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## Political business cycle and bank liquidity creation in Ghana: the role of financial sector transparency

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### ABSTRACT

This study examines how financial sector transparency (FST) administered through credit information sharing helps reduce the BLC growth induced by PBC in an emerging economy in Africa. The study employs twenty-seven 27 banks in Ghana over three (3) different political election cycles between 2006 and 2016. The results are estimated using robust random effect panel models with technological and year effect controls. The results shows that (i) PBC increases liquidity creation by banks, (ii) FST administered through credit information sharing encourages BLC, (iii) the joint term of PBC and FST yields a negative synergetic effect on BLC and (iv) promoting FST dampens the growth in liquidity creation induced by PBC in Ghana. These results imply that bank managers, regulators and policymakers must be mindful of liquidity creation especially during election periods since it can lead to soaring credit defaults and losses. Also, FST can be used as tool for suppressing growth in liquidity creation induced through PBC by help banks screen out bad political dealings and politicians.

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Political business cycle; bank liquidity creation; financial transparency; Ghana

## Introduction

Financial intermediation theory suggests that banks are risk averse economic agents who mobilizing surplus funds from surplus spending economic agents as deposit and transforms the surplus funds into loans and grant the loans to deficit spending economic agents (Berger and Bouwman 2009, 2017). Put differently, through the financial intermediation functions of savings mobilization, asset maturity transformation, bank create liquidity on the balance sheet of deficit spending economic units to facilitate economic activities and dealings (Choi, Park, and Ho 2013). The liquidity creation role of banks is a very critical financial intermediation function because it (i) generates the greatest portion of bank revenue (Kusi et al. 2020a), (ii) requires the transformation short term deposit liabilities into long term loans which can cause asset maturity mismatch leading to liquidity crisis and bank failures (Berger and Bouwman 2009, 2017) and (iii) provides

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short and long term financial and liquidity support to deficit spending units to facilitate economic activities. Given the critical nature of the BLC, there are limited empirical evidence on liquidity creation in emerging economies from Africa while such evidence abound in America, Europe and Asia (see Berger and Bouwman 2009, 2017; Nguyen, Perera, and Skully 2017; Chatterjee 2015; Horváth, Seidler, and Weill 2014; Lei and Song 2013; Acharya and Thakor 2016).

Extant literature shows that political business cycles (PBCs) (elections) have been established to influence economic (Agbloyor 2019; Lucardi 2019; Bircan and Saka 2019; Sarkar 2019; Block 2002) and financial (Frigerio and Vandone 2020; Ozili 2019; Englmaier and Stowasser 2017) system outcomes. For instance, studies have shown that PBCs influence bank profitability (Ghosh 2016; Chen and Liu 2013; Micco, Panizza, and Yanez 2007), bank lending and liquidity creation (Iddrisu and Turkson 2020; Frigerio and Vandone 2020; Englmaier and Stowasser 2017) and asset quality and stability (Ozili 2019; Englmaier and Stowasser 2017). Similarly, Nordhaus (1975) advance that PBCs gives right to the elected government to decide the allocation of resources to various sectors of an economy and determines how various sectors should be regulated. These show that PBC can influence financial sector outcomes, specifically liquidity creation (see Frigerio and Vandone 2020; Ozili 2019; Borio, Gambacorta, and Hofmann 2017), but these evidences are limited to Europe, America and Asia. Surprisingly, Africa and for that matter Ghana where political elections have serious adverse effects because of weak institutional systems have seen less evidence on how PBCs influence liquidity creation.

Specifically, the literature on PBCs and bank liquidity creation (BLC) advance that BLC increases during election periods (see Englmaier and Stowasser 2017) largely because of increased borrowing by politicians and increased economic and developmental projects (see Ozili 2019; Claessens, Feijen, and Laeven 2008). Accordingly, because the increase in BLC is not driven by positive economic shock or higher growth prospects (see Fungáčová et al. 2020), it is associated with increased (or reduced) loan loss provision (or asset quality) (see Appendix C), defaults and credit risk (see Ozili 2019) during elections due to failure or delay in loan repayment by borrowing politicians (see Ozili 2019; Claessens, Feijen, and Laeven 2008). Interestingly, empirical literature shows that FST through credit information sharing institutions can improve loan repayment, reduce asset quality and credit risk (Kusi et al. 2017, Kusi et al. 2016b), respectively, and at the same time improve bank lending and liquidity creation (Kusi et al. 2021; Asongu and Nwachukwu 2018; Tchamy and Asongu 2017; Asongu 2017; Triki and Gajigo 2014). Given the above, it is intuitive to argue that while PBC and FST through credit information sharing can induce BLC, FST can help tame BLC the growth associated with PBCs which is not healthy for the banking system. Thus, FST can be serve as a repressing modulator which tames growth in liquidity creation associated with PBCs. This repressing effect of FST on the nexus between PBC and BLC is argued as follows. Under credit information sharing regimes which enhances FST, banks advance loans and create liquidity based on the creditworthiness of their client and not their political influence. Hence, political influence and power may not pressure banks to grant loans to political agents because banks have good evidence and basis to deny or reject the loan applications of less creditworthy politicians. This may lead to a reduction in the unhealthy increase in liquidity created by banks during elections. While these explanations are intuitive, there is an urgent need for empirical evidence to substantiate this argument or claim. Hence, this present study attempts to

provide such an evidence using the Ghanaian banking sector as a case in Africa for a number of reasons. First, the study contributes to the scanty literature on liquidity creation in Ghana by providing first time evidence to the best of our knowledge on how PBC and FST interplay to affect BLC. Second, the recent banking sector clean up in Ghana showed that political events and actors contributed to the collapse of some banks that were affected by the cleanup. This makes Ghana relevant for such a study for enhancing our understanding on how political events influence bank operations. Third, Ghana remain a good choice given that its banking sector is fairly dominated by banks from other African countries, reflecting and capturing the different banking orientations and operations represented in banking sector of Africa. Four, the importance of using Ghana is further heightened with only four empirical studies (see Kusi et al. 2015, 2016a, 2016b, 2021) having to studied how FST in the Ghanaian banking sector since the inception of FST through credit information sharing in 2010. These reasons positions Ghana as good choice for this study. The rest of the paper is organized into overview, literature review, methodology, empirical results and discussion and conclusions and policy implication and recommendations.

## Overview of liquidity creation, elections and financial sector transparency in Ghana

In this section, yearly trends in liquidity created, elections of elections and FST through credit information sharing in Ghana are reported. The discussion covers between 2006 and 2016. Bank liquidity created is computed following the study of Berger and Bouwman (2009, 2017), while data on elections in Ghana which is termed as PBC is constructed following period study of Agbloyor (2019). However, data on FST through credit information sharing is obtained from World Development Indicators (WDI).

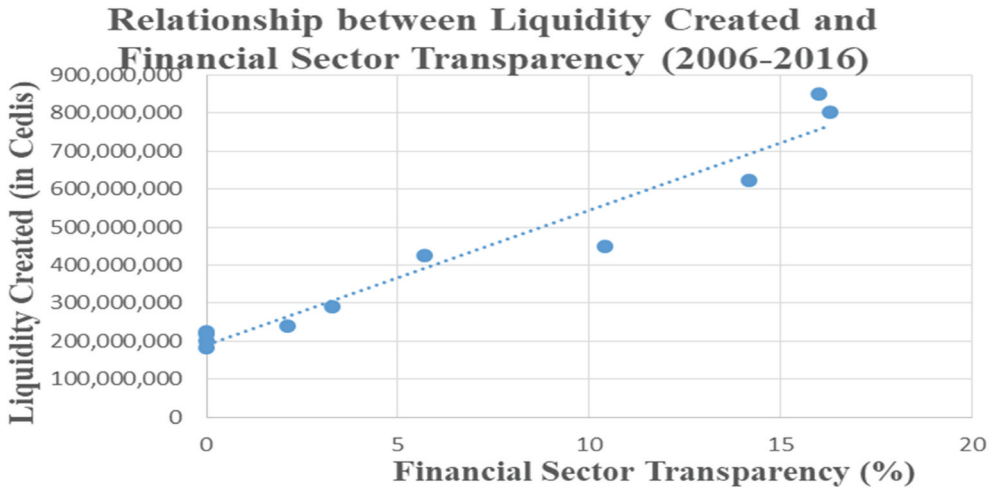
From Table 1, there is a consistent increase in banking liquidity creation in Ghana between 2006 and 2016 with the exception of the decline in liquidity creation in 2008. This decline can be attributed to the 2007–2008 global financial crises which weakened the banking intermediation functions across most economies. While banking liquidity create reports a period average of GHC 400,799,700 between 2006 and 2016, there period growth in liquidity creation is about 3.6 times in the same period. During the same period, there

**Table 1.** Yearly trends in liquidity creation, political business cycle and financial sector transparency in Ghana between 2006 and 2016.

Year	Liquidity Created (Cedis)	Election Years	Financial Sector Transparency
2006	184,573,000	No	0
2007	224,647,700	No	0
2008	200,534,000	Yes	0
2009	217,598,700	No	0
2010	240,769,200	No	2.1
2011	290,071,600	No	3.3
2012	426,767,800	Yes	5.7
2013	448,856,500	No	10.4
2014	622,293,700	No	14.17
2015	801,428,500	No	16.3
2016	849,418,800	Yes	16
<b>Average</b>	<b>400,799,700</b>		<b>6.15</b>

Source: Computed by Author based on Data from Bank of Ghana.

have been three (3) political elections in 2008, 2012 and 2016. However, FST through credit information sharing institutions was introduced in 2010 and reports an average of 6.15% implying that information that enhance the transparency of financial sector covers only 6.15% of adult population.



**Figure 1.** Relationship between liquidity creation and financial sector transparency (2006–2016). Source: Plotted by Author based on Data from Bank of Ghana.

**Table 2.** Trends in liquidity creation and financial sector transparency across election and non-election periods.

	Liquidity Created (Cedis)	Financial Sector Transparency (%)
Election Period	468,049,700	6.78
Non-Election Period	377,648,100	5.94

Source: Computed by Author based on Data from Bank of Ghana.

Observing further trends in liquidity created and FST across election and non-election periods, it is evident that elections years reports higher liquidity created (GHC 468,049,700) compared to GHC 377,648,100 in non-election years (see Table 2). Similarly, FST in election years is averagely 6.78% while FST during non-election years is averagely 5.94%. Thus, both liquidity creation and FST are higher in election periods compared to non-election periods. Interestingly, Figure 1 further demonstrates a positive association between liquidity creation and FST in Ghana between 2006 and 2016. These provide evidence that both elections (PBC) and FST have the individual capacity to promote liquidity creation.

## Literature review: theory and empirics

The dealership theory popularly known as financial intermediation theory is used as the theoretical support for this study. The theory of financial intermediation suggests that banks are rational economic agents who aim at maximizing profitability (Ho and Saunders 1981) by mobilizing deposits at a lower rate (or price) and transforming the deposits into loans at a higher rate (or price). Hence, the difference between the loan rate (or price) and deposit rate (or price) which is termed as the spread becomes the gains realized from the core financial intermediation function of banks. However, given the problems associated information asymmetry which is the lack of complete, accurate and wholesome information in the credit market, the financial intermediation process which is core to liquidity creation may lead excessive risk exposure and losses (Greenwald, Stiglitz, and Weiss 1984; Stiglitz and Weiss 1981). To help reduce the problems associated with information asymmetry in the credit market, the literature on information sharing theory (Stiglitz and Weiss 1981, 1987) advance the sharing credit market participants information improves the transparency in the financial market over times and hence reduces adverse selection and moral hazard problems associated. This improves the financial intermediation functions particularly, the lending (liquidity creation) and pricing of loans or credit. Interestingly, once the transparency in the credit market is improved through credit information sharing institutions, liquidity creation and lending growths associated with political events like elections can be reduced since these growths are associated with credit losses and huge provisions for bad loans (Ozili 2019; Englmaier and Stowasser 2017; Claessens, Feijen, and Laeven 2008).

In terms of empirical literature, we review studies that have focused on the effects of PBC and financial sector transparency (FST) on bank lending and liquidity creation. The review looks at the effect of PBC on bank lending and liquidity creation first before reporting on studies the focus on the effect of FST on bank lending and liquidity creation. More recently, Frigerio and Vandone (2020) investigated how lending activity of European development banks is affected by opportunistic political behaviour during election years. Employing a unique data of manually collected data that includes all development bank headquarters in Europe between 2002 and 2015, the results show that while the political view of development banks cannot be supported as a general rule, there is evidence that show that large development banks actually tend to increase their lending activities in election years. Similarly, Fungáčová et al. (2020) studied how presidential elections influence bank lending in Russia. Employing monthly bank data between 2004 and 2019 covering four presidential elections, the results reveal that both state-owned and privately-owned banks especially larger banks increased their lending to firms and households before presidential elections. The surge in lending prior to presidential elections is accompanied by a deteriorating loan quality the following year suggesting that the increased lending prior to presidential elections is not driven by positive economic shock or higher growth prospects.

Likewise, Koetter and Popov (2020) examined how political party turnover after elections influence bank lending to regional government. Using data on German state elections between 1992 and 2018, the results show that party turnover at state level results to a sharp and significant increase in lending by local savings banks to their home-state government and is accompanied by a substantial reduction in private lending.

However, these observed significant relationships did not exist in the case of German cooperative banks. More so, Engmaier and Stowasser (2017) examined how German savings banks which are controlled by politicians adjust lending policies in response to local electoral cycles. Employing OLS and fixed effect models of 1735 banks across 14 German states between the periods of 1987 and 2009, they results show that election-induced lending negatively impacts savings bank profitability and is associated with increased credit defaults three years after elections. Additionally, they show that savings bank excess lending and public spending at the country level are substitute levers for county politicians. In a similarly function, Iddrisu and Turkson (2020) showed that loan prices increased prior to and during election years using 330 banks across 29 African economies between 2002 and 2013.

With regards to the link between on BLC (or lending) and FST, the literature has studied how FST through credit information sharing impact bank credit mainly from the banks (supply side) and firms (demand) perspectives. Hence, the literature review reports on the role FST through credit information play on supply and demand sides of the credit market. First, Bahadir and Valev (2019) studied credit information sharing and it influences household credit in 25 transition and non-transition European economies between 2005 and 2012. Their results reveal that FST through credit information sharing institutions significantly increasing effect on private lending towards households implying that improving transparency in the financial market boosts bank credit access. Second, Asongu and Nwachukwu (2018) examined the effect of credit information sharing on financial access in 162 banks across 39 African economies between 2001 and 2011. The study employed instrumented fixed effect models with overlapping and non-overlapping bank size thresholds. Measuring financial access with loan price and loan quantity, the results reveal that improving FST through credit information sharing increases the quantities of loans advanced by banks while reducing the price of loans in Africa. Clearly, this result shows that enhancing transparency in the financial market is relevant for increasing access to bank credit. Third, Sutherland (2018) probed how credit information sharing impact on firm access to bank credit. Employing within firm-time and lender-time tests, evidence to show that credit information sharing boosts lending by reducing the borrower switching cost especially for small, young, and non-defaulting firms. Furthermore, the results show credit information sharing reduces bank reliance on relationship lending and hence shortens lending relationships. Thus, improving financial transparency through credit information sharing in the credit market improves credit availability. Lastly, Brown, Jappelli, and Pagano (2009) explored how information sharing among banks influence credit availability to 5,717 firms from 24 European transition economies between 2002 and 2005. Their results show that information sharing promote credit availability and dampens cost of credit to firms especially in opaque firms. This finding suggests that information sharing promotes the use of bank credit is a debt financing option.

The literature review shows clear intuitive and theoretical reasons to suggest possible interplay among PBCs, FST and BLC. However, empirical literature is silent on providing empirical evidence on how PBCs and FST interplay on and BLC. While the literature review shows that PBCs increase liquidity creation because political actors use the political influence and power and lack of transparency in the financial market to obtain liquidity during election periods to influence election outcomes, it can be argued that improving transparency in the financial market can equip and provide legitimate basis for banks to

reject less credit worthy politicians from obtaining credit during election periods. It is against this background that this study attempts to provide first time evidence on the interplay among PBCs, FST and liquidity creation in an emerging market context. We anticipate that the enhancing effect of elections on liquidity creation which is due to information asymmetry or use of political power can be reduced by improving transparency in the financial market. We argue that once people obtain credit solely through their credit worthiness which is enforced through credit information sharing, politicians cannot use their political power to obtain credit during election periods. Hence, this study tests the ability of FST to reduce the increasing effect of elections on BLC in an emerging economy, Ghana.

## Methodology and estimation strategy

The study employs panel data technique to investigate how PBC in Ghana influence BLC in the presence of FST. Baltagi (2015) posits that the panel data technique presents more convincing and conclusive results than the traditional cross-sectional and time series techniques as the panel takes advantage of the strengths and corrects for the weaknesses of both time series and cross-sectional technique. Similarly, the panel data presents that ability to control for omitted variable and allows for both long and short run effect which controls for the weakness of cross-sectional and time series techniques. Bank level data covering 27<sup>1</sup> banks between 2006 and 2016 is obtained from Bank of Ghana while macroeconomic data is obtained from World Development Indicators. The banks are selected purely based on data availability where banks that were included should have at least 5 years of data. The panel data framework for this study is expressed as:

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

$\varepsilon_{it} = \alpha_i + \gamma_t + e_{it}$ ;  $\alpha_i$  = bank fixed effect  $\gamma_t$  = time fixed effect  $e_{it}$  = *idiosyncratic term* where: subscript  $i$  denotes the cross sectional dimension (bank)  $i = 1 \dots N$  and  $t$  denotes the time series dimension (time),  $t = 1 \dots T$ ;  $Y_{it}$  is the dependent variable;  $\alpha_i$  is scalar and constant term for all periods ( $t$ ) and specific to a bank fixed effect ( $i$ );  $\gamma_t$  is the time fixed effect  $t$ ;  $\beta$  is a  $k \times 1$  vector of parameters to be estimated on the independent variables for the explanatory variables;  $X_{it}$  is a  $1 \times k$  vector of observations on the independent variables comprising of independent variables in the model which includes controlled variables and  $\varepsilon_{it}$  which is iid is the error term.

To select the appropriate the estimation models, the study first employs the Breusch-Pagan LM test to aid the selection between ordinary least squares and generalized least squares (random effect). The results of the Breusch-Pagan LM test ( $\text{chibar2}(01) = 122.15$ ;  $\text{Prob} > \text{chibar2} = 0.0000$ ) suggests evidence in favour of random effect. Further to this, the Hausman test is used to justify the selection between random and fixed effect models. The Hausman test results ( $\text{chi2}(10) = 13.01$ ;  $\text{Prob} > \text{chi2} = 0.2231$ ) provides evidence in support of using the random effect models to estimate the BLC models by showing. In dealing with suspected autocorrelation ( $F(1, 26) = 32.291$ ;  $\text{Prob} > F = 0.0000$ ) and heteroscedasticity ( $\text{chibar2}(01) = 122.15$ ;  $\text{Prob} > \text{chibar2} = 0.0000$ ) problems, robust standard

error are used. In terms of modelling liquidity creation a number of prior studies (Horvath, Seidler, and Weill 2016; Berger and Bouwman 2009) are followed to arrive at the model stated below:

$$BLC_{ij,t} = \beta_0 + \beta_1 PBC_t + \beta_2 FST_i + \beta_3 [PBC_t * FST_i] + \beta_4 NIM_{i,t} + \beta_5 LCAP_{i,t} + \beta_6 CRISK_{i,t} + \beta_7 ROAZSCORE_{t,j} + \beta_8 SIZE_{i,t} + \beta_9 HHI_t + \beta_{10} INFL_t + \beta_{11} GDPG_t + \varepsilon_{i,t}, \quad (2)$$

### Variable selection and definition

**BLC** is employed as dependent variable in the study. In the computation of BLC, the study follows the approach of Berger and Bouwman (2009). For this approach, liquidity creation is computed as a function of assets (A), liabilities (L) and shareholder equity (S) and modelled as:

$$LC_{i,t} = w_a A_{i,t} + w_l L_{i,t} + w_s S_{i,t} \quad (4)$$

In the case of assets and liabilities, they are further classified into liquid, semi-liquid and illiquid while shareholder equity solely classified as illiquid. Expanding Equation (4) to capture liquid, semi-liquid and illiquid assets, liabilities and shareholder equity with weights ( $w$ ), the expanded equation is written as:

$$LC_{i,t} = \left[ \begin{array}{l} (-0.5 * \text{liquid assets}) + (0.5 * \text{illiquid assets}) + (0 * \text{semi - liquid assets}) + \\ (-0.5 * \text{liquid liabilities}) + (0.5 * \text{illiquid liabilities}) + (0 * \text{semi - liquid liabilities}) \\ + (-0.5 * \text{illiquid surplus}) \end{array} \right] \quad (5)$$

Where  $i$  and  $t$  represent insurer and year respectively;  $LC$  represents liquidity creation;  $A$ ,  $L$  and  $S$  are assets, liabilities and surplus respectively;  $w_a$  and  $w_l$  are the weights assigned to liquid and illiquid assets and liabilities respectively;  $w_s$  is the weight assigned to surplus. Positive values for  $BLC$  will reflect liquid creation while negative values denote the de-creation of liquidity. While liquid assets and liabilities are assigned  $-0.5$  weights, illiquid assets and liabilities are assigned  $0.5$  weights respectively. In the case of illiquid shareholder equity the weight assigned is  $-0.5$ . Semi-liquid assets and liabilities are assign a  $0$  weights. See Appendix B for items classified under each of the liquid, illiquid and semi-liquid assets, liabilities and shareholder equity.

**PBC** is simply political election and is measured in two different ways given existent literature on political elections (see Agbloyor 2019). First, PBC is measured as a dummy which assumes a value of 1 if a year is an election year and 0 otherwise. The second measure of PBC is also a dummy which assumes a value of 1 for the year of election and the year before the election and 0 otherwise. The latter measurement of PBC is usually employed by scholars who believe elections are not events but a process which start before the main election year. Interestingly, political businesses cycles comes with increased borrowing by politicians and increased developmental and growth projects and activities (see Ozili 2019; Claessens, Feijen, and Laeven 2008). These leads to increased banking funding and liquidity creation. Hence, a positive relationship between BLC and PBCs. Interestingly, because increase in BLC during elections is not supported by positive growth shocks and leads to huge credit losses and provisions

(Fungáčová et al. (2020), improving FST through credit information sharing can tame the increasing effect of political business on BLC. That is, the joint term of PBC and FST should produce a negative synergetic effect on BLC and further reduce the overall effect of PBC on liquidity creation (Kusi et al. 2021; Kallberg and Udell 2003). Thus, transparency in the financial market lowers problems of moral hazard and adverse selection (Stiglitz and Weiss 1981, 1987) and hence encourages lenders to lend and create more liquidity in credit market. Hence, increased FST should promote lending and liquidity creation by banks but should reduce the healthy election induced liquidity creation.

Following the financial intermediation theory (Kusi et al. 2020a; Ho and Saunders 1981), the performance of financial intermediation function is largely motivated by profits or gain maximization. Thus, banking profitability measured with net interest margin (**NIM**) influences the liquidity creation function of banks. Profitability measured with net interest margin measures the extent to which banks gain from the financial intermediation process. The computation for NIM is the ratio interest income minus interest to total assets. Following the intermediation theory, profitability should promote BLC given that majority of bank earnings come as a result of creating liquidity. Bank capital adequacy (LCAP) measures the risk absorption capacity of a bank and measured as natural log of total equity. Since capital adequacy acts as buffer funds used for soaking banking shocks and losses, it reduces banks' ability to create more liquidity through credit advancement. Hence, a negative relationship is expected between capital adequacy and liquidity creation (see Berger and Bouwman 2009). Bank credit risk (**CRISK**) represents undesirable outputs that arise from the financial intermediation process. It is measure as nonperforming loans to total loans advances (Horvath, Seidler, and Weill 2016; Crotty 2009). Increase in bank credit risk requires banks to set aside funds to take of it and restricting the ability of banks to advance more credit to create liquidity. Therefore, the study expects a negative nexus between bank credit risk and liquidity created as in the case of Horvath, Seidler, and Weill (2016) and Berger and Bouwman (2009).

Financial stability (**ROAZSCORE**) is measure with z score and captures the distance a bank is away from financial distress. It is measured as the natural log of capital adequacy plus return on assets scaled over standard deviation of return on assets. The expectation is that financially stable banks should have the financial muscle to create more liquidity; hence, a positive relationship is expected between financial stability and liquidity creation. Bank size (**SIZE**) measures the size of the bank assets. Following accounting and finance literature the total assets of a firms signifies the firm size financially. Following the economies of scale and scope literature, there are efficiency gains and benefits associated with size and hence should increase banks' ability to create liquidity. Thus, the study expects a positive effect of bank size on liquidity creation following prior studies (see Horváth, Seidler, and Weill 2014; Petersen and Rajan 1995). Herfindal Hirschman index (HHI) measures banking market concentration and show the structure of the banking sector. Following the concentration-stability and concentration-fragility literature, the effect of market concentration could be either positive or negative. However, following prior studies (Horváth, Seidler, and Weill 2014, 2016; Berger and Bouwman 2009) that report a positive nexus between HHI and liquidity creation, this study also anticipates same relationship. On macroeconomic economic factors, inflation (**INFL**) and gross domestic product growth (**GDPG**) are key to liquidity creation. Following prior studies

**Table 3.** Summary variables employed.

Symbols	Names	Measurements	Expected Signs
BLC	Bank Liquidity Creation	Berger and Bouwman (2009) Approach	
PBC1	Political Business Cycle	Dummy which assumes a value of 1 if a year is an election year and 0 otherwise	-
PBC2	Political Business Cycle	Dummy which assumes a value of 1 for the year of election and a year before the election and 0 otherwise	-
FST	Financial Sector Transparency	percentage of population whose information are available with information sharing institutions to be shared by lenders for credit decision making	+
NIM	Profitability	Interest income minus interest expense scaled over total assets	+
LCAP	Capital Adequacy	Natural log of equity	-
CRISK	Credit Risk	Nonperforming loans scaled over loans and advances	-
ROAZSCORE	Financial Stability	Capital Adequacy plus Return on Assets scaled over standard deviation of Return on Assets	-
SIZE	Bank Size	Natural log of total assets	+
HHI	Market Structure	Herfindal Hirschman Index Approach	-/+
INFL	Inflation	Consumer Price Index	-
GDPG	Gross Domestic Product Growth	Changes in GDP	+

(Umar and Sun 2016), increase inflation rate signifies reduction in the purchasing power of money and devaluation of bank funds available to be advanced as loans to deficit spending units. Hence, a negative relationship is expected between inflation and liquidity creation by banks. Similarly, improvement in gross domestic product growth signifies improvements in income and standard of living (Dang 2020; Vo 2018; Berger and Bouwman 2009). This will imply less borrowing by citizenry and hence reduced liquidity creation by banks. This support the loan growth theory. Table 3 summarizes all the variables used in the study.

## Empirical results and discussions

This section presents the descriptive statistics, pairwise correlation matrix and the main estimation models. Table 4 presents the descriptive statistics of all variables. The table is employed to observe and check for outliers which have the possibility of affecting the

**Table 4.** Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max	VIF
BLC	245	.332	.242	-.995	1.195	
NIM	258	.07	.028	0	.159	1.47
PBC1	269	.528	.5	0	1	4.22
PBC2	269	.257	.438	0	1	1.36
FST	269	6.15	6.438	0	16.3	3.75
LCAP	257	11.506	1.476	8.164	18.315	7.59
CRISK	256	.041	.083	-.011	1.203	1.12
ROAZSCORE	200	22.963	38.762	-.779	425.37	1.07
SIZE	258	13.336	1.241	9.296	15.895	5.18
HHI	269	.08	.02	.06	.119	5.76
INFL	269	.135	.036	.087	.193	4.44
GDPG	269	.068	.031	.037	.14	3.12

**Significance level** – \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Note: bank liquidity creation (BLC), Political Business cycle (PBC1 & PBC2), financial sector transparency (FST), profitability (NIM), capital adequacy (LCAP), bank credit risk (CRISK), financial stability (ROAZSCORE), bank size (SIZE), market competition (HHI), inflation (INFL), gross domestic product growth (GDPG).

accuracy and consistency of the results. However, outliers are not observed within the dataset given the minimum, maximum and standard deviations reported. Table 4 again presents Variance Inflation Factor (VIF) of the variables employed. The VIF was used to test for the acceptability of each variable in the model in conjunction with the correlation matrix. With the maximum VIF threshold of 10 (Wooldridge 2009), all the variables were below the threshold of 10, indicating that all the variables were good to be in the model. Similarly, the correlation matrix which is used as a mechanism for checking and controlling multicollinearity is shown in Table 5. Following Kennedy (2008), the study sets the multicollinearity threshold to 0.7; hence, the results presented in Table 5 show no evidence of multicollinearity.

From Table 6, the main results for this study are presented. In the table, four (4) models are presented. All the models are estimated using robust standard errors random effect models with year and technology change controls. Models 1 and 2 report on PBC captured as a dummy of year before and year of elections while Models 3 and 4 report on PBC captured as a dummy for the years of election only. Additionally, Models 2 and 4 present the interactive terms of PBC and FST while Models 1 and 3 do not report on the interactive terms of PBC and FST. This is done to help us understand the synergetic nexus between PBC and FST and the marginal effect of PBC on liquidity creation in the presence of FST.

From the results, it is evident that PBC has a positive significant effect on BLC in Ghana implying that during electioneering periods, bank create more liquidity compared to non-election periods. This result is consistent in Models 2, 3 and 4 and is supported by prior studies (see Frigerio and Vandone 2020; Iddrisu and Turkson 2020; Fungáčová et al. 2020; Englmaier and Stowasser 2017) that show that banks create more liquidity during election periods. We explain that during elections, politician's especially incumbent governments increase their borrowings from all sources including banks in order to get enough financing for development and economic projects to secure or safeguard their political victory. Thus, the quest of the incumbent government and other politicians to retain or win elections, pressures politicians utilize bank financing to embark on development projects and hence increased bank liquidity created during election periods.

Considering FST and BLC, a positive significant relationship is reported between the two. This provides an indication that increasing FST through credit information sharing encourages banks to create more liquidity. We argue that increasing transparency in the financial market reduce information asymmetry and its related adverse effect and hence encourages banks to create more liquidity. This finding is not surprising given that prior studies (Bahadir and Valev 2019; Asongu and Nwachukwu 2018; Sutherland 2018) show that FST reduces problems such as adverse selection and moral hazard which are associated with information asymmetry. This tend to sanitize the credit market and boosts bank lending and liquidity creation.

In understanding how FST influences the relationship between PBCs and BLC, the study employs the approach of Brambor, Clark, and Golder (2006). Under this approach of testing moderation effects, test for the joint significance of the interactive and constitutive terms must be significant for the computation of marginal moderation effect of PBC to hold. First, the interactive terms (of PBC and FST through credit information sharing) show significant negative effect on BLC implying that there is a destructive synergetic relationship between FST and PBC on BLC. This implies that in a transparent financial

**Table 5.** Pearson's correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) BLC	1.000											
(2) NIM	-0.070	1.000										
(3) PBC1	-0.017	0.014	1.000									
(4) PBC2	-0.052	0.065	0.555*	1.000								
(5) FST	-0.186*	0.359*	0.097	0.057	1.000							
(6) LCAP	-0.008	0.360*	0.045	0.006	0.473*	1.000						
(7) CRISK	0.031	0.146*	0.070	-0.026	0.026	-0.025	1.000					
(8) ROAZSCORE	-0.046	0.013	0.030	0.029	0.132*	0.138*	0.003	1.000				
(9) SIZE	0.221*	0.262*	0.091	0.089	0.555*	0.637*	-0.029	0.086	1.000			
(10) HHI	0.144*	-0.333*	0.225*	-0.107*	-0.524*	-0.224*	0.075	-0.008	-0.330*	1.000		
(11) INFL	-0.086	0.149*	0.084	0.307*	0.335*	0.028	-0.016	-0.028	0.123*	-0.429*	1.000	
(12) GDPG	0.008	-0.052	0.240*	0.138*	-0.426*	-0.168*	0.074	-0.045	-0.179*	0.525*	-0.522*	1.000

**Significance level** – \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Table 6.** Effect of political business cycle and financial sector transparency on liquidity creation.

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
PBC1	0.015 (0.022)	0.099* (0.053)		
PBC2			0.082* (0.046)	0.115* (0.060)
FST	0.019* (0.011)	0.019* (0.011)	0.049** (0.024)	0.033* (0.020)
i.PBC1#c.FST		-0.007* (0.004)		
i.PBC2#c.FST				-0.007 (0.004)
NIM	1.611 (1.279)	1.637 (1.270)	1.684 (1.254)	1.694 (1.256)
LCAP	-0.114*** (0.041)	-0.120*** (0.043)	-0.108*** (0.040)	-0.109*** (0.041)
CRISK	-0.046 (0.072)	-0.030 (0.066)	-0.045 (0.065)	-0.048 (0.066)
ROAZSCORE	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
SIZE	0.167*** (0.041)	0.171*** (0.042)	0.162*** (0.038)	0.162*** (0.038)
HHI	0.925 (1.011)	1.913* (1.021)	4.983** (2.387)	4.948** (2.384)
INFL	-0.921 (0.741)	-1.625* (0.859)	-3.061** (1.548)	-2.716* (1.454)
GDPG	-0.629 (1.123)	-2.466* (1.415)	-3.734* (2.077)	-3.858* (2.123)
Constant	147.185** (64.730)	144.333** (64.051)	311.168** (129.537)	220.952** (110.415)
Year Effects	Yes	Yes	Yes	Yes
Observations	190	190	190	190
R-Square				
Number of banks	27	27	27	27

**Significance level** – \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Note: BLC, Political Business cycle (PBC1 & PBC2), financial sector transparency (FST), profitability (NIM), capital adequacy (LCAP), bank credit risk (CRISK), financial stability (ROAZSCORE), bank size (SIZE), market competition (HHI), inflation (INFL), gross domestic product growth (GDPG).

sector, politicians cannot use the influence to pressure banks to increase BLC. Thus, under transparent financial sector regimes, banks have a good reason and legitimate basis to deny less credit worthy politician assess to credit and hence lowers the liquidity created by banks during electioneering periods. This implies that transparency in the credit market tames BLC increases fuelled by election by helping banks screen out bad politically motivated lending deals which dampens liquidity creation by banks. Following the computation of marginal effect, Model 2 shows marginal effect  $(0.099 + [-0.007 \times 6.15] = 0.056)$  that FST serves as a moderator that reduces the positive effects of PBC on BLC. Interestingly, when we vary the level of FST upwards (see Appendix A), the marginal effect of PBC on liquidity creation declines further. This provides an indication that election related liquidity creation boom which is not driven by positive economic shock (Fungáčová et al. 2020) can be tamed by promoting transparency in the financial market.

In terms of the control variables, capital adequacy is found to reduce BLC. This is not surprising as capital adequacy funds lie idle and act as buffer funds used only when there is banking losses or crises to be resolved. Bank size is reported to positively influence liquidity creation implying that larger banks create more liquidity. This is in

line with the literature that argue that there are benefits and efficiency gains associated with size. Market structure measured using Herfindal Hirschman Index (HHI) reports a significant positive effect of market concentration on liquidity creation. That is, while this result shows that a concentrated banking market creates more liquidity, the result is in support of the concentration-stability hypothesis. In terms of macroeconomic factors, inflation has a negative significant effect on liquidity creation of banks. This result is an indication that increase in inflation which implies reduction in purchasing power reduces the ability of banks to create more liquidity. Likewise, gross domestic product growth provides an indication of favour economic conditions and improvement in income and or standard of living of citizenry. Hence, improvement in income and standard of living reduces demand for loans and increases savings which tend to reduce liquidity creation by banks.

### Conclusions, policy implications and recommendations

In this paper, we provide evidence that FST advanced through credit information sharing systems influence the nexus between PBC and BLC in an emerging economy in Africa. Prior studies show that BLC increase during election periods largely because of increased borrowing for campaign and developmental projects by politicians. However, because the increase in bank lending and liquidity creation is not driven by positive growth shocks, it is usually accompanied by higher credit defaults, losses and lower asset quality which is not health for the banking sector. Interestingly, improving transparency in the financial sector can help sanitize banking lending and liquidity creation and further reduce the growth in BLC induced by PBCs. Yet, empirical evidence to this claim is not existent. Therefore, this study is motivated by the non-existent of empirical studies on how FST can help repress or tame PBC induced BLC especially in an emerging economy in Africa.

The study employs 27 banks in Ghana between 2006 and 2016 in random effect models with technological and year effect controls to estimate the results. First, we find that PBC induces BLC largely because of increased borrowings for campaign and development projects by politicians as confirmed in prior studies. Second, FST through credit information sharing also enhances BLC as transparency in the financial market sanitizes the financial market to aid banks create liquidity for creditworthy clients. Third, a negative synergetic nexus is reported between PBC and FST on BLC implying that PBC and FST jointly dampens BLC, and this effect is profound when FST increases. Thus, there is evidence to show that transparency in the financial market tames the increasing effect of PBCs on BLC in Ghana.

These results suggests that banks and policy makers must be mindful of liquidity creation during election periods because it may hurt the soundness of the banking sector through increased credit defaults and losses. Also, improving transparency in the financial market can enhance BLC by reducing the adverse effect (moral hazard and adverse selection) of information asymmetry on liquidity creation and hence, promote liquidity creation by banks. Additionally, promoting FST can help repress the growth in liquidity creation induced by elections. This means that policymaker will have enact laws that improves transparency in the financial market to ensures bad politically motivated borrowers and banking deals are avoided and screened out of the lending market.

Hence, FST can be a good tool for repressing BLC growth induced by PBC. In terms of future research direction, understanding the threshold levels and possible nonlinearity between FST and BLC can be useful for policy direction.

## Note

1. Unite Bank of Africa, First Atlantic Bank, Standard Chartered Bank, Ecobank Ghana, Zenith Bank Ghana Limited, Agriculture Development Bank, Ghana Commercial Bank, Societe Generale Ghana, UniBank Ghana Limited, Stanbic Ghana Limited, Barclays Bank Ghana, Republic Bank Ghana Limited, Cal Bank, National Investment Bank, Sahel Sahara, Bank of Baroda Ghana, UT Bank Ghana Limited, Guaranteed Trust Bank, Prudential Bank Ghana Limited, Access Bank Ghana Limited, Bank of Africa, International Commercial Bank, Fidelity Bank Ghana Limited, Energy Bank Ghana Limited, The Royal Bank, First National Bank and First Bank of Nigeria.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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## Data availability statement

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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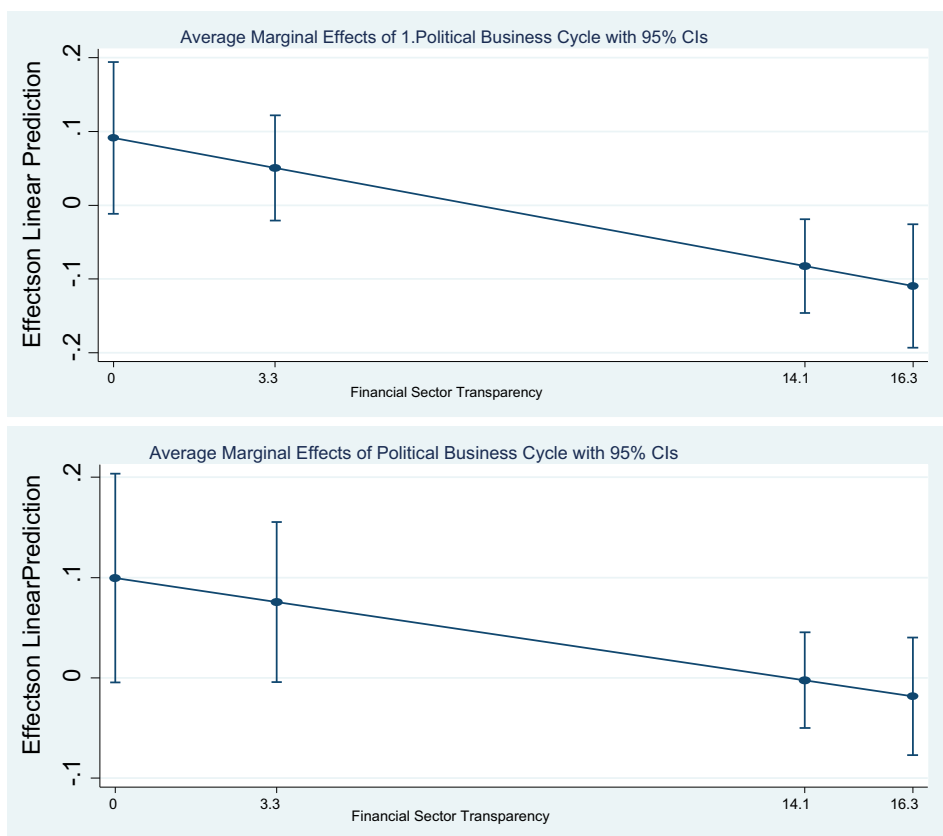
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## Appendices

### Appendix A. Marginal effect plots.



### Appendix B. Classifications of bank balance sheet items.

#### Assets

##### Illiquid (weight = 0.5)

Loans and advances; pledged assets; other assets; available for sale financial assets; lease hold property; medium term invest in other securities; property, plant and equipments; investment properties & other investments; intangible assets

##### Semi-Liquid (weight = 0)

Investment in subsidiary companies, and associated companies; goodwill; banks' share of provision for unearned income and outstanding income; deferred acquisition costs and tax assets

##### Liquid (weight = -0.5)

Cash and balances with bank of Ghana; due from other banks financial institutions; government securities; trading assets

##### Illiquid (weight = -0.5)

Other liabilities; medium term borrowing; long term bonds; long term loans

#### Liabilities

##### Semi-Liquid (weight = 0)

##### Liquid (weight = 0.5)

deposits; due to banks other financial institutions; interest payable & other liabilities; deferred taxation; provisions; current tax liabilities

#### Surplus (Equity)

##### Illiquid (weight = -0.5)

Stated capital; income surplus; statutory reserve fund; revaluation reserve; capital surplus account; share deals; regulated reserve funds; preference share capital; other reserves

**Appendix C. Loan loss provision and liquidity creation in Ghana.**

	Loan Loss Provision/loans	Loans/assets	Liquidity Creation
Non-Election Periods	22.56%	68.34%	GHC 342,640,400
Election Periods	31.73%	69.13%	GHC 453,548,900