




# Financial sector transparency, financial crises and market power: A cross-country evidence

Baah Kusi<sup>1,2</sup>  | Elikplimi Agbloyor<sup>2,3</sup>  | Agyapomaa Gyeke-Dako<sup>2</sup> |  
 Simplice Asongu<sup>4,5</sup> 

<sup>1</sup>Department of Finance, Central University College, Accra, Ghana

<sup>2</sup>Department of Finance, University of Ghana Business School, Accra, Ghana

<sup>3</sup>University of Stellenbosch Business School, Faculty of Economic and Management Sciences, Cape Town, South Africa

<sup>4</sup>African Governance and Development Institute

<sup>5</sup>Department of Economics University of South Africa

## Correspondence

Agyapomaa Gyeke-Dako, Department of Finance, University of Ghana Business School, P.O. Box LG 78, Accra, Ghana.  
 Email: [afuagyekedako@yahoo.co.uk](mailto:afuagyekedako@yahoo.co.uk)

## Abstract

The study investigates how financial sector transparency moderates the influence of financial crises on bank market power across 75 economies between 2004 and 2014. Using two-step dynamic system generalized method of moments the study shows that while public sector-led financial sector transparency reduces bank market power, private sector-led financial sector transparency promotes bank market power given that private sector-led transparency gives financial cost advantage to financially sound banks to solidify the market power and dominance. Similarly, while financial crises reduce the market power of banks implying that during financial crises banks lose their market power, financial sector transparency promotes the negative effect of financial crises on bank market power. This implies that during financial crises, financial sector transparency whether enforced through private or public sector, boosts the weakening effect of financial crises on bank market power. These findings imply that regulators can rely on financial transparency to tame bank market power to enhance banking competitiveness. The findings and results are consistent even when country, time and continental effects are controlled for.

## KEYWORDS

bank, financial sector transparency, market power, private sector, public sector

## 1 | INTRODUCTION

Banking sector competitiveness which is gauged by the level of market power of banks (Cubillas & Suárez, 2018; Cubillas & Suárez, 2013; Laeven & Valencia, 2013; Laeven & Valencia, 2008a) is critical for bank management (Berger & Hannan, 1998; Mirzaei, 2019), access to external finance (Beck, Demirgüç-Kunt, & Levine, 2004; Beck, Demirgüç-Kunt, & Maksimovic, 2008), financial stability (Beck et al., 2008; Beck, De Jonghe, & Schepens, 2013; Mirzaei, 2019) and sound economic growth and development (Cetorelli & Gambera, 2001; Claessens & Laeven, 2005; Fernández, González, &

Suárez, 2010). As such, there is a depth of literature on bank market power and competitiveness in the banking sector of many economies. Despite the critical nature of banking market power in shaping banking competitiveness in an economy, there is no consensus among researchers regarding the best measure to be used to gauge competition (Northcott, 2004). Following prior studies (Carbó, Humphrey, Maudos, & Molyneux, 2009), banking competitiveness is measured using structural (Carbó et al., 2009; Bain, 1951) and non-structural (Iwata, 1974; Bresnahan, 1989; Panzar & Rosse, 1987) methods. Although the structural approach uses the concentration and market structure indicators to gauge

competitiveness in the banking sector, the non-structural approach uses bank pricing ability to gauge competitiveness in the banking sector.

Although a competitive banking sector is desired to enhance innovation and growth in the sector which spurs economic growth (Carbó et al., 2009), it is impeded by information asymmetry, and searching and switching costs of financial market participants. For instance, information asymmetry creates higher switching cost for bank market participants (see Gehrig & Stenbacka, 2007; Ivashina, 2009; Ruiz-Aliseda, 2016) making banking market participants bonded and concentrated in few larger and older banks (Farrell & Klemperer, 2007); This increases the market power of such banks. Thus, information asymmetry within the financial sector makes few banks powerful in determining loan and deposit prices (price makers) and hence reduces the competitiveness in the pricing of loans and deposits. Similarly, Bouckaert, Degryse, and Provoost (2010) show that reducing switching cost leads to increased competition and social welfare. Thus, several studies (Farrell & Klemperer, 2007; Shy, 2002; Viard, 2007) report similar arguments using different industries including banking and telecommunication industries. Although Bouckaert et al. (2010) advance that industries are reluctant to introducing mechanisms that reduce switching cost because it makes them powerful as they profit from such reluctance, regulators who are social welfare enforcers have attempted to maintain competitiveness (dampen market power) through reduction in switching cost and information asymmetry by introducing financial sector transparency reforms and regulations.

One critical regulation enforced by regulators to enhance financial sector transparency in recent times especially in developing and emerging markets is credit information sharing (see Asongu, 2017; Kusi, Agbloyor, Ansah-Adu, & Gyeke-Dako, 2017; Kusi, Agbloyor, Fiador, & Osei, 2016a; Kusi, Agbloyor, Fiador, & Osei, 2016b). Thus, credit information sharing in the credit market translates into reduced information asymmetry (thereby enhancing financial sector transparency; Asongu, 2017; Kusi et al., 2017) and reduced financial crises (Büyükkarabacak & Valev, 2012; Houston, Lin, Lin, & Ma, 2010). This study argues rely on prior studies (Gehrig & Stenbacka, 2007; Ivashina, 2009; Ruiz-Aliseda, 2016), that increased financial sector transparency reduces the information rent fee or cost to new and young banks and enables them to compete with larger and older banks that have huge market power. Similarly, financial sector transparency frees bank clients (borrowers) to choose from a host of lenders because financial sector transparency reduces the bank clients' searching and switching costs to new lenders. These

reduce the pricing power held by large and old banks who have an informational rent advantage, leading to a more competitive bank sector and reduced market power. Despite these conceptual and intuitive reasonings, the effect of financial sector transparency on bank market power largely remains an unanswered empirical question. The positioning of this study is therefore to fill the apparent gap in the literature.

Furthermore, given that financial sector transparency regulation may be enforced through the private or public sector and these two have varying features (see Miller, 2003) which may impact their operational efficiencies and effectiveness, it has become imperative to investigate which of these two improves competitiveness and reduces the market power of banks accordingly. That is, financial sector transparency enforced through the public sector is less expensive, easily accessible and may translate into reducing market power compared to financial sector transparency enforced through the private sector. Put differently, financial transparency through the private sector is more costly or expensive (see Miller, 2003) and hence gives banks the advantage to price their services and products a bit higher in order to pass on that cost to their clients. This therefore leads to increased pricing power for banks using private sector-led financial sector transparency.

Moreover, following studies show that credit information sharing which enhances financial sector transparency reduces financial crises (Büyükkarabacak & Valev, 2012; Houston et al., 2010) and market power (Asongu & Biekpe, 2018; Asongu, Le Roux, & Tchamy, 2019; Boateng, Asongu, Akamavi, & Tchamy, 2018), and studies show that financial crises reduce market power (see Claessens, Klingebiel, & Laeven, 2002; Mirzaei, 2019; Shin & Chang, 2003), it is intuitive to inquire whether or not financial sector transparency can moderate the effect of financial crises on market power. Thus, this study argues that financial sector transparency modulates the effect of financial crises on the market power of banks. The contribution of this study includes: providing international evidence on the relationship between financial sector transparency on market power of banks; offering evidence on whether private or public sector led financial sector transparency is more effective in dealing with bank market power or competitiveness and presenting evidence on how financial sector transparency modulates the link between market power and financial crises. The contribution of this paper is hinged on how financial sector transparency and financial crises translate into bank competitiveness or market power in 69 economies. The rest of the study is organized as follows. After this introduction is an overview of financial sector transparency and market power,

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.

## 2 | BRIEF OVERVIEW OF MARKET POWER AND FINANCIAL SECTOR TRANSPARENCY BETWEEN 2004 AND 2014

This section reports a brief overview of market power and financial sector transparency across 75 economies between 2004 and 2014. Market power that is used to gauge banking price competitiveness is measured with the Lerner index and obtained from the Global Financial Development database. Similarly, financial sector transparency is measured as private credit bureau coverage and public credit registry coverage which are credit information sharing variables that offer transparency in the credit or banking market. Thus, private credit bureau coverage and public credit registry coverage measure financial sector transparency led by the private sector and public sector, respectively. The financial sector transparency variables are obtained from the World Development Indicators database.

Table 1 presents the yearly trends in market power and financial sector transparency across 75 economies between 2004 and 2014. It is observed that market power which is measured with the Lerner index (and indicates

the ability of banks to price their loans above marginal cost) exhibits unstable trends over the years under review. Thus, the ability of banks in an economy to price loans above their marginal cost increased from 28.602% in 2004 to 29.027% in 2005 but subsequently declined from 29.027% in 2005 through to 27.128% in 2008. The decline seems to have coincided with the 2007–2009 financial crises which reinforces the argument that financial crises induce regulators restructuring and sanitizing which improve competition (or reduce market power). Hence, the decline in market power during the financial crises period is not surprising. However, market power is seen to increase from 27.128% in 2008 through to 31.958% in 2014 but marginally declined in 2012.

In terms of financial sector transparency, it is evident from Table 1 that financial sector transparency led by both public and private sectors has increased constantly across the years under review. Specifically, it is evident that public sector-led financial sector transparency which indicates the coverage of public credit registries improves from 3.334% in 2004 through to 11.764% in 2014 while reporting an average public sector-led financial transparency of 7.189%. Thus, financial sector transparency through public credit registries coverage is averagely 7.189% of the adult population. Similarly, it is observed that private sector-led financial sector transparency which indicates the coverage of private credit bureaus improves from 15.126% in 2004 through to 28.588% in 2014 while reporting an average period private sector-led financial transparency of 22.219%. Thus, financial sector transparency through private credit bureaus coverage is averagely 22.219% of the adult population. Though an increasing trend in financial sector transparency is observed for both private and public sector-led financial transparency, the rate of increase in private sector-led financial transparency is faster and higher compared to that of the public sector-led financial transparency. Interestingly, while a steady increasing trend is observed for both private and public sector-led financial transparency, an unstable trend is observed for bank market power; hence bank competitiveness.

**TABLE 1** Yearly trends in market power, public, and private sector-led financial sector transparency

Year	Lerner	Public	Private
2004	28.602	3.334	15.126
2005	29.027	3.955	16.446
2006	28.433	4.294	18.643
2007	28.22	4.574	19.495
2008	27.128	6.388	21.025
2009	27.948	7.034	22.354
2010	29.675	8.151	24.259
2011	30.336	8.963	24.264
2012	30.2	10.18	26.695
2013	31.834	10.445	27.51
2014	31.958	11.764	28.588
<b>Average</b>	<b>29.396</b>	<b>7.189</b>	<b>22.219</b>

Note: By Authors based on data from World Development Indicators and Global Financial Development Database—Notes—Lerner-bank market power; Private-private sector led financial transparency; Public-public sector led financial sector transparency—values are in percentages (%).

## 3 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### 3.1 | Theoretical literature review

The literature on market power as a gauge for competition is backed by the information asymmetry theory (see Ivashina, 2009; Ruiz-Aliseda, 2016; Tian, Han, & Mi, 2019; Vives, 2019). It is argued that information asymmetry increases market power through increased

searching, switching and information costs (see Bouckaert et al., 2010; Farrell & Klemperer, 2007; Ornelas, da Silva, & Van Doornik, 2020; Shy, 2002). Thus, bank clients face potentially higher lending rates when changing their lenders due to information asymmetry. The new lenders who do not have any credit information on the potential new client to judge the client's credit worthiness would have to charge a higher interest rate to compensate for the risk and uncertainty surrounding that potential new borrower. To avoid the extra charge on bank clients, clients are forced to stick with one bank or lender. Over time, due to information asymmetry, clients are bounded to one lender or bank indirectly due to the cost of searching and switching from one lender or bank to another; hence increasing the market power of dominant large and old banks or lenders. For instance, prior studies (see Allen, Clark, & Houde, 2019; Farrell & Klemperer, 2007; Syverson, 2019) posit that switching costs bind customers to vendors which make it difficult to change from one supplier to another.

Furthermore, a strand of literature also highlights the links between information asymmetry and financial crises leading to market power. The literature suggests that financial crises emanating from information asymmetry leads to regulator-induced restructuring and sanitization which translate into a competitive banking sector; hence reduced market power (Bandaranayake, 2019; Barrell & Karim, 2020; Claessens et al., 2002; Shin & Chang, 2003). This discussion is rooted in the "too-big-to-fail" hypothesis (see Baker & McArthur, 2009; Demirgüç-Kunt & Huizinga, 2013) which induces the intervention of regulators to sanitize the banking sector for improved competition and reduced market power during crises. Contrary to this opinion, studies (Cubillas & Suárez, 2013; Laeven & Valencia, 2008b) advance that "financial crises"-induced restructuring, including shutdowns, mergers and acquisitions of failed banks, may increase market power and reduce competition of surviving banks.

From the above theoretical and conceptual discussions, it is obvious that information asymmetry may influence financial crises and market power. Following the information sharing theory (Freimer & Gordon, 1965; Stiglitz & Weiss, 1981, 1987, 1992) which states that sharing credit information in the credit market improves transparency in the financial market and reduces information asymmetry, the study contends that financial sector transparency information sharing institutions reduce switching cost which weakens market power and improves banking competitiveness. Generally, financial sector transparency is expected to reduce bank market power and hence improve banking competitiveness. However, financial sector transparency through the

private sector is expected to increase bank market power and worsen bank competitiveness (Miller, 2003). This is because private sector-led financial transparency comes with a cost which makes it costly or expensive and hence increase (decrease) market power of financially strong (weak) banks. Furthermore, the study contends that financial sector transparency may moderate the significant effect of financial crises on market power and bank competitiveness.

### 3.2 | Empirical literature review

First, the empirical literature on transparency and market power is discussed. Second, is the literature on financial crises and market power. Asongu et al. (2019) examined the role of private and public information sharing offices in reducing market power for financial access in 162 banks of 42 African economies between 2001 and 2011. Using two-stage least squares, generalized method of moments and quantile regression models, they find that information sharing offices which enhance transparency in the financial market only reduce market power in financial access when public and private information coverages are between 3.156 and 3.3% and 1.443 and 18.4%, respectively. Thus, there are threshold points within which transparency through information sharing offices may not have their desired negative impact on the market power of banks. Similarly, Asongu and Biekpe (2018) investigated how information sharing offices are complemented by information technology infrastructure to influence the market power of banks. Using a panel data of 162 banks in 42 African economies between 2001 and 2011, they show that the interaction between internet penetration and public information sharing offices reduces market power while the interaction between mobile penetration and private information sharing offices increases market power, respectively. Despite the positive interactive term of mobile penetration and private information sharing offices, the net effect is negative implying that technological infrastructure can complement private information sharing offices to reduce the market power of banks. Moreover, Boateng et al. (2018) investigated the role of transparency through information sharing offices on the market power of 162 banks from 42 African economies between 2001 and 2011. Using both dynamic and static estimation techniques, they find that transparency through private and public information sharing offices increases the market power of banks which was contrary to theoretical postulations. However, interacting transparency through public information sharing offices with technological infrastructure (mobile phone and internet) revealed the

theoretical negative effect on the market power of banks, implying that information sharing offices reduce market power when complemented with technological infrastructure.

In terms of financial crises and market power, Efthymoulou and Yildirim (2014) examined market power in Central and Eastern European banking markets in the face of the 2007–2008 global financial crises and foreign ownership. They find that, while there is convergence in market power during the pre-crisis period, the onset of crises can dampen the tendency. Again, while market power appears to vary significantly with respect to ownership features, pre-crisis period impacts are the same for all banks regardless of ownership features. More so, Cubillas and Suárez (2013) analysed the effect of banking crises on bank market power across 64 countries and 66 episodes of banking crises between 1989 and 2007. They provide bank-level and country-level evidence that after a systematic banking crisis, there is an increased level of bank market power consistent with higher levels of bank market concentration. More so, the higher the severity of the banking crises, the higher the increase in bank market power. Furthermore, whereas institutional quality induces a positive impact of banking crises on market, stricter regulations on banking activities and on new entrants into the banking market reduce the effect of the crisis on market power.

Likewise, Laeven and Valencia (2013) reports on a comprehensive dataset on systematic banking crises during 1970 and 2011 across several countries. The study presents information on costs and policy responses linked with banking crises arguing that increased market power of banks is associated with periods after banking crises. Furthermore, they show that banking crises are fueled by sovereign debt and currency crises although sovereign debt crisis is more costly than banking and currency crises. Furthermore, Mirzaei (2019) examined the impact of global financial crises on market power in 31 banks in the United Arab Emirates. Using the Lerner index and exploring the evolution of market power over time, it is reported that the 2007–2009 global financial crises weakened United Arab Emirates banks market power. Furthermore, bank-level market power during the crisis period has varying significant effects on market power depending on banks' characteristics. Thus, the market power of those banks that were less capitalized and efficient, decreased particularly significantly during the crisis period while banks with a high level of market share were also unable to preserve their power. Also, Carbo, Humphrey, Maudos and Molynex (2009) studied banking market power and competitiveness in 14 European economies using different indicators of market competitiveness. They show that the different market power or

competition indicators are providing conflicting predictions across countries, within countries and overtime arguing that the different market power or competitive indicators measure different things. They conclude that bank pricing power suggests that banking competition in Europe may well be stronger than implied by traditional measures and analysis.

In terms of information asymmetry through switching cost and market power, Egarius and Weill (2016) examined the influence of switching costs in the banking sector of the three largest Eurozone economies between 2006 and 2012. Following the study of Shy (2002) in estimating switching costs, their finding suggests that a positive relationship exists between switching cost and the market power of commercial and cooperative banks, implying that switching cost which is fueled by information asymmetry increases the market power of banks. Furthermore, they observe that cooperative banks have lower client-based switching cost. Similar to the finding of Egarius and Weill (2016), Bouckaert et al. (2010) also show that a proportional decrease in switching cost which is induced by information asymmetry or lack of financial sector transparency increases competition (i.e., reduced market power) and social welfare.

### 3.3 | Hypothesis development

From the above, although theoretical and empirical evidence on factors determining the market power of banks is abundant, empirical studies using financial sector transparency as a market power determinant are limited. Thus, despite theoretical and empirical reasoning that financial sector transparency may reduce information asymmetry leading to reduced searching, switching and information rent costs and hence reduced market power, empirical evidence on this assertion is limited and scanty, especially in relation to cross country data. Hence, this study hypothesizes that financial sector transparency may weaken the market power of banks. However, given that financial sector transparency can be enforced or implemented either through the public and private sectors, it is further hypothesized and argued that private sector-led financial sector transparency will increase the market power of banks while public sector led financial sector transparency will decrease the market power of banks. The study argues that private sector-led financial sector transparency is more costly, expensive and gives banks the advantage of passing on that cost to their clients. Hence, giving banks the advantage to price their services and products higher, leading to increased pricing power for the corresponding banks.

- H1.** Public Sector Led Financial Transparency reduces the market power of banks.
- H2.** Private Sector Led financial transparency increases the market power of banks.

Again, although literature provides an indication that financial sector transparency reduces banking crises and market power, discussions on how financial sector transparency moderates the effect of financial crises on market power during financial crises is less apparent. Following prior studies (fill this in) hypothesizes that financial crises weaken or reduce bank market power. Furthermore, the study hypothesizes that financial crises conditioned on financial sector transparency further weakens market of banks. This implies that when financial crises is interacted with private or public sector-led financial sector transparency, the net effect of financial crises further reduces market power or improves banking competitiveness. It is against this background that this study tests the hypothesis that financial sector transparency can modulate the effect of financial crises on bank market power. Hence, the hypotheses to be tested includes:

- H3.** Financial Crises leads to reduced market power of banks.
- H4.** Private sector led financial transparency mitigates the negative effect of financial crises on market power.
- H5.** Public sector led financial transparency mitigates the negative effect of financial crises on market power.

## 4 | METHODOLOGY AND DATA

This study uses the panel data strategy to pursue the objective of establishing the effect of financial sector transparency and financial crises on the market power of banks in 69 economies between 2004 and 2014. The time period used for this study is purely based on data availability of data on the variables used. The panel data strategy is used following Brooks (2008) and Baltagi, Song, and Koh (2003) who state that panel data are deemed to be more reliable, accurate and consistent because it combines the traditional time series and cross-sectional data and at the same time corrects the weaknesses of the traditional time series and cross-sectional data. Hence, panel data captures both the time and entity dimensions of the dataset, making it more convincing and reliable. While data on financial sector transparency are obtained from

World Development Indicators, the data on country-level bank variables are obtained from the Global Financial Development database. Panel data strategy is expressed in its general form as:

$$Y_{it} = \alpha_i + \gamma_{it} + \beta X_{it} + \varepsilon_{it} \quad (1)$$

where subscripts  $i$  and  $t$  represent entity (country) and time dimensions, respectively, with  $i$  running from 1 ...  $N$  and  $t$  running from 1 ...  $T$ .  $Y_{it}$  is the dependent variable,  $\alpha_i$  is scalar and constant term for all periods ( $t$ ) and specific to a country fixed effects ( $i$ );  $\gamma_t$  is the time fixed effects  $t$ ;  $\beta$  is a  $k \times 1$  vector of parameters to be estimated on the independent variables;  $X_{it}$  is a  $1 \times k$  vector of observations on the independent variables comprising of input variables in the model which includes controlled variables and  $\varepsilon_{it}$  which is iid, is the error term.

## 5 | ESTIMATION STRATEGY

The study uses the dynamic generalized method of moments estimator. The dynamic generalized method of moments approach is normally used where there is evidence of possible endogeneity (see Arellano & Bond, 1991; Arellano & Bover, 1995). This study suspects a possible endogeneity (reverse causality) between market power and financial crises. This is because while some studies show that financial crises influence the market power of banks (Claessens et al., 2002; Cubillas & Suárez, 2013; Laeven & Valencia, 2008a; Shin & Chang, 2003), other studies show that market power influences financial crises (Allen & Gale, 2004; Beck, Demirgüç-Kunt, & Levine, 2006; Berger, Klapper, & Turk-Ariss, 2009). These empirical studies therefore indicate probable reverse causality between market power and financial crises; hence a potential concern for endogeneity. To resolve the underlying endogeneity concern, one needs to identify instrumental variables which are correlated with the endogenous variable but not correlated with the dependent variable. However, identifying a good instrument and justifying it with the literature is difficult and nearly impossible. In the light of the concern of finding appropriate instruments, this study employs the dynamic generalized method of moments as it generates its own instruments (internal instruments). Specifically, the *two-step* generalized method of moments is employed ahead of the *one-step* generalized method of moments because the *two-step* generalized method of moments controls for both heteroscedasticity and autocorrelation (see Blundell & Bond, 1998; Windmeijer, 2005). Hence, following the models of Cubillas and Suarez (Cubillas & Suárez, 2013; Cubillas &

Suárez, 2018) and modifying it (thus including financial sector transparency variables), the two-step generalized method of moments models are estimated as:

## 5.1 | Effect of financial sector transparency on the market power of banks

### Public Sector Led Financial Transparency

$$\begin{aligned} \text{LERNER}_{i,t} = & \beta_0 + \beta_1 \text{LERNER}_{i,t-1} + \beta_2 \text{PUBLIC} \\ & - \text{TRANS}_{i,t} + \beta_3 \text{FINCRISES}_t + \beta_4 \text{PRIVATE} \\ & - \text{CREDIT}_{i,t} + \beta_5 \text{BANK} - \text{LIQ}_{i,t} + \beta_6 \text{BANK} \\ & - \text{CAP}_{ij,t} + \beta_7 \text{GROWTH}_{i,t} + \beta_8 \text{BZ} - \text{SCORE}_{i,t} \\ & + \beta_9 \text{BANK} - \text{DIV}_{i,t} + \beta_{10} \text{BANK} - \text{COST}_{i,t} \\ & + \beta_{11} \text{GDPG}_{i,t} + \beta_{12} \text{INFL}_{i,t} + \epsilon_{ij,t} \end{aligned} \quad (2)$$

### Private Sector Led Financial Transparency

$$\begin{aligned} \text{LERNER}_{i,t} = & \beta_0 + \beta_1 \text{LERNER}_{i,t-1} + \beta_2 \text{PRIVATE} \\ & - \text{TRANS}_{i,t} + \beta_3 \text{FINCRISES}_t + \beta_4 \text{PRIVATE} \\ & - \text{CREDIT}_{i,t} + \beta_5 \text{BANK} - \text{LIQ}_{i,t} + \beta_6 \text{BANK} \\ & - \text{CAP}_{ij,t} + \beta_7 \text{GROWTH}_{i,t} + \beta_8 \text{BZ} - \text{SCORE}_{i,t} \\ & + \beta_9 \text{BANK} - \text{DIV}_{i,t} + \beta_{10} \text{BANK} - \text{COST}_{i,t} \\ & + \beta_{11} \text{GDPG}_{i,t} + \beta_{12} \text{INFL}_{i,t} + \epsilon_{ij,t} \end{aligned} \quad (3)$$

## 5.2 | Effect of financial crises through financial sector transparency on market power

### Public Sector Conduit

$$\begin{aligned} \text{LERNER}_{i,t} = & \beta_0 + \beta_1 \text{LERNER}_{i,t-1} + \beta_2 \text{PUBLIC} \\ & - \text{TRANS}_{i,t} + \beta_3 \text{PRIVATE} - \text{TRANS}_{i,t} \\ & + \beta_4 \text{FINCRISES}_t \\ & + \beta_5 [\text{PUBLIC} - \text{TRANS}_{i,t} \times \text{FINCRISES}_t] \\ & + \beta_6 \text{PRIVATE} - \text{CREDIT}_{i,t} + \beta_7 \text{BANK} \\ & - \text{LIQ}_{i,t} + \beta_8 \text{BANK} - \text{CAP}_{ij,t} + \beta_9 \text{GROWTH}_{i,t} \\ & + \beta_{10} \text{Z} - \text{SCORE}_{i,t} + \beta_{11} \text{BANK} - \text{DIV}_{i,t} \\ & + \beta_{12} \text{BANK} - \text{COST}_{i,t} \\ & + \beta_{13} \text{GDPG}_{i,t} + \beta_{14} \text{INFL}_{i,t} + \epsilon_{ij,t} \end{aligned} \quad (4)$$

### Private Sector Conduit

$$\begin{aligned} \text{LERNER}_{i,t} = & \beta_0 + \beta_1 \text{LERNER}_{i,t-1} + \beta_2 \text{PUBLIC} \\ & - \text{TRANS}_{i,t} + \beta_3 \text{PRIVATE} - \text{TRANS}_{i,t} \\ & + \beta_4 \text{FINCRISES}_t \\ & + \beta_5 [\text{PRIVATE} - \text{TRANS}_{i,t} \times \text{FINCRISES}_t] \\ & + \beta_6 \text{PRIVATE} - \text{CREDIT}_{i,t} + \beta_7 \text{BANK} \\ & - \text{LIQ}_{i,t} + \beta_8 \text{BANK} - \text{CAP}_{i,t} + \beta_9 \text{GROWTH}_{i,t} \\ & + \beta_{10} \text{Z} - \text{SCORE}_{i,t} + \beta_{11} \text{BANK} - \text{DIV}_{i,t} \\ & + \beta_{12} \text{BANK} - \text{COST}_{i,t} + \beta_{13} \text{GDPG}_{i,t} \\ & + \beta_{14} \text{INFL}_{i,t} + \epsilon_{i,t} \end{aligned} \quad (5)$$

In respect of the interaction (conduit model 4 and 5) between the financial sector transparency and financial crises, the study follows the arguments in Brambor, Clark, and Golder (2006) and test for the joint significance of the interactive and constitutive terms to arrive at the net effect of financial crises and financial sector transparency on market power of banks. For example, in Equations ((4) and ((5), the hypothesis that the effect of financial crises on bank market power is conditioned on financial sector transparency (public and private sector-led) is tested by joint coefficients, respectively. Thus, taking the derivative of the interactive and constitutive terms with respect to financial crises in models 4 and 5, respectively, the net effect is obtained as:

$$\frac{\partial \text{LERNER}_{i,t}}{\partial r \text{FINCRISES}_t} = \beta_4 + \beta_5 \text{PUBLIC} - \text{TRANS}_{i,t} = 0 \quad (6)$$

$$\frac{\partial \text{LERNER}_{i,t}}{\partial r \text{FINCRISES}_t} = \beta_4 + \beta_5 \text{PRIVATE} - \text{TRANS}_{i,t} = 0 \quad (7)$$

Hence, the nature of financial crises interacted with public and private sector-led financial transparency is examined by the summation of the coefficients ( $\beta_4 + \beta_5$ ) and the test of significance for the joint coefficients.

## 6 | DEFINITION AND SELECTION OF VARIABLES

### 6.1 | Lerner index (LERNER)

The Lerner index is employed to measure market power following the studies of Cubillas and Suarez (Cubillas & Suárez, 2013, Cubillas & Suárez, 2018; Amidu and Wolfe, 2016). The Lerner index measures the relative market power of banks by the difference between price and marginal cost expressed over the price [(price-marginal cost)/price] (Lerner, 1934). However, the marginal cost is unobservable but derived through a translog cost

function. The Lerner is used as the dependent variable and obtained from Global Financial Development database.

## 6.2 | Financial sector transparency (PUBLIC-TRANS and PRIVATE-TRANS)

Financial sector transparency is measured by private and public information sharing institution coverages. Information sharing through private bureaus and public registries provide valuable information that weakens the information rent advantage of large banks and dampens the switching cost bank clients face when changing lenders. Thus, information sharing through private bureaus and public registries do not only encourage new lender entrants but also grant bank clients the freedom to change or switch between lenders. This reduces the market power and dominance of banks and encourages a competitive banking environment. It is expected that financial sector transparency should reduce bank market power to induce competition in the banking space. However, because financial sector transparency enforced through the private sector is costly and expensive compared to public sector-led financial transparency, only large and powerful banks can afford it; hence giving them (i.e., large and powerful banks) financial advantage to access client transparency information. Thus, private-sector led financial transparency is expected to increase the market dominance of large and powerful banks whereas public-sector led financial transparency is expected to decrease the market power of banks.

## 6.3 | Financial crises (FINCRIESE)

In capturing financial crises, the 2007–2009 global financial crisis is employed. Following Goddard, Molyneux and Wilson (2009), the financial crises is captured as a dummy which assumes a value of 1 from 2007 to 2009 and 0 for other years. Cubillas and Suarez (Cubillas & Suárez, 2013; Cubillas & Suárez, 2018) argue that financial crises induce restructuring (i.e., shutdown, mergers and acquisition of failed banks), which in turn leads to greater market power and less competition of surviving banks. However, this study expects the opposite following Mirzaei (2019), Efthyvoulou and Yildirim (2014) and Shin and Chang (2003). Thus, during financial crises, there are panic withdrawals and bank panics—leading to lower confidence in the banking market and reduced banking activities. Hence, banks lose their pricing dominance and power and hence lower market power for banks.

## 6.4 | Private credit by deposit money banks

Private credit by deposit money banks is used to measure the size of the banking system. It is measured as the ratio of private credit advanced by deposit money banks to gross domestic product. From the empirical literature, size is associated with both positive (Bikker & Bos, 2005; Freixas and Rochet, 1997) and negative (Bikker, 2004; Mamatzakis, Staikouras & Koutsomanoli-Fillipaki, 2005) effects on market power. Thus, following market structures arguments (Caminal & Matutes, 2002), when the size of the banking sector is made up of many small banks, a negative relationship is expected between size and market power whereas the size of the banking sector is made up of a few large banks, a positive relationship is expected between size and market power.

## 6.5 | Bank liquidity reserve (BANK-LIQ)

Liquidity reserve is measured as bank liquidity reserve to bank assets. That is, liquidity reserves are required by regulators and hence used to measure liquidity regulation. Liquidity regulations are implemented to ensure banks have buffer liquidity in case of bank runs or panic. Thus, this ensures banks are liquid enough leading to a reduced ability of banks to advance more loans and hence constraints bank ability to advance loans and credit. This lowers the market power and dominance of banks. Put differently, regulations and reforms are implemented with the aim of improving banking efficiency and competitiveness (Bouyon, 2014) which implies reduced bank market power. From this, a negative effect is expected between liquidity regulation and market power.

## 6.6 | Bank capital (BANK-CAP)

Bank capital measures capital adequacy which is understood as a ratio of required capital to risk-weighted total assets. Following the literature on capital requirement and recapitalization (Poczter, 2016; Tahir, Adegbite, & Guney, 2017), increased bank capital results into improved bank client confidence and running of banks, leading to increased banking activities. That is, the increased banking activities lead to more competition and hence reduced market power and dominance of banks. This implies that a negative effect is expected between bank capital adequacy and market power.

## 6.7 | Growth (GROWTH)

Growth is used as a measure of opportunity for growth. It is measured as year on year growth in loans and advances. Following Cubillas and Suárez (2013), a higher growth rate in loans and advances is expected to allow banks to increase their market power. Thus, the increase in loans and advances may be an indication of demand for loans going higher leading to increased market power and dominance for banks.

## 6.8 | Z-Score (Z-SCORE)

Z-Score is employed as a measure of stability in the banking sector following prior studies (Beck et al., 2013; Houston et al., 2010; Laeven and Levine, 2009). It is computed as the capital to asset ratio plus return on assets divided by the standard deviation of return on assets. However, given that the resultant Z-Score value is positively skewed, it is logged to be normalized. It is anticipated that improved stability will lead to increased market power (see Cubillas & Suárez, 2013). Thus, stability strengthens the financial muscle of banks, promotes the confidence of bank clients in the banking sector and hence gives banks the edge to price higher thus leading to higher levels of market power.

## 6.9 | Bank diversification (BANK-DIV)

Bank diversification according to Cubillas and Suárez (2013) can be used to proxy for specialization as it is the direct opposite of diversification. Measured as non-interest income to total income, a lower value implies high specialization leading to increased bank market power. Thus, as banks specialize, they develop core competence and specialized features which make them powerful in setting prices; hence a negative relationship between diversification and bank market power. However, Nguyen, Skully, and Perera (2012) advance that banks in an attempt to maintain and grow their power in a concentrated market use non-interest income to leverage their market power and dominance; hence a positive relationship between non-interest income and market power. Following the above discussion, non-interest income could either have a positive or negative effect on bank market power.

## 6.10 | Bank cost (BANK-COST)

Bank cost measures bank efficiency and is proxied as operating expenses to total income. Following the

efficiency-structure hypothesis, more efficient banks have superior management or production technologies leading to lower overhead costs and higher profits (see DeYoung & Rice, 2004). These efficient banks tend to have large market shares resulting in greater market power (see Berger, 1995). Thus, given the measure of bank efficiency (which is actually an inefficiency measure), a negative relationship is expected.

## 6.11 | Inflation (INFL)

Inflation measures the degree of volatilities in an economy. The impact of inflation on market power is not a clear one a priori. Increased inflation levels oblige banks to demand a higher risk premium (Angelini & Cetorelli, 2003). Following Chirinko and Fazzari (2000), powerful and dominant banks have the ability to pass on inflation to the clients; hence a positive relation between inflation and market power. Similarly, in markets where banks have lower market power, the ability to transfer inflation to the client will be low and hence a negative relationship between inflation and market power. Thus, the relationship between inflation and market power is not straight forward.

## 6.12 | Gross domestic product growth (GDPG)

Gross domestic product growth is employed as a macroeconomic variable in addition to inflation as a determinant of market power. Gross domestic product is measured as year on year changes in gross domestic product. Gross domestic product growth is an indication for enhancement in business opportunities and improved citizenry welfare. Following an improvement in welfare, banks lose their pricing power because citizenry are well to do given the improvement in welfare and hence relies less on banks for support. This weakens the pricing power and dominance of banks (Angelini & Cetorelli, 2003).

All the variables employed in this study are summarized and reported in Table 2 for easy reference by readers.

## 7 | EMPIRICAL RESULTS

Table 3 presents the summary statistics of the variables used in this study. The table captures data on the variables across 75 economies in Europe, Asia, America and Africa (Appendix). From the table, the average Lerner index which measures the relative market power of

**TABLE 2** Summary and description of variables

Variables	Measurements	Indicators	Expected Signs
LERNER	[Price-marginal cost]/Price	Market power	
PRIVATE-TRANS	Percentage of Adult Population covered by private bureaus	Financial Sector Transparency led by the private sector	[+]
PUBLIC-TRANS	Percentage of Adult Population covered by public registries	Financial Sector Transparency led by Public sector	[-]
FINCRISES	Dummy which assumes a value of 1 for years 2007, 2008 and 2009 and 0 otherwise	2007–2009 Financial Crises	[+/-]
PRIVATE-CREDIT	Private credit advance by deposit money banks/gross domestic product	Size of Banking Sector	[-/+]
BANK-LIQ	Liquidity Reserves/Bank Assets	Bank Liquidity	[-]
BANK-COST	Operational cost/total income	Bank Efficiency	[-/+]
GROWTH	Changes in loans and advances/total loans and advances	Growth Potentials	[+]
Z-SCORE	[capital-asset + ROA]/Standard deviation ROA	Bank Stability	[+]
BANK-DIV	Non-interest income/total income	Bank Diversification	[-/+]
INFL	Consumer Price Index	Economic Stability	[-/+]
GDPG	[Current GDP-Previous GDP]/Previous GDP	Economic Growth	[-]

Variable	Obs	Mean	SD	Min	Max	SWILK	VIF
LERNER	2,353	26.48	15.694	0	100	13.063***	—
PUBLIC-TRANS	2,418	8.065	17.222	0	100	15.476***	1.111
PRIVATE-TRANS	2,418	23.133	34.134	0	100	12.707***	1.392
FINCRISES	5,778	.074	.262	0	1	6.870***	1.145
PRIVATE-CREDIT	4,628	44.036	44.764	0	100	16.846***	1.930
BANK-LIQ	2,263	22.298	23.785	.205	100	15.670***	1.428
BANK-CAP	2,023	16.572	5.418	1.755	48.6	12.504***	1.268
GROWTH	4,425	5.001	21.374	-98.417	63.343	18.015***	1.178
ZSCORE	3,716	2.376	.727	-4.11	4.557	12.736***	1.159
BANK-DIV	3,325	38.878	14.977	1.425	93.701	9.867***	1.377
BANK-COST	3,291	56.37	14.72	19.988	100	4.091***	1.340
GDPG	5,334	3.592	5.97	-64.047	88.958	16.988***	1.236
INFL	4,498	7.39	11.346	-18.109	98.773	17.968***	1.238

Note: LERNER-bank market power; PUBLIC-TRANS-financial sector transparency led by public sector; PRIVATE-TRANS-financial sector transparency led by private sector; FINCRISES-2007-2009 financial crises; PRIVATE-CREDIT-size of banking system; BANK-LIQ-liquidity requirement; BANK-CAP-bank capital requirement; GROWTH-growth potential; ZSCORE-bank stability; BANK-DIV-bank diversification; BANK-COST-bank efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-economic growth; INFL-economic stability.

\*\*\*  $p < .01$ —values are in percentages.

banks in the 75 countries used in this study is 26.48% implying that banks in the 75 economies are able to price the services and products 26.48% above their marginal cost. Compared to the average market power of 38.44% in

64 economies used in the study of Cubillas and Suárez (2013), the mean market power of the present study is lower. Public and Private sector-led financial transparencies are on the average 8.065 and 23.133% of

**TABLE 3** Summary statistics

TABLE 4 Pearson's correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) LERNER	1.000												
(2) PUBLIC-TRANS	-0.069*	1.000											
(3) PRIVAT-TRANS	-0.123*	0.006	1.000										
(4) FINCRISES	0.033	-0.080*	-0.050*	1.000									
(5) PRIVAT-CREDIT	-0.082*	0.100*	0.370*	0.051*	1.000								
(6) BANK-LIQ	0.034	-0.028	-0.167*	-0.001	-0.344*	1.000							
(7) BANK-CAP	0.192*	-0.124*	-0.212*	-0.067*	-0.300*	0.212*	1.000						
(8) GROWTH	0.076*	-0.070*	-0.128*	0.071*	-0.005	0.073*	-0.005	1.000					
(9) LNZSCORE	0.205*	0.048*	-0.055*	-0.004	0.093*	-0.053*	-0.013	-0.119*	1.000				
(10) BANK-DIV	-0.129*	-0.133*	-0.024	0.014	-0.054*	0.178*	0.116*	-0.008	-0.165*	1.000			
(11) BANK-COST	-0.447*	0.013	0.064*	-0.061*	-0.054*	-0.055*	-0.077*	-0.042*	-0.086*	0.155*	1.000		
(12) GDPG	0.193*	-0.062*	-0.127*	0.067*	-0.120*	0.034	0.051*	-0.087*	-0.016	0.043*	-0.114*	1.000	
(13) INFL	-0.045*	-0.069*	-0.190*	0.022	-0.259*	0.202*	0.079*	-0.002	-0.149*	0.110*	0.063*	-0.011	1.000

Note: LERNER-bank market power; PUBLIC-TRANS-financial sector transparency led by public sector; PRIVATE-TRANS-financial sector transparency led by private sector; FINCRISES-2007-2009 financial crises; PRIVATE-CREDIT-size of banking system; BANK-LIQ-liquidity requirement; BANK-CAP-bank capital requirement; GROWTH-growth potential; ZSCORE-bank stability; BANK-DIV-bank diversification; BANK-COST-bank efficiency; NONPERFOM-credit risk; INFL-inflation; GDPGROWTH-economic growth; INFL-economic stability.

\*  $p < .1$ —values are in percentages.

**TABLE 5** Effect of transparency regulation on bank market power

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
<b>Variables</b>	<b>Public-Trans</b>	<b>Private-Trans</b>	<b>Both</b>	<b>Public-Trans</b>	<b>Private-Trans</b>	<b>Both</b>
LERNER(-1)	1.116*** (0.102)	1.148*** (0.110)	1.159*** (0.111)	1.123*** (0.102)	1.161*** (0.113)	1.166*** (0.113)
PUBLIC-TRANS	-0.0321** (0.0124)		-0.0290** (0.0142)	-0.0337*** (0.0124)		-0.0310** (0.0146)
PRIVATE-TRANS		0.0229** (0.00984)	0.0223** (0.00982)		0.0241** (0.0101)	0.0227** (0.0102)
FINCRISES	-1.472* (0.769)	-1.353* (0.748)	-1.355* (0.751)	-1.434* (0.768)	-1.311* (0.742)	-1.318* (0.746)
PRIVATE-CREDIT	-0.0103 (0.00752)	-0.0164* (0.00978)	-0.0163* (0.00951)	-0.00886 (0.00790)	-0.0155 (0.0101)	-0.0152 (0.00969)
BANK-LIQ	-0.00655 (0.0371)	-0.0166 (0.0355)	-0.0116 (0.0368)	-0.0124 (0.0389)	-0.0181 (0.0363)	-0.0140 (0.0377)
BANK-CAP	-0.0891 (0.0566)	-0.0825 (0.0555)	-0.0902 (0.0560)	-0.0549 (0.0648)	-0.0578 (0.0636)	-0.0664 (0.0632)
GROWTH	-4.055 (2.927)	-2.889 (3.091)	-3.416 (3.047)	-4.257 (3.090)	-3.362 (3.372)	-3.733 (3.268)
Z-SCORE	-0.127 (0.463)	-0.171 (0.457)	-0.223 (0.472)	-0.395 (0.510)	-0.342 (0.492)	-0.399 (0.504)
BANK-DIV	0.0955** (0.0432)	0.0958** (0.0407)	0.0914** (0.0407)	0.0948** (0.0430)	0.0944** (0.0401)	0.0910** (0.0397)
BANK-COST	-0.0493 (0.0600)	-0.0479 (0.0606)	-0.0451 (0.0609)	-0.0687 (0.0574)	-0.0551 (0.0606)	-0.0566 (0.0610)
GDPG	-0.171 (0.103)	-0.154 (0.0970)	-0.170* (0.0989)	-0.201* (0.111)	-0.185* (0.106)	-0.195* (0.106)
INFL	-0.0292 (0.0516)	-0.0248 (0.0563)	-0.0237 (0.0546)	-0.0367 (0.0503)	-0.0310 (0.0575)	-0.0303 (0.0552)
Constant	0.503 (6.044)	-1.402 (6.043)	-1.165 (6.108)	6.142 (5.708)	2.565 (6.326)	2.856 (6.356)
Country Effects	No	No	No	Yes	Yes	Yes
Continental Effects	No	No	No	Yes	Yes	Yes
Year Effects	No	No	No	Yes	Yes	Yes
F-Stats	67.12***	52.43***	47.60***	66.68***	53.64***	50.94***
Observations	533	533	533	533	533	533
Number of countries	75	75	75	75	75	75
Instruments	18	16	17	21	19	20
AR (1)	-1.76* (0.769)	-1.79* (0.748)	-1.81* (0.751)	-1.80* (0.768)	-1.84* (0.742)	-1.85* (0.746)
AR (2)	0.07	0.05	0.07	0.06	0.05	0.07
Sargan	26.48***	20.69***	20.53***	26.60***	20.78***	20.59***
Hansen	4.35	2.21	2.10	5.08	2.51	2.40

\*\*\*  $p < .01$ ; \*\*  $p < .05$ ; \*  $p < .1$ —values are in percentages.

Note: LERNER-bank market power; PUBLIC-TRANS-financial sector transparency led by the public sector; PRIVATE-TRANS-financial sector transparency led by the private sector; FINCRISES-2007-2009 financial crises; PRIVATE-CREDIT-size of the banking system; BANK-LIQ-liquidity requirement; BANK-CAP-bank capital requirement; GROWTH-growth potential; ZSCORE-bank stability; BANK-DIV-bank diversification; BANK-COST-bank efficiency; NONPERFOM-credit risk; INFL-inflation.

the adult population in the sample countries. This implies that public and private sector led credit information on bank client that is used by financial institutions to improve transparency in the financial market covers, respectively, 8.1 and 23.1% of adults in the sampled countries. Financial crises which captures the 2007–2009 global financial crises covers about 7.4% of the dataset sample.

Credit advanced to the private sector by banks and bank liquidity reserve requirements are on the average 44.036% and 22.298% of gross domestic product and bank assets, respectively. Bank required capital which measures capital adequacy for absorbing shocks is averagely 16.572% of risk-adjusted assets. Compared to the average capital adequacy of 35.43% in 17 European economies used in the study of Cubillas and Suárez (2018), the average capital adequacy of 16.572% in this present study is lower. Growth potential in this current study is averagely 5% while the growth potential of 19.430% is reported in Cubillas and Suárez (2013). This is an indication that growth potentials in the 75 economies used in the study are lower compared to the growth potential of the 64 economies used in Cubillas and Suárez (2013). Although the Z-Score which measures banking stability is reported to have a mean logged value of 2.376, the logged mean values of 1.0504 and 1.3181 reported in Cubillas and Suárez (2013) and Cubillas and Suárez (2018) respectively, implying that banking stability in the 75 economies used in this study is higher compared to the economies in Cubillas and Suárez (2013) and Cubillas and Suárez (2018). Bank diversification and efficiency are reported to be 38.878% and 56.37%, respectively. These imply that while banks in the 75 economies averagely earn 38.88% of the revenue from non-traditional revenue sources, about 56.37% of total revenue goes into settling operating expenses. In terms of macroeconomic indicators, inflation and gross domestic product growth are averagely reported to be 7.39% and 3.592%, respectively.

Given the values in the summary statistics table (Table 3), there is no evidence of outliers (as the variables were within their expected minimum and maximum ranges); hence no potential influence of outliers to bias the reliability, accuracy and consistency of the results and findings. Again, the normality of each of the variables is confirmed by the Shapiro Wilk normality test shown in Table 3. In Table 4 however, multicollinearity is examined. Following the rule of thumb of 0.5 threshold of multicollinearity (see O'Brien, 2007; Wichers, 1975; Kumar, 1975), there is no evidence of multicollinearity. This is further confirmed by the Variance Inflation Factor (VIF) reported in Table 3 as none of the VIF values exceeded the maximum threshold of 10 (see O'Brien, 2007).

The main results of the study are reported in Tables 5 and 6. While Table 5 reports on the direct effect of financial sector transparency on the market power of banks, Table 6 reports on the conduit effect of financial crises through financial sector transparency on market power. The reports cover 75 economies between 2004 and 2014. In Table 5, six (6) models are reported. While all six (6) models present the effect of private and public sector led financial transparency on bank market power in 75 economies, Models 1–3 fail to control for technological changes, country and continental differences while Models 4–6 control for technological changes, country and continental differences. Similarly in Table 6 which presents the results on the conduit effect of financial crises through financial sector transparency on bank market power, Models 7 and 8 fail to control for technological changes, country and continental differences while Models 9 and 10 control for technological changes, country and continental differences.

From the generalized method of moments results in Table 5, the study finds a positive and significant effect of previous year bank market power on current year bank market power implying persistency in bank market power. Thus, previous year bank market power positively reinforces the current year's market power. In terms of financial sector transparency, both significant positive and negative relationships are established on bank market power in all the models (Models 1–6 in Table 5 and Models 7–10 in Table 6). Although a negative relationship between public sector led financial transparency and bank market power is reported implying that public sector led financial transparency erodes the market power of banks, a positive relationship between private sector-led financial transparency and bank market power is reported implying that private sector-led financial transparency promotes the market power of banks. Interestingly, both the positive and negative results can be explained by the literature. First, financial sector transparency (public sector led) through credit information sharing reduces bank market power because “public sector”-driven financial transparency is associated with little charges and therefore, erodes the searching, switching and information rent costs which make banks powerful in pricing their services above marginal cost. Hence, public sector led financial sector transparency reduces the market power of banks. Second, financial sector transparency (private sector-led) through credit information sharing promotes bank market power because private sector-led financial sector transparency comes with costly or expensive charges which banks pass on to their clients (Maudos & De Guevara, 2004; Tarus, Chekol, & Mutwol, 2012) by marking-up their prices, leading to increased bank market power. Furthermore, one may

**TABLE 6** Effect of transparency regulation and financial crises on bank market power

Variables	Model 7 Private-Crises	Model 8 Public-Crises	Model 9 Private-Crises	Model 10 Public-Crises
LERNER(-1)	1.161*** (0.109)	1.114*** (0.0953)	1.167*** (0.111)	1.121*** (0.0960)
PUBLIC-TRANS	-0.0290** (0.0145)	-0.0418** (0.0172)	-0.0311** (0.0149)	-0.0424** (0.0168)
PRIVATE-TRANS	0.0238** (0.0111)	0.0186* (0.0102)	0.0246** (0.0114)	0.0189* (0.0101)
FINCRISES	-0.965 (1.302)	-2.926*** (0.859)	-0.850 (1.304)	-2.895*** (0.872)
1.FINCRISES×C.PUBLIC-TRANS		0.188** (0.0896)		0.186** (0.0916)
1.FINCRISES×C.PRIVATE-TRANS	-0.0109 (0.0197)		-0.0133 (0.0197)	
PRIVATE-CREDIT	-0.0157* (0.00912)	-0.0143 (0.0102)	-0.0144 (0.00929)	-0.0133 (0.0102)
BANK-LIQ	-0.0107 (0.0367)	-0.0158 (0.0373)	-0.0126 (0.0378)	-0.0189 (0.0394)
BANK-CAP	-0.0923 (0.0561)	-0.0713 (0.0562)	-0.0693 (0.0637)	-0.0462 (0.0636)
GROWTH	-3.372 (3.179)	-3.180 (2.886)	-3.648 (3.397)	-3.487 (3.098)
Z-SCORE	-0.228 (0.476)	-0.0589 (0.426)	-0.401 (0.512)	-0.270 (0.465)
BANK-DIV	0.0881** (0.0406)	0.0985** (0.0427)	0.0869** (0.0392)	0.0976** (0.0429)
BANK-COST	-0.0439 (0.0604)	-0.0550 (0.0565)	-0.0549 (0.0602)	-0.0696 (0.0549)
GDPG	-0.165* (0.0975)	-0.149 (0.102)	-0.189* (0.105)	-0.175 (0.109)
INFL	-0.0247 (0.0538)	-0.0164 (0.0484)	-0.0310 (0.0546)	-0.0214 (0.0482)
Constant	-1.240 (6.064)	-0.0776 (5.850)	2.707 (6.332)	4.686 (5.795)
Country Effects	No	No	Yes	Yes
Continental Effects	No	No	Yes	Yes
Year Effects	No	No	Yes	Yes
F-Stats	41.43***	47.49***	44.45***	54.44***
Observations	533	533	533	533
Number of countries	75	75	75	75
Instruments	18	20	21	23
AR (1)	-1.81*	-1.78*	-1.85*	-1.82*
AR (2)	0.11	0.41	0.11	0.40
Sargan	19.88***	26.81***	19.90***	26.95***

**TABLE 6** (Continued)

Variables	Model 7 Private-Crises	Model 8 Public-Crises	Model 9 Private-Crises	Model 10 Public-Crises
Hansen	2.13	4.37	2.46	4.91
<i>Net Effect</i>	<i>-1.390*</i>	<i>-1.781***</i>	<i>-1.372*</i>	<i>-1.759***</i>

Note: LERNER-bank market power; PUBLIC-TRANS-financial sector transparency led by public sector; PRIVATE-TRANS-financial sector transparency led by private sector; FINCRISES-2007-2009 financial crises; PRIVATE-CREDIT-size of banking system; BANK-LIQ-liquidity requirement; BANK-CAP-bank capital requirement; GROWTH-growth potential; ZSCORE-bank stability; BANK-DIV-bank diversification; BANK-COST-bank efficiency; NONPERFOM-credit risk; INFL-inflation.

\*\*\* $p < .01$ ; \*\* $p < .05$ ; \* $p < .1$ —values are in percentages.

argue that because of the cost of private sector-led financial transparency, fewer banks are able to access this service and this gives those who are able to access the service significant market power especially in economies where bank are required by law to access or use financial sector transparency institutions in the dealings.

Again, it is observed in both Tables 5 and 6 that financial crises negatively and significantly affect bank market power across almost all 10 models estimated. This finding indicates that during financial crises periods, banks lose the market power in pricing their services and products overly above their marginal cost. This supports existing literature that argue that during financial crises, there are bank panic withdrawals—leading to lower confidence in the banking market and reduced banking activities (see Efthyvoulou & Yildirim, 2014; Mirzaei, 2019; Shin & Chang, 2003). This makes banks lose their pricing dominance and power and hence lowers bank market power.

Similarly in Table 6 where the study interacts financial crises with financial sector transparency on bank market power, it is observed that the interactive term between financial crises and private-led financial transparency (Models 8 and 10) and financial crises and public led financial transparency (Models 7 and 9) are negatively insignificant and positively significant related to bank market power, respectively. However, following Brambor et al. (2006), the study obtains the effect and significance of the interaction term by computing the net effects as illustrated in Equations (6) and (7). As shown in Table 6, the net effect of financial crises through private and public sector-led financial sector transparency are negative implying that in an average private sector and public sector-led transparent economy, the reducing effect of financial crises on market power is propelled and weakened, respectively. Thus, while public sector-led financial transparency dampens the reducing effect of financial crises on bank market power, private sector-led financial transparency promotes the reducing effect of financial crises on bank market power. The study argues that because of the cost of private sector-led financial

transparency, it reinforces the nexus between financial crises and market power. Similarly, because public sector-led transparency does not give a financial advantage to financially sound banks, it dampens the reducing effect of financial creises on market power.

On control variables, private credit by banks, bank income diversification and gross domestic product growth rate are reported to be significant determinants of bank market power across the 75 economies used in this study. Specifically, the size of the banking system represented as private credit advanced by banks reduces the market power of banks. Following the empirical literature (Bikker, 2004; Mamatzakis, Staikouras & Koutsomanoli-Fillipaki, 2005), an increase in the size of the banking system in the form of new entrants reduces the market power of the existing banks. Hence, this finding is consistent with prior studies. However, the negative effect of diversification is explained following Cubillas and Suárez (2013) who argue that diversification, unlike specialization, weakens the development of core competence and expert experience which give banks the ability to dictate prices. Hence, the negative relationship between diversification and market power is rooted in the literature. Finally, the gross domestic product growth rate reduces bank market power significantly. That is, banks lose their pricing power when there is an improvement in the welfare of the citizenry. This is because the citizenry rely less on banking institutions for financial assistance during good economic times. This weakens the pricing power and dominance of banks (Angelini & Cetorelli, 2003).

## 8 | ROBUSTNESS AND DIAGNOSTIC CHECKS

To ensure consistency, reliability, accuracy and efficiency in the results and findings of this study, a number of standard econometric processes and procedures are observed. Using the summary statistics table, the study screens for outliers

and no evidence of outliers which have the potential to bias the results are observed from the Shapiro Wilk normality result. Again, multicollinearity is screened for using Pearson's correlation and the variance inflation factor (O'Brien, 2007; Wichers, 1975; Kumar, 1975). That is, no evidence of multicollinearity is observed given that none of the paired correlations exceeded the rule of thumb threshold of 0.5. Moreover, by employing the two-step dynamic system generalized methods of moments, the study is able to control for endogeneity, autocorrelation and heteroscedasticity. These ensure the results and findings are reliable, consistent and accurate. Similarly, the instruments, F-Statistics, Sargan and Hansen values are evidence of validity and reliability of the results. Finally, the results are consistent across all the models and even when the study controls for year and technological, country and continental effects. Thus, the results are reliable and valid.

## 9 | CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

In this study, the role of financial sector transparency in modulating the effect of financial crises on bank market power is examined across 75 economies in Europe, America, Asia and Africa. Motivated by the lack of empirical studies on the interrelations between financial sector transparency and financial crises on bank market power, this study employs country-level data from World Development and Global Financial Development databases between 2004 and 2014 to examine the underlying nexuses. This study employs two-step dynamic system generalized method of moments to provide evidence on these interrelations.

The key findings are reported as follows. First, it is observed that public sector-led financial sector transparency has a negative effect on bank market power implying that financial sector transparency enforced through the public sector is effective in reducing the pricing power of banks. This finding conforms to both theoretical and empirical literature. Contrary to the first finding, private sector-led financial sector transparency has a positive effect on bank market power implying that financial sector transparency enforced through the private sector promotes the pricing power of banks which is contrary to the theoretical literature. However, this positive relationship is not surprising and can be attributed to the costly and expensive nature of enforcing financial sector transparency through the private sector. Thus, banks pass on the cost of financial sector transparency to their clients; hence increasing the price of banking services and products which increases their market power. Third, it is

reported that financial crises represented as 2007–2009 global financial crises reduced the market power of banks implying that during financial crises, banks lose their market power especially pricing power because the confidence of market players decline leading to less banking and financial transaction; hence loss in market power. Fourth, the interactive term of financial crises and financial sector transparency on bank market power has a net negative effect on bank market power implying that during financial crises, financial sector transparency whether enforced through private or public sector boosts the weakening effect of financial crises on bank market power. Finally, on the control variables, the size of the banking system, bank diversification and gross domestic product growth rate also have significant effects on bank market power.


These findings have policy implications and recommendations for regulators and bank managements. First, while regulators are assured of relying on public sector-led financial sector transparency as a tool for taming bank market power to enhance banking competitiveness, regulators must have a look at private sector-led financial sector transparency because it does not yield the desired results on bank market power. Possibly, the regulator may have incorporate some of the information in private databases that do not exist in public databases into the public database that do not exist in public databases into the public database. This will reduce the advantage of private databases. I think it is an easier and more workable solution. Also, regulators may have to pay attention to the structure and cost setting features of private sector-led financial sector transparency. As a future research direction, researchers may have to investigate further the effect of financial sector transparency on stability and welfare of the citizenry. Also, it will be worthwhile for researchers to assess if the established findings withstand empirical scrutiny when bank-level data is used.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in World Development Indicators, Global Financial Development and World Governance Indicator databases at the following URL respectively: <https://databank.worldbank.org/source/world-development-indicators>; <https://databank.worldbank.org/reports.aspx?source=global-financial-development>; <https://databank.worldbank.org/source/worldwide-governance-indicators>.

### ORCID

Baah Kusi  <https://orcid.org/0000-0003-0920-9866>

Elikplimi Agbloyor  <https://orcid.org/0000-0003-3945-5224>

Simplice Asongu  <https://orcid.org/0000-0001-5227-5135>

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**APPENDIX: LIST OF COUNTRIES EMPLOYED IN THE STUDY**

Afghanistan	Rwanda	Costa Rica	Kuwait	Croatia
Albania	Senegal	Czech Republic	Kyrgyz Republic	Iceland
Algeria	South Africa	Dominican Republic	Madagascar	Serbia
Armenia	Sweden	Ecuador	Malaysia	Sierra Leone
Bangladesh	Tanzania	El Salvador	Mexico	Turkey
Belarus	Tunisia	Georgia	Morocco	United States
Bolivia	Uganda	Ghana	Nigeria	Belgium
Bosnia and Herzegovina	Ukraine	Guatemala	Norway	Botswana
Brazil	United Arab Emirates	Honduras	Oman	Burkina Faso
Bulgaria	Uruguay	Hungary	Panama	Angola
Burundi	Venezuela, RB	Indonesia	Peru	Sweden
Cambodia	Zambia	Israel	Philippines	Turkey
Cameroon	Azerbaijan	Japan	Poland	United States
Canada	Chile	Kazakhstan	Qatar	Uruguay
Colombia	China	Korea, Rep.	Russian	Tunisia