Bangladesh Journal of Political Economy

Vol. 31, No. 5, January 2017, pp. 001-018
Bangladesh Economic Association
(ISSN 2227-3182)

Excess Liquidity And The Recent Financial Crisis: A Study On The Bangladesh Banking Sector Applying Different Bank Typologies

Qamarullah Bin Tariq Islam*

Abstract: *With the recent financial crisis and the possibility of its future recurrence, it is important to analyse the resilience of the banking sector in Bangladesh. This paper analyses the performance of the banking sector during the recent crisis. Using data of 15 years from 37 banks, the results show that the banking sector in Bangladesh performed resilliently during the financial crisis. Additionally, different bank typologies are applied to see if banks behaved differently according to these characteristics. It is observed that they behaved mostly in a similar way except for one typology. This paper's main findings are twofold: firstly, the banking sector of Bangladesh was generally resilient during the crisis and secondly, the resilience was observed for most typologies. However, the significant difference for one typology nevertheless suggests the need for a tailor-made, rather than a general, approach for this sector.*

Keywords: Excess liquidity, financial crisis, banking sector, bank typologies, Bangladesh.

1. Introduction

The banking sector in Bangladesh is one of the most emerging sectors in the economy with an annual growth rate of 9.79 per cent in 2014-15. This growth rate puts it among the top five sub-sectors in the economy. With a contribution of around 2.87 per cent of GDP, the banking sector in Bangladesh needs particular attention (Bangladesh Economic Review, 2015). With a recent approval of 10 banks, taking the total number of banks to 57, this sector's importance is continuously increasing.

The recent financial crisis of 2007-08, also known as the great recession, was a

* This paper is based on work done at Glasgow, UK..
Department of Economics, University of Rajshahi. Corresponding author.

major test of resilience for the financial sector all over the world and this was no different for Bangladesh. Although according to some, the crisis was over a few years back, while some believe that its effect is still present. Some others feel that the world is still not out of the crisis fully and the danger of a similar crisis is still looming.

1.1 Previous works

There were various works on the relationship between bank lending and ownership during business cycles. Recently the focus shifted to examine the lending pattern of different types of banks during and after the crisis. The main reason for this shift of focus of the recent works was mainly due to the 'Great Recession' that occurred from 2007. Because of this, it became important to investigate how it affected the lending situation of banks and the focus shifted to address this issue to some extent (Micco et al., 2007; Omran 2007; Lin and Zhang, 2009; Davydov, 2013; Duprey, 2013).

However, these studies mainly examined the effect of ownership of banks to see the effect of lending[3]. But this study goes further to see other possible and pertinent bank-specific characteristics and their impact on excess liquidity via lending. This was done to have a very comprehensive picture of how bank typologies affect excess liquidity pattern in the banks. According to our knowledge, the four bank-specific characteristics used in this study had not been used previously together to study excess liquidity.

Different ownerships of banks had different lending patterns during the crisis time. In different cross-country studies on non-crisis times, it is commonly found that public banks were less efficient and sometimes led to lower financial development than the private banks. Davydov (2013) identified three possible reasons for the comparative inefficiency of the public banks. These were: (i) political interference that deviate them from the profit maximization aims; (ii) incentives structure for managers that were weaker than the private banks; and (iii) inferior incentives for owners that lead to poor monitoring[4].

During the recent financial crisis of 2007-08, public banks played a positive role for the economy by generally acting counter-cyclically (Allen et al., 2013) or less pro-cyclically (Fungacova et al., 2013). This was crucial and helped the economy to stabilise as the domestic private banks acted pro-cyclically (Kowalewski and

---

[3] Bank lending and excess liquidity are very closely related two aspects (Alper et al., 2012) of the banking sector and there are many works on lending and bank ownership related to the financial crisis.

[4] Comparing public and private banks in terms of efficiency or profitability can be misleading (UNCTAD, 2008) since public banks have other agenda (along with that of profitability) and hence pursuing solely the profit objective is not their aim. Therefore, they may sometime need to sacrifice the objective of profit maximisation and become less profitable than the private banks. This (less profitability) does not imply that the public banks were less efficient.

Rybinski, 2011; Cull and Peria, 2012). This was also true for earlier financial crises in Asia and Latin America in the 1990s (Hawkins and Mihaljek, 2001).

Micco and Panizza (2006), in their study of 179 countries, mentioned the following four possible reasons why public banks stabilise credit: (i) it was part of their objectives as public banks; (ii) generally it was considered by depositors to be a safer place during possible bank failures, ending up public banks having a better deposit base during the crisis and thereby also in a better position to smooth credit; (iii) sometimes the public banks do not have a proper set of incentives and hence the managers can be lazy; and (iv) politicians might try to influence public bank lending in election years.

Interestingly enough, there were very few empirical works on excess liquidity directly related to the financial crisis, especially investigating the aftermath of the crisis on excess liquidity. The existing works on financial crisis and excess liquidity can broadly be divided into two categories. One group discussed how excess liquidity acted as one of the factors for the financial crisis (Palma, 2009; Acharya and Naqvi, 2012; Brana et al., 2012). The other group discussed how the crisis situation affects excess liquidity.

One of the possible effects of a financial crisis is that it increases the uncertainty and risk in the economy making lending riskier for the banks. Therefore, banks lend less and increase excess liquidity. This was found in the studies of Agenor et al. (2004) for Thailand and Ashcraft et al. (2011) for the US economy. Montoro and Moreno (2011) found similar results for Peru. In another study, Murta and Garcia (2010) examined the excess liquidity in the banks of the Euro area.

The most direct empirical study till now, to our knowledge, that examined the effect of the recent financial crisis on the excess liquidity situation of the banking sector was carried out by Pontes and Murta (2012). They studied this relationship for the African economy of Cape Verde. Their results suggested that the crisis decreased the excess liquidity in the economy. The possible reasons included the extreme dependence of the economy on the external economic factors (especially remittance) and also the underdevelopment of the financial markets.

1.2 Contribution of this paper

The objective of this research is to fill some of the gaps in this strand of literature. Generally, this study attempts to examine if the recent financial crisis and excess liquidity were related? Financial crisis is a time when banks do not feel very confident to lend and there is less demand from the investors' side. Hence a positive relationship between the crisis and the excess liquidity is expected. However, the period of crisis is normally accompanied by a process of recapitalisation to increase lending. This can in turn reduce the amount of excess liquidity.

On this perspective, this paper attempts to investigate how the banking sector in

Bangladesh fared during the last financial crisis using data of 37 banks for 15 years. Four bank-specific typologies of ownership, size, mode of operation and age are applied to examine if there were any difference in the performance of banks according to these typologies. The main objectives of this study are twofold: (i) to find out the impact of the last financial crisis on the banking sector of Bangladesh, and (ii) if the banking sector performed differently according to different typologies.

1.3 Structure of this paper

This paper is divided into the following sections. Section 1 describes some of the earlier works on financial crisis and the contribution of this paper. The financial crisis and the Bangladesh economy is described in Section 2. The empirical approach is described in Section 3 while empirical results are discussed in Section 4 along with additional estimates and possible explanation of results. This is followed by concluding remarks in Section 5 which include a summary, some policy recommendations and conclusion.

2. The Financial Crisis and the Bangladesh Economy

The experience of the recent financial crisis showed that not all economies were affected at the same time. Some were affected immediately (termed as the first shockwave), some were after some time (called the second shockwave through impact on credit), while some took even more time (named the third shockwave through impact on real economy). Like other economies, the recent financial crisis also affected the economy of Bangladesh. However, it did not impact the economy immediately but after some time. According to Rahman et al. (2009), the crisis started affecting the Bangladesh economy from October 2008. One of the main features of this crisis was that 'the crisis … evolved from financial crisis to credit contraction to crisis of confidence' (Rahman et al., 2009).

The lag effect of crisis could be attributed to the very little exposure of the capital market in Bangladesh to foreign portfolio investment (only 2.4%). This led Bangladesh to survive the first shockwave but it started to feel the impact from the second shockwave. The economy was mainly affected through the channels of exports, remittances and foreign investment.

One of the key factors of the impact of these channels depended on the economic performance of the main partner countries (Murshid et al., 2009). As they were unable to perform well, the crisis negatively affected the economy of Bangladesh.

Ali and Islam (2010) stated that although the financial crisis did not affect the economy very harshly but it still slowed down along with exports and remittances. However, they also mentioned that Bangladesh performed well in agriculture and in equity markets to counterbalance the effect of the financial crisis. According to Raihan (2010), the crisis affected the export sector negatively and some categories

had to suffer negative growth both in terms of value and volume.

3. Empirical Approach

The variables used in this study are discussed first followed by the model applied. Finally, the nature of the data used and its sources are narrated.

3.1 Variables

The dependent variable of this study is described first. Then the explanatory variables applied in this study are discussed.

3.1.1 Excess liquidity: The dependent variable in this study is excess liquidity. From the earlier studies, it is generally observed that during economic recession or crisis, there was more excess liquidity and there would be generally an inverse relationship between excess liquidity and the crisis. However, different typologies based on bank-specific characteristics might not be related in the same way and for each classification, there could be variation in the direction, degree and significance of the relationship. To investigate these relationships, excess liquidity will be the dependent variable to see how it was affected by different typologies of banking.

The excess liquidity is calculated by summing up trading securities at fair value (FV) through income, loans and advances to banks, reverse repos and cash collateral, and cash and due from banks. Then mandatory reserves included above are deducted. As there are banks of different sizes according to assets, therefore growth rate of liquid assets is taken to proxy for the excess liquidity to avoid the scale problem. Logarithm values of these are taken and then growth rate is calculated by deducting the log value of the previous year[5].

3.1.2 Financial crisis: The main variable of interest in this study is financial crisis. The main objective is to see how the financial crisis affected the excess liquidity situation and whether different types of banks vary in their excess liquidity situation in relation to the financial crisis. It can shed important light if it found that any particular type of banking has procyclical, counter-cyclical or acyclical relationship with the financial crisis.

There were very few empirical works on the relationship between excess liquidity and the financial crisis. One of the determinants of the excess liquidity studies in general, the deposit volatility, was included in these works. This was measured by Pontes and Murta (2012) for Cape Verde as the moving average of the standard deviation of private sector deposits divided by the moving average of the same variable. Fadare (2011) examined the banking sector liquidity for the economy of Nigeria to see the effect of the financial crisis. A different approach was taken by him where the basis was to see if the actual loan-to-deposit ratio was above or

[5] As a result, one observation was lost per series.

below the predicted value. If the actual value was above the predicted value, then it implied less liquid assets while less actual value than the predicted value meant more liquid assets. According to Moore (2009), "If the actual loan-to-deposit ratio is above the predicted value this would suggest that commercial banks were less liquid than is consistent with fundamentals, while if the actual ratio is below the predicted value commercial banks were more liquid than what is consistent with economic fundamentals."

The possible final effect of the financial crisis was also ambiguous since it was expected that initially there would be higher excess liquidity in the banks due to lower demand and higher risk. However, as governments and other organisations recapitalise the banking sector during these periods to boost the economy, banks would be able to lend more and thereby reduce excess liquidity situation. Again, there can be higher excess liquidity if banks lend less than they were recapitalised.

Davydov (2013) used crisis dummy variable that equals one in fiscal years 2008, 2009, and 2010. Although the financial crisis started in September 2007, the effect of it reached Bangladesh in 2008 and the effect continued in the following year. Therefore, 2008 and 2009 were the most appropriate years and were given value of 1 during these two years. The interactions of crisis and bank typology dummies were used to see how the excess liquidity situation differed for different types of banks. This was in line with some of the earlier studies (Cull and Peria, 2012) that used dummy variables to see the lending pattern during and after the financial crisis.

3.1.3 Bank typology: Some of the standard variables in the literature are incorporated to see the direction and significance of their relationship. Generally it is observed that public banks are less pro-cyclical than the private banks in non-crisis times. In some cross-country studies on non-crisis times, it is commonly found that public banks are less efficient and sometimes lead to lower financial development than the private banks (Barth et al., 2004; Bonin et al., 2005; Duprey, 2013). This view of dissimilarity in lending according to ownership was also supported by various country-level studies. For example, Berger et al. (2008) observed it for Argentina, Lin and Zhang (2009) found it for China, and Omran (2007) witnessed it for Egypt. But in some cases it was observed that public banks and private banks were almost equally efficient (Beck et al., 2005; Kraft et al., 2006).

During the recent financial crisis, the public banks played a positive role for the economy by either acting counter-cyclically or at least less pro-cyclically. Although most of the earlier studies discussed the differences in ownership and their effect, this study addressed the issue using some additional typologies of banking. These include the most common typology of ownership (public versus private banks) along with size (small versus large banks), mode of operation (Islamic versus conventional banks) and age (new versus old banks). It will be

interesting to see if the large banks behaved differently from the small banks about their liquid assets or if there was any pattern for new banks which separated them from the old banks. The growth of Islamic banking worldwide and in Bangladesh made it a very worthy effort to investigate if they differed from the conventional banks.

Bank ownership is measured with the help of dummy variable. For the ownership dummy, value of 1 is given if it is a public bank and 0 otherwise. Bank ownership dummy variable has also been used by Van den Heuvel (2002), Gambacorta (2005) and Allen et al. (2013). To examine the effect of bank ownership, the dummy variable is used in an interaction form with the financial crisis. The interactions of crisis and public bank dummies can show how public banks performed in this period relative to private banks. Dummy variable for crisis was also used by Allen et al. (2013).

Another explanatory variable that is used quite often in the earlier studies is the bank size (Vihriala, 1997; Allen et al., 2013; Davydov, 2013). In most cases, the asset values were taken from Bankscope. But it was measured differently in different works. These include: (i) banks average total asset divided by the average total asset of the country, (ii) asset of the bank relative to top 20, and (iii) growth rate of number. Of all these measures, the first measure showed bank size in absolute terms while others indicated the variable in relative term (Cull and Peria, 2012; Duprey, 2013). To examine the effect of bank size, the dummy variable is used in an interaction form with the financial crisis. The asset values are taken from Bankscope to measure bank size.

In country-level studies, **bank age** variables are used (Beck et al., 2005; Lin and Zhan, 2009). Beck et al. (2005) also included the age variable with the notion that it can have positive effect on its performance due to the experience of older banks while it can also have negative effect if newer banks gained more rent in foreign exchange rate market. According to them, older and smaller banks performed poorly than newer and bigger banks. To examine the effect of bank size, the dummy variable is used in an interaction form with the financial crisis where age of bank is calculated from its year of establishment.

Additionally, the **mode of operation** typology is used in this study. According to this criterion, value of 1 is given if it is an Islamic bank and 0 otherwise. Here again, the dummy variable is used in an interaction form with financial crisis.

3.1.4 Capitalisation: It is ideal to include the capital variable as one important feature after the financial crisis was to recapitalise the banking sector in order to increase the flow of money in the economy. Therefore, it is important to see how it affected the excess liquidity situation in the banking sector around the time of the financial crisis. Since highly capiltalised banks would be able to lend more, therefore it was expected to have a negative relationship with excess liquidity. Capital

is measured by bank equity as ratio of total assets.

3.1.5 Political motive: There is also an indication in the literature that excess liquidity might vary during periods of stress relative to normal situations, leading to greater asset price volatility during the former and so disrupting liquidity targets (Cohen and Shin, 2003). Morrison (1966) did a study on bank's demand for excess reserves in both banks' panic and non-panic periods. He concluded that excess reserves were held as a buffer to avoid asset transaction costs emanating from unforeseen and transitory deposit shocks. This sort of excess liquidity could also be interpreted as an insurance against deposit outflows. Al-Hamidy (2013) found that turbulent international markets slowed down domestic credit growth and increased excess liquidity for the economy of Saudi Arabia. Value of 1 was given if the national election has taken place on that year, 0 otherwise.

3.1.6 Reserve requirement: Another important variables of excess liquidity that emerged from the previous studies was reserve requirement. With the same amount of deposit available, if the reserve requirement is higher in the banking sector then it is expected that there would be lower excess liquidity and vice versa. Therefore, reserve requirement is expected to have negative relationship with excess liquidity. In their study on Thailand, Agenor et al. (2004) included it as one of the explanatory variables and found it significant. Aikaeli (2011) also studied the excess liquidity problem for Tanzania and found similar result. One point that needs to be noted is that the inclusion (and significance) of this variable depends on how excess liquidity is measured. If, as many studies have done before, excess liquidity is proxied by bank liquidity then reserve requirements should be included as an explanatory variable. But if excess liquidity is measured net of required reserves then it should not be included as an explanatory variable. Since this study used the second type of definition of excess liquidity, therefore this variable is not included in the final regression.

3.1.7 Inflation: Inflation can also possibly play a role in the excess liquidity situation of the banks. There can be two possible effects. On one hand, inflation can continuously increase the demand for loans from the banks which would reduce excess liquidity. On the other hand, there can be higher demand for deposits due to devaluation of money because of inflation, forcing banks to keep more deposits which may lead to higher excess liquidity. Among the country-specific studies, Akinboade and Makina (2010) used inflation as one of the variables in their study on South Africa. Bertay et al. (2012), in their study on 111 countries, and Bhaumik et al. (2011), in their study on India, also used inflation as an explanatory variable in their study on lending. However, Bhaumik et al. (2011) found it insignificant[6].

From the discussion above, it can be observed that different explanatory variables were used in the studies of lending. Of them, some variables may also impact

[6] Our observation is also similar in preliminary estimation. Therefore, inflation is not included in the final regression.

excess liquidity. These include: capital, size, age, reserve requirement, political motive and inflation rate. Of these, the first four are bank-specific variables while the last two are macroeconomic. Among the bank-specific variables, capital is included directly while the reserve requirement variable is not included as discussed in 3.1.6. The size and the age variables are covered under the bank typology variables of bank size and bank age and are applied after interacting with the financial crisis to see how they performed during the crisis. Among the macroeconomic variables, the political motive variable is included while inflation is not included in the final regression due to its insignificance in the preliminary estimates.

3.2 The model

There are various methods of estimation for panel data. This include the Fixed Effect (FE) method, the Random Effect (RE) method, and the Generalised Method of Moments (GMM). Among these and other methods, GMM has an advantage if the model includes the lag of the dependent variable as one of its explanatory variables. Since lag of the dependent variable is not one of the explanatory variables, therefore either FE or RE or both can be applied.

The FE method examines the relationship where each individual has its own characteristics that can affect the independent variable. In the RE model, the variation across individuals is assumed to be random and uncorrelated with the independent variable (Torres-Reyna, 2007). According to Greene (2008, p.183):

> "…the crucial distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not."

To decide which of these tests should be applied, it is a standard practice to use the Hausman test. This test checks whether the unique errors are correlated with the regressor with the null hypothesis being that they are not (Hausman, 1978). The test also checks if both the estimators can be used. If the null hypothesis is rejected then it implies that the RE model will produce biased estimators and therefore the FE model should be preferred. On the other hand, if the null hypothesis is accepted, it is standard to use both FE and RE methods[7] as there should be no systematic difference between the two estimators.

In this study, the Hausman test was applied to compare the FE and the RE methods. Since the null hypothesis was not rejected in this test (not reported here), hence both the FE and RE estimation methods are applied. A similar approach has been taken by others before (Allen et al., 2013; Duprey, 2013). In this study, FE is applied first followed by RE for robustness check. Following Duprey (2013), the model below is used in this study:

[7] Detailed technical explanation is given by Schaffer (2014) in the following link: http://www.stata.com/statalist/archive/2003-09/msg00595.html (accessed on 6 August 2014).

$$EL_{it} = \alpha_0 + \beta_1 Cap_{it} + \beta_2 Elec_{it} + \beta_3 FC_{it} + \beta_4 (FC_{it} * BT_{it}) + \varepsilon_{it} \quad (1)$$

Here, *EL* is excess liquidity, *Cap* represents the capitalisation, *Elac* indicates political motive while bank typology variables are represented by *BT* which include ownership, size, mode of operation and age. The financial crisis is shown with *FC*. The subscript *i* represents the banks while *t* is showing years.

Separate regressions are estimated for each typology to identify the effect properly since the characteristics are overlapping in many cases. For example, Sonali Bank Limited is a public bank according to ownership criterion. But it is also a large, conventional and an old bank according to the criteria of size, mode of operation and age.

3.3 Data

The main source of data used in this paper is the Bankscope database. For bank-level data, Bankscope contains annual income statements and balance sheet data for individual banks. Some publications from Bangladesh Bank and other government publications were also used.

Although most of the banks had 15 years of data in the Bankscope database but there were some banks for which 15 years of data were not available. In some cases, there was some missing years inside the series. Out of 38 banks (excluding the foreign banks), data were available in Bankscope for 37 banks.

Regarding the form of data available, it was available in both consolidated and unconsolidated forms for 18 banks, available only in unconsolidated forms for 16 banks and available only in consolidated forms for 3 banks. Since the unconsolidated data availability was more, so most of the data were taken from unconsolidated sources. Taking data mainly from the unconsolidated sources is in line with earlier works (Duprey, 2013). Moreever, taking consolidated data along with unconsolidated ones is also in line with some earlier works (Ehrmann et al., 2001; Cihak and Hesse, 2008).

4. Empirical Results and Discussion

The empirical results are described first followed by a discussion of them. The FE method is applied here and the results are given in Table 1.

The financial crisis, which is the main variable of interest in this study, is found to be insignificant in all cases. This shows that excess liquidity was not significantly affected by the financial crisis. This demonstrates the strength and resilience of the banking sector in facing the crisis.

Regarding the relationship of different bank typologies and excess liquidity, the results are mostly insignificant with the exception of the bank size variable. In this case, the relationship is positive and significant which imply that large banks lent comparatively less during the financial crisis than the small banks. This can be

either due to the fact that they were more careful or could afford to lend less and still survive at this time of crisis. Or it could mean that a higher fraction of their assets was impaired. Note that the implications are very different depending on which explanation is accepted. However, all other bank typologies showed insignificant result meaning that there was not much difference in the effect of the financial crisis across these typologies.

Table 1: Excess liquidity estimates applying fixed effect method

Variable	Ownership	Islamic	Size	Age
	Coefficient	Coefficient	Coefficient	Coefficient
Cap	-0.214*** (0.070)	-0.210*** (0.071)	-0.211*** (0.070)	-0.220*** (0.071)
Elec	0.113* (0.064)	0.108* (0.064)	0.125** (0.064)	0.112* (0.064)
FC	-0.027 (0.063)	0.008 (0.062)	-0.088 (0.071)	0.092 (0.090)
DumO* FC	0.175 (0.162)	---	---	---
DumI* FC	---	-0.098 (0.144)	---	---
DumS* FC	---	---	0.206** (0.096)	---
DumA* FC	---	---	---	-0.146 (0.104)
No. of banks	35	35	35	35
observations	276	276	276	276

Note 1: Standard errors are in parentheses to the right of the respective estimated coefficients.
Note 2: * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

Among other key variables of interest, the political motive is found to be consistently significant with a positive sign implying that during election years, the banks were not more inclined towards lending. On the positive note, this implies that the politicians do not or cannot force the banks for higher lending during this time to influence the election result by implementing different development works at that time. Conversely, on the negative note, this could imply that the situation became uncertain and banks wanted to move carefully about their lending decisions. This can be particularly true for Bangladesh as election years generally remain tense and borrowers as well as banks take a cautious approach during this time to gauge the situation and lend less[8].

Capitalisation is found to be negative and significant. Generally it is observed that increased capitalisation can lead banks towards more lending. This is a principle that was applied during the recent financial crisis to bail out the banking sector. This is found to be true here as well.

4.1 Additional Estimate: Application of RE Method

For robustness, the method of RE is applied to the above model. This is reported below.

[8] As Bangladesh went through a period of non-democratic government from 2007 to 2008, hence these two years have been used as a proxy for abnormal years and used as an alternative measure of election years to see the effect of political motive. The result from using this variable shows similar results strengthening the earlier findings using the election years. The results are not reported here due to space.

The results for the financial crisis after applying RE method are found to be similar. The financial crisis variable is again found to be insignificant in all cases and among the typology variables, only the size typology is found significant again like the FE method. The capitalisation variable is observed to be significantly negative while the political motive was found to be positive and significant.

Table 2: Excess liquidity estimates applying random effect method

Variable	Ownership	Islamic	Size	Age
	Coefficient	Coefficient	Coefficient	Coefficient
Cap	-0.247*** (0.066)	-0.243*** (0.066)	-0.238*** (0.066)	-0.250*** (0.066)
Elec	0.117* (0.064)	0.112* (0.063)	0.130** (0.063)	0.116* (0.063)
FC	-0.033 (0.063)	-0.008 (0.061)	-0.102 (0.069)	-0.066 (0.089)
DumO* FC	0.129 (0.159)	---	---	---
DumI* FC	---	-0.057 (0.139)	---	---
DumS* FC	---	---	0.214** (0.094)	---
DumA* FC	---	---	---	-0.125 (0.102)
No. of banks	35	35	35	35
observations	276	276	276	276

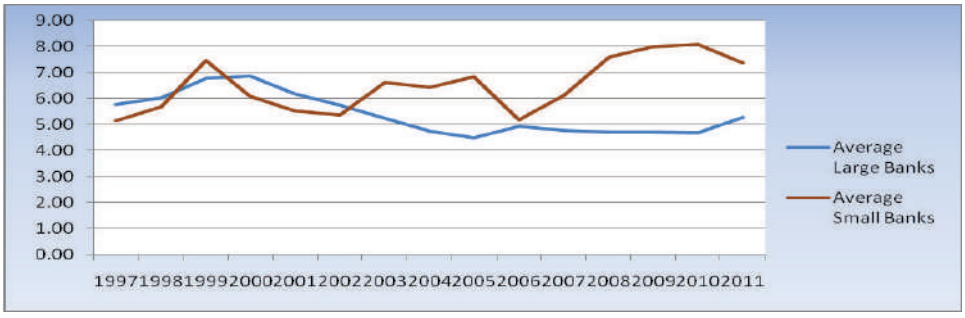
Note 1: Standard errors are in parentheses to the right of the respective estimated coefficients.
Note 2: * Significant at the 10% level, ** Significant at the 5% level, *** Significant at the 1% level.

4.2. Possible Explanation of Results: Variation in Capitalisation

Variations in capitalisation can play a significant role in making a difference in excess liquidity. It is observed that there is a significant inverse relationship between capitalisation and excess liquidity as better capitalised banks had easier access to markets and thus held less liquidity (Delechat et al., 2012).

Capitalisation for the bank age typology, where significant variation is observed in this study is presented here. The gap was much smaller at the beginning but gradually increased overtime. This is particularly true from 2002 onwards except in 2005. It can be observed that gap in capitalisation for the size typology and was insignificant for other typologies[9]. The gap increased during this period only for the size typology. This shows that capitalisation and its difference plays a key role in the significant (or insignificant) difference in behaviour according to bank-specific characteristics in times of the financial crisis.

Figure 1: Capitalisation according to size



Source: Author's own calculation based on Bankscope database.

[9] Figures for other typologies not reported here due to space.

5. Concluding Remarks

In this section, summary of results are described first. Then some policy recommendations are made based on these findings followed by a brief conclusion.

5.1 Summary

This study analysed how the financial crisis affected the excess liquidity situation of the banking sector in Bangladesh. The relationship of excess liquidity with the financial crisis was found to be insignificant which supports the strength of the banking sector as well as the economy in Bangladesh in facing this crisis.

Among the typology variables, only the size typology was found to be positive and significant. This implied that large banks had higher amount of excess liquidity due to the financial crisis. For large banks, this could be due to their lack of flexibility relative to the small banks and the diseconomies of scale after a certain threshold level. The relationships were insignificant for other typologies.

Significant and positive value of the political motive variable showed that banks did not lend excessively during election years. This is a good sign since political influence is used in some countries during the election years. This could also be due to the lack of demand during this time due to possible political uncertainty. Capitalisation was another key variable of interest and was found negative and significant, confirming the earlier results. This may support the view that recapitalisation can help banks towards higher lending and thereby reduce excess liquidity.

5.2 Policy Implications

This study highlighted a number of policy issues related to excess liquidity with the financial crisis. These are described below in the following paragraphs.

(i) Tailor-made approach for different bank sizes: Although most typologies were insignificant but the size typlogy was found to be significant. Therefore, it is observed that one-size-fits-all approach should not be applied. Rather it highlights the importance of addressing the banking sector improvement with a tailor-made-approach. As only the size typology was found to be positive and significant, more attention is required for size typology (particularly for large banks) during crisis time.

(ii) Reduction of political uncertainty in the economy: In this study, political motive was found to be positive and significant. This is also observed by others. For example, one of the reasons mentioned for excess liquidity in Bangladesh is political uncertainty (Dhaka Tribune, 7 November 2013). Therefore, political and other uncertainties need to be especially taken care of to address the problem of excess liquidity.

(iii) Using capitalisation process and making it symmetric: This study has

observed that capitalisation played a significant role in terms of reducing excess liquidity. Therefore, this should be used as a policy instrument whenever necessary. However, differences in capitalisation among banks (according to typologies) can lead to different impacts. Therefore, special attention is recommended so that all banks are capitalised in a similar way.

5.3 Conclusion

This bank-level study provides further understanding of the relationship between the financial crisis and excess liquidity in Bangladesh. The result shows that the banking sector faced the financial crisis very well and, as a result, the excess liquidity was not significantly affected. This shows the strength and resilience of the banking sector in Bangladesh.

One limitation of this study was the inability to study if foreign banks performed differently[10]. This was due to unavailability of data of foreign banks in Bankscope, the main database used in this study. Future research on this characteristic can shed further light.

Inspite of the above limitation, the inclusion of other various bank typologies captured most of the sector and suggested the need for a tailor-made policy application for the banking sector in Bangladesh. Although the banking sector behaved generally well and across most typologies, separate attention is required for the size typology during crisis time.

---

10 Though in terms of scale, the foreign banks are not significant since the 37 banks included in the study represent the banking sector in Bangladesh very well as they account for more than 99 percent of bank branches. Moreover, they had more than 90 percent of assets and deposits of the possible 47 banks including the foreign banks (Bangladesh Bank Annual Report, 2013).

References

Acharya, V. and Naqvi, H. 2012. The seeds of a crisis: A theory of bank liquidity and risk taking over the business cycle. Journal of Financial Economics 106(2), pp. 349–366.

Agenor, P-R., Aizenman, J. and Hoffmaister, A. W. 2004. The credit crunch in East Asia: What can bank excess liquid assets tell us. Journal of International Money and Finance 23. pp. 27–49.

Aikaeli, J. 2011. Determinants of excess liquidity in Tanzanian commercial banks. African Finance Journal 13 (1), pp. 47-63.

Akinboade, O. A. and Makina, D. 2010. Econometric analysis of bank lending and business cycles in South Africa. Applied Economics 42(29), pp. 3803-3811.

Al-Hamidy, A. A. 2013. Compliance and anti-money laundering. Fifth Annual Gathering on Compliance and anti-money laundering. Riyadh, 26–27 March 2013.

Ali, M. M. and Islam, A. M. 2010. Macroeconomic impacts of the global financial crisis on the Bangladesh economy. Savings and Development 34 (3), pp. 305-342.

Allen, F., K. Jackowicz and Kowalewski, O. 2013. The effects of foreign and government ownership on bank lending behavior during a crisis in Central and Eastern Europe MPRA Paper 48059.

Alper, K., Hulagu, T and Keles, G. 2012. An empirical study on liquidity and bank lending. Research and Monetary Policy Department Working Papers 1204, Central Bank of the Republic of Turkey.

Ashcraft, A., McAndrews, J. and Skeie, D. 2011. Precautionary reserves and the interbank Market. Journal of Money, Credit and Banking 43, pp. 311–348.

Bangladesh Bank. 2015. Bangladesh Economic Review.Dhaka.

Barth, J. R., G. Caprio Jr., and Levine, R. 2004. Bank supervision and regulation: What works best? Journal of Financial Intermediation 13, pp. 205–248.

Beck, T., Cull, R. and Jerome, A. 2005. Bank privatization and performance: Empirical evidence from Nigeria. Journal of Banking & Finance 29, pp. 2355–2379.

Berger, A. N. L. F. Klapper, M. S. M. Peria and Zaidi, R. 2008. Bank ownership type and banking relationships. Journal of Financial Intermediation 17, pp. 37–62.

Bertay, A. C., Demirguc-Kunt, A. and Huizinga, H. 2012. Bank Ownership and Credit over the Business Cycle: Is lending by state banks less procyclical? The World Bank, Development Research Group, Policy Research Working Paper 6110.

Bhaumik, S. K., V. Dang and Kutan, A. M. 2011. Implications of bank ownership for the credit channel of monetary policy transmission: Evidence from India. Journal of Banking and Finance 35, pp. 2418–2428.

Bonin, J. P., Hasan, I. and Wachtel, P. 2005. Privatization matters: Bank efficiency in transition countries. Journal of Banking & Finance 29, pp. 2155–2178.

Brana, S., Djibenou, M-L. and Prat, S. 2012. Global excess liquidity and asset prices in emerging countries: a pvar approach. Working Papers hal-00740102, HAL.

Cihak, M. and Hesse, H. 2008. Islamic banks and financial stability: An empirical analysis. International Monetary Fund Working Paper 08/16, Washington DC.

Cohen, B. and Shin, H. 2003. Positive Feedback Trading Under Stress: Evidence from the U.S. Treasury Market. Working Paper, London School of Economics.

Cull, R. and Peria, M. S. M. 2012. Bank ownership and lending patterns during the 2008–2009 financial crisis: Evidence from Latin America and Eastern Europe. Development Research Group, Policy Research Working Paper 6195, The World Bank .

Davydov, D. 2013. Should state-owned banks be privatized? Evidence from the Financial crisis. Presented at the Vaasa A&F Research Seminar. 16 April, 2013, University of Vaasa.

Delechat, C., Henao, C., Muthoora P. and Vtyurina, S. 2012. The determinants of banks' liquidity buffers in central America. IMF Working Paper, December 2012.

Duprey, T. 2013. Bank ownership and credit cycle: the lower sensitivity of public bank lending to the business cycle. Bank of France Working Paper 411 and Paris School of Economics Working Paper 2013-15.

Ehrmann, M., Gambacorta, L., Martinez-Pages, J., Sevestre, P. and Worms, A. 2001. Financial systems and the role of banks in monetary policy transmission in the Euro area. European Central Bank Working Paper 105.

Fadare, S. O. 2011. Banking sector liquidity and financial crisis in Nigeria. International Journal of Economics and Finance 3(5), pp. 3-11.

Fungacova, Z., Herrala, R. and Weill, L. 2013. The influence of bank ownership on credit supply: Evidence from the recent financial crisis. Emerging Markets Review 15, pp. 136–147.

Gambacorta, L. 2005. Inside the bank lending channel. European Economic Review 49, pp. 1737–1759.

Greene, W. H. 2008. Econometric analysis, 6th ed., Upper Saddle River, N. J.: Prentice Hall.

Hausman, J. A. 1978. Specification tests in econometrics. Econometrica 46, pp. 1251–1271.

Hawkins, J. and Mihaljek, D. 2001. The Banking Industry in the Emerging Market Economies: Competition, Consolidation, and Systemic Stability: An Overview. BIS Papers 4 pp. 1-44.

Islam, Q. B. T. 2016. Financial liberalisation, bank excess liquidity and lending: A bank-level study for the economy of Bangladesh (Unpublished doctoral thesis). University of Glasgow.

Kowalewski, O. and Rybinski, K. 2011. The hidden transformation: the changing role of the state after the collapse of communism in central and eastern Europe. Oxford Review of Economic Policy 27, pp. 634–657.

Kraft, E., Hofler, R. and Payne, J. 2006. Privatization, foreign bank entry and bank efficiency in Croatia: a fourier-flexible function stochastic cost frontier analysis. Applied Economics 38, pp. 2075-2088.

Lin, X. and Zhang, Y. 2009. Bank ownership reform and bank performance in China. Journal of Banking & Finance 33, pp. 20–29.

Micco, A. and Panizza, U. 2006. Bank ownership and lending behaviour. Economics Letters 93, pp. 248–254.

Micco, A. U. Panizza and Yanez, M. 2007. Bank ownership and performance. Does politics matter? Journal of Banking & Finance 31, pp. 219–241.

Montoro, C. and Moreno, R. 2011. The use of reserve requirements as a policy instrument in Latin America. BIS Quarterly Review, Bank for International Settlements.

Moore, W. 2009. How do financial crises affect commercial bank liquidity? Evidence from Latin America and the Caribbean. MPRA Paper 21473, University Library of Munich. [Online] Available from: SSRN: http://mpra.ub.uni-muenchen.de/21473/1/MPRA_paper_21473.pdf [Accessed: 1 March 2011].

Morrison, G. R. 1966. Liquidity Preferences of Commercial Banks. Chicago, IL: University of Chicago Press.

Murshid, K. A. S., Zohir, S. C., Ahmed, M., Zabid, I. and Mehdi, A. 2009. The global financial crisis: Implications for Bangladesh', BIDS-PRP Working 1.

Murta, F. T. S. and Garcia, A. M. 2010. The demand for excess reserves in the Euro area and the impact of the current credit crisis. GEMF Working Paper 2010-01.

Omran, M. 2007. Privatization, state ownership, and bank performance in Egypt. World Development 35(4), pp. 714–733.

Palma, J. G. 2009. The revenge of the market on the rentiers: Why neo-liberal reports of the end of history turned out to be premature. Cambridge Journal of Economics 33 (4), pp. 829-869.

Pontes, G. and Murta, F. T. S. 2012. The Determinants of the Bank's Excess Liquidity and the Credit Crisis: The Case of Cape Verde', retrieved at http://www.alde.es/encuentros/anteriores/xveea/trabajos/p/pdf/132.pdf [Accessed: 7 November 2013].

Rahman, M., Bhattacharya, D. Iqbal, M. A., Khan, T. I. and Paul, T. K. 2009. Global financial crisis: Discussion Series. Overseas Development Institute Paper 1: Bangladesh. London.

Raihan, S. 2010. Implications of the Global Economic Crisis for the Bangladesh Economy. 13th Annual Conference on Global Economic Analysis, June 2010. Malaysia.

Schaffer, M. 2014. http://www.stata.com/statalist/archive/2003-09/msg00595.html (accessed on 6 August 2014).

Torres-Reyna, O. 2007. Panel data analysis, Fixed & Random Effects [online] Available at: <http://dss.princeton.edu/training/Panel101.pdf>, [Accessed: 4 September 2014]

UNCTAD 2008. Trade and Development Report. New York and Geneva: United Nations publications.

Van den Heuvel, S. J. 2002. Does bank capital matter for monetary transmission? Economic Policy Review 8, pp. 258–265.

Virhiala, V. 1997. Banks and the Finnish Credit Cycle 1986-1995. Bank of Finland Studies E7.

World Bank. 2011. World Development Indicators 2011. Available at http://data.worldbank.org/indicator [Accessed: 15 December 2013].