] = Xb + u[ccode] + e[ccode,t]
Test: Var(u) = 0
chibar2(01) = 667.78
Prob> chibar2 = 0.0000

Appendix 2: Hausman (1978) specification test

	Coef.
Chi-square test value	61.00
P-value	0.000

Appendix 3: Wooldridge test for autocorrelation in panel data

H0: no first order autocorrelation
F(1, 73) = 39.024
Prob> F = 0.0000

Appendix 4: Modified Wald test for groupwise heteroscedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i
chi2 (121) = 5.7e+36
Prob>chi2 = 0.0000

Appendix 5: List of Economies Included in the Study

Northern and Southern American Economies (17)	African Economies (18)	European Economies (22)		Asian and Oceania Economies (29)	
Argentina	Algeria	Albania	Ireland	Afghanistan	Saudi Arabia
Brazil	Botswana	Austria	Italy	Australia	Singapore
Canada	Cameroon	Belgium	Ukraine	Azerbaijan	Sri Lanka
Chile	Congo, Rep.	Bulgaria	United Kingdom	Bahrain	Thailand
Colombia	Egypt, Arab Rep.	Norway		Bangladesh	United Arab Emirates
Costa Rica	Gabon	Poland		Bhutan	Vietnam
Dominican Republic	Ghana	Portugal		Cambodia	Yemen, Rep.
Ecuador	Guinea	Switzerland		China	New Zealand
	Kenya	Czech Republic		Hong Kong	Oman
Guatemala	Morocco	Denmark		India	Pakistan
Honduras	Namibia	Spain		Indonesia	Philippines
Mexico	Nigeria	Finland		Israel	Qatar
Panama	Rwanda	France		Japan	
Paraguay	Senegal	Sweden		Jordan	
Peru	South Africa	Germany		Korea, Rep.	
United States	Tunisia	Greece		Kuwait	
Uruguay	Uganda	Hungary		Malaysia	
Venezuela, RB	Zambia	Iceland			

Appendix 6: Private Credit Bureaus versus Public Credit Registries

	Public Credit Registries	Private Credit Bureaus
Purpose	Banking supervision	Sharing of credit information to help lenders take informed decisions
Coverage	Mainly large corporate. Limited in terms of history and type of data provided.	Large corporations, SMEs, individuals. Longer history and more rich data provided.
Ownership	Government or central banks	Government/central banks, lenders, lenders' associations, independent third parties
Status	Not for profit	Mainly for profit
Data sources used	Banks and non-banks financial institutions	Banks, non-banks financial institutions, PCRs, tax authorities, courts, utilities
Access	Restricted to information providers	Open to all types of lenders

Sources: Miller (2003)

Appendix 7: Data Summary

Symbols	Variable Names	Definition of Variables	Sources of Variables
NIM	Net Interest Margins	Accounting value of bank's net interest revenue as a share of its average interest-bearing (total earning) assets.	https://databank.worldbank.org/reports.aspx?source=global-financial-development
PRIVATE-TRAN	Private Sector Financial Sector Transparency	Private credit bureau coverage reports the number of individuals or firms listed by a private credit bureau with current information on repayment history, unpaid debts, or credit outstanding. The number is expressed as a percentage of the adult population.	https://databank.worldbank.org/source/world-development-indicators
PUBLIC-TRAN	Public Sector Financial Sector Transparency	Public credit registry coverage reports the number of individuals and firms listed in a public credit registry with current information on repayment history, unpaid debts, or credit outstanding. The number is expressed as a percentage of the adult population.	https://databank.worldbank.org/source/world-development-indicators

COST-INCOME	Cost Efficiency	Operating expenses of a bank as a share of sum of net-interest revenue and other operating income.	https://databank.worldbank.org/reports.aspx?source=global-financial-development
NONPERFORM	Credit Risk	Ratio of defaulting loans (payments of interest and principal past due by 90 days or more) to total gross loans (total value of loan portfolio). The loan amount recorded as nonperforming includes the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue.	https://databank.worldbank.org/reports.aspx?source=global-financial-development
INFL	Inflation	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.	https://databank.worldbank.org/source/world-development-indicators
GDPGROWTH	Gross Domestic Product Growth	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	https://databank.worldbank.org/source/world-development-indicators
BANKCON	Bank Concentration	Assets of three largest commercial banks as a share of total commercial banking assets. Total assets include total earning assets, cash and due from banks, foreclosed real estate, fixed assets, goodwill, other intangibles, current tax assets, deferred tax assets, discontinued operations and other assets.	https://databank.worldbank.org/reports.aspx?source=global-financial-development

BANKDIV	Bank Diversification	Bank's income that has been generated by noninterest related activities as a percentage of total income (net-interest income plus noninterest income). Noninterest related income includes net gains on trading and derivatives, net gains on other securities, net fees and commissions and other operating income.	https://databank.worldbank.org/reports.aspx?source=global-financial-development
RRATE	Real Interest rate	Lending rate less inflation (consumer price index)	Computed by authors based on data from World development Indicators
FINCRISES	Financial Crises	Dummy which assumes a value of 1 for years 2007, 2008 and 2009 and 0 otherwise	Capture Author Following Dietrich and Wanzeried, 2011; Goddard, Molyneux and Wilson, 2009

Appendix 8: Test of Significant Difference in Private and Public Transparency Coefficients (Model 4 and 5)

$$Z = \frac{|b_1 - b_2|}{\sqrt{\sigma_{b1}^2 + \sigma_{b2}^2}} = \frac{|-0.0100 + 0.0077|}{\sqrt{(0.0053)\text{^}2 + (0.0034)\text{^}2}} = 0.3653$$

Appendix 9: Test of Significant Difference in Private and Public Transparency Coefficients (Model 6)

$$Z = \frac{|b_1 - b_2|}{\sqrt{\sigma_{b1}^2 + \sigma_{b2}^2}} = \frac{|-0.0115 + 0.0077|}{\sqrt{(0.0054)\text{^}2 + (0.0032)\text{^}2}} = 0.6054$$

Appendix 10: Effect of Financial Sector Transparency on Net Interest margins – Full and Continental Samples

VARIABLES	(1) Private	(2) Public	(3) Both	(4) North&South America	(5) Africa	(6) Europe	(7) Asia & Oceania
	Full Sample			Continental Sample			
L.NIM	0.34079	0.34077	0.34076	0.27368	0.17328	0.37940	0.50182
	(0.03097)***	(0.03097)***	(0.0310)***	(0.07881)***	(0.08821)**	(0.06099)***	(0.05527)***
PrivateTrans	-0.00014		-0.00010	0.00398	-0.01118	-0.00060	0.00060
	(0.00262)		(0.00264)	(0.00484)	(0.02348)	(0.00446)	(0.00625)
PublicTrans		-0.00059	0.00057	-0.00177	-0.06093	0.00070	0.00405
		(0.00454)	(0.00458)	(0.00803)	(0.12994)	(0.00786)	(0.01253)
bankeff	-0.00947	-0.00945	-0.00942	0.00850	0.00595	-0.01662	-0.01369
	(0.00586)	(0.00584)	(0.00588)	(0.01607)	(0.02034)	(0.00995)*	(0.01083)
bankcrisk	-0.02024	-0.02040	-0.02039	-0.05905	0.04238	-0.00717	-0.01162
	(0.00950)**	(0.00958)**	(0.00959)**	(0.04927)	(0.03312)	(0.01744)	(0.03042)
infl	0.0748	0.07478	0.07473	0.08411	-0.02912	0.07511	0.06115
	(0.01593)***	(0.01590)***	(0.01596)***	(0.02699)***	(0.06229)	(0.02886)***	(0.05125)
gdpg	0.0146	0.01471	0.01469	-0.06076	-0.00701	-0.00189	0.02159
	(0.00948)	(0.00947)	(0.0095)	(0.03933)	(0.01935)	(0.03057)	(0.01858)
bankcon	-0.00328	-0.00324	-0.00325	-0.00903	-0.04460	-0.00418	0.00596
	(0.00455)	(0.00455)	(0.00456)	(0.01073)	(0.02387)*	(00.0090)	(0.00831)
bankdiv	-0.03373	-0.03366	-0.03368	-0.03527	-0.09965	-0.02799	-0.00155
	(0.00524)***	(0.00524)***	(0.00526)***	(0.01072)***	(0.01609)***	(0.00971)***	(0.01107)
fincrises	-0.67605***	-0.26522	-0.67802	0.33980	0.09453	-0.09990	-0.67733
	(0.17085)	(0.16449)	(0.17174)***	(0.35341)	(0.51352)	(0.30870)	(0.32391)**
rrate	0.05456	0.05460	0.05456	0.06350	-0.00419	0.05515	0.04176
	(0.01598)***	(0.01594)***	(0.01599)***	(0.02817)**	(0.05470)	(0.02997)*	(0.05200)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	603	603	603	133	112	167	191
Number of	86	86	86	17	18	22	29

ccode

Standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1 –
Instrumented: LD.NIM
Instruments: D.PrivateTransD.bankeffD.bankcriskD.inflD.gdpgD.bankconD.bankdiv D.fincrisesD.rrate D.year2004 D.year2005 D.year2006 D.year2007 D.year2009 D.year2011 D.year2012 D.year2013 D.year2014 L2.NIM

Appendix 11: Effect of Financial Sector Transparency on Net Interest margins – Continental Samples

VARIABLES	(1) North&South America	(2) Africa	(3) Europe	(4) Asia & Oceania	(5) North&South America	(6) Africa	(7) Europe	(8) Asia & Oceania
	Private Transparency Sample				Public Transparency Sample			
L.NIM	0.27271	0.17051	0.37966	0.49767	0.26554	0.17640	0.3790	0.50236
	(0.07831)***	(0.08756)*	(0.06069)***	(0.05360)***	(0.07806)***	(0.08752)**	(0.06069)***	(0.05481)***
PrivateTrans	0.00395	-0.01235	-0.00078	0.00089				
	(0.00482)	(0.02322)	(0.00401)	(0.00617)				
PublicTrans					-0.00158	-0.06753	-0.00116	0.00422
					(0.00801)	(0.12854)	(0.00707)	(0.01236)
bankeff	0.00789	0.00661	-0.01682	-0.01333	0.00986	0.00543	-0.01660	-0.01355
	(0.01576)	(0.02019)	(0.00967)*	(0.01074)	(0.01596)	(0.02021)	(0.00991)*	(0.01069)
bankcrisk	-0.05728	0.04509	-0.00721	-0.01279	-0.05775	0.04643	-0.00691	-0.01212
	(0.04838)	(0.03244)	(0.01737)	(0.03010)	(0.04917)	(0.03185)	(0.01727)	(0.02985)
infl	0.08389	-0.03067	0.07571	0.05975	0.07803	-0.03151	0.07429	0.06185
	(0.02684)***	(0.06188)	(0.02793)***	(0.05091)	(0.02592)***	(0.06177)	(0.02813)***	(0.05056)
gdpg	-0.05911	-0.00587	-0.00212	0.02118	-0.06269	-0.00633	-0.00187	0.02143
	(0.03841)	(0.01910)	(0.03034)	(0.01848)	(0.03919)	(0.01920)	(0.03045)	(0.01845)
bankcon	-0.00973	-0.04699	-0.00418	0.00573	-0.00872	-0.04819	-0.00443	0.00554
	(0.01020)	(0.02320)**	(0.00800)	(0.00825)	(0.01071)	(0.02253)**	(0.00878)	(0.00707)
bankdiv	-0.03502	-0.09786	-0.02786	-0.00266	-0.03552	-0.09894	-0.02805	0.00146
	(0.01061)***	(0.01555)***	(0.00957)***	(0.01050)	(0.01070)***	(0.01594)***	(0.00967)***	(0.01100)

fincrises	-0.11337	0.6893	-0.27981	-0.67064	0.42138	0.06296	-0.01562	-0.32101
	(0.35414)	(0.48551)	(0.36492)	(0.32224)**	(0.36932)	(0.56117)	(0.40203)	(0.32762)
rrate	0.06313	-0.00711	0.05553	0.04058	0.05733	-0.00696	0.05434	0.04225
	(0.02798)**	(0.05406)	(0.02956)*	(0.05171)	(0.02710)**	(0.05411)	(0.02926)*	(0.05158)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	133	112	167	191	133	112	167	191
Number of ccode	17	18	22	29	17	18	22	29

Standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1 –
Instrumented: LD.NIM
Instruments: D.PrivateTransD.bankeffD.bankcriskD.inflD.gdpgD.bankconD.bankdiv D.fincrisesD.rrate D.year2004 D.year2005 D.year2006 D.year2007 D.year2009 D.year2011 D.year2012 D.year2013 D.year2014 L2.NIM