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The Impact of Rural Banking on Credit Creation, Using Securitization Model in Ghana

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Abstract

This study aimed to analyze the impact of rural banking on credit creation, using securitization in Ghana. The rural banking concept was fantastic, but most of these banks faced liquidity challenges which could be traced back to the period of the rapid and uncontrolled credit expansion which resulted in the closure of 18 rural banks in 1992. Excessive liquidity problems are thus an indication of deeper-lying problems and are usually preceded by excessive risks taken by the bank, i.e. interest rate risk and credit risk (Koch 1995). The study, therefore, wanted to explore securitization as an alternative means of raising immediate cash. The study made use of descriptive statistics, regression analysis, and correlation coefficient to analyse data and test the hypotheses set for the study. The study used data on rural banks' assets that span from 2011 to 2014. The study also used the case study approach to creating scenarios to demonstrate the application of securitization to increasing the liquidity of three selected rural banks for credit expansion. At the end of it all, the study revealed that there was a strong positive relationship between securitization and bank liquidity. The study, therefore, recommended government through the central bank and parliament to enact appropriate laws to govern the use of securitization as an alternative means of raising funds. Securitization has many benefits, and it is up to Ghanaian banks and other non-banks to appreciate these advantages by embracing securitization.

JEL classification: G21, G23

Keywords: Rural banking, credit creation, securitization

1. Introduction

The introduction of rural banking in Ghana in 1976 is one of the many attempts by governments to provide credit to rural farmers for the expansion of their agricultural activities which is ultimately aimed at eliminating poverty. Since 1976, many rural banks numbering 137 as of January 2013 have registered to operate in Ghana (BoG 2013). The rural banking concept has been successful in that rural banks have played a major role in inculcating the habit of banking in the rural dwellers. These banks have been able to mobilise funds that are given out as loans and advances to agricultural sector activities and rural industries. The flexible credit policies and lending procedures have contributed immensely to freeing the rural population from some of the harsh conditions that characterise credits from the informal sector (Asiedu-Mante 2011).

The rural banks have played the role of providing credit to the rural sector effectively because of the introduction of the financial sector reforms in 1987 (Agyire-Tettey and Kusi 2006). However, most of these banks face liquidity challenges that could be traced back to the period of rapid and uncontrolled credit expansion that resulted in the closure of 18 rural banks in 1992. Excessive liquidity challenges indicate that the banks have taken on excessive risks, such as interest rate risk and credit risk (Koch 1995). Rural banks can obtain funds by either selling assets or borrowing funds (Burns 1984). Rural banks have often been restricted access to certain markets, and their usage of borrowed funds is thus limited (Hempel et al. 1994). They are thus more reliant on assets for liquidity while large banks have better access to liability liquidity sources. Again, the increasing credit demand has led to a reduction in the liquidity of the rural banks. This situation has eventually created a vacuum between the demand for finance and its consequent availability. For this reason, the study seeks to investigate whether rural banks in Ghana can use securitization as an alternative source of liquidity.

Securitization as a financing technique can help to influence a bank's access to liquidity and also guarantee the safety of the financial system of a country. The question that this study intends to address is whether asset securitization can be implemented in the Ghanaian banking realm to reduce the liquidity risk faced by these institutions. This paper thus aims to indicate how Ghanaian rural banks can use securitization to improve their cash positions and increase their credit supply to the rural folks. The current paper aims to indicate how securitization can be applied by Ghanaian rural banks to improve their access to liquidity and increase credit to the rural farmers. Specifically, the study analyses the impact of

securitization on the liquidity of rural banks in Ghana. The study further analyses the impact of rural banking on poverty reduction in Ghana. With respect to the above objectives, the study sets out to test the following hypothesis "There is no significant relationship between securitization and liquidity of rural banks" at 5% level of significance

2. Literature Review

Ranieri (1996) writes that "The term securitization has an interesting origin. It first appeared in a "Heard on the Street" column of the Wall Street Journal in 1977. Ann Monroe, the reporter responsible for writing the Column called him to discuss the underwriting by Salomon Brothers of the first conventional mortgage pass-through security, the landmark Bank of America issue. She asked Ranieri what he called the process and, for want of a better term, he said securitization. Wall Street Journal editors are sticklers for good English, and when the reporter's column reached her editor, he said there was no such word as securitization. He complained that Monroe was using improper English and needed to find a better term. Late one night, Ranieri said, he received another call from Ann Monroe asking for a real word. Ranieri replied, "But I don't know any other word to describe what we are doing. You will have to use it." The Wall Street Journal did so in protest, noting that securitization was a term concocted by Wall Street and was not a real word. So, we have come a long way. A decade and a half ago securitization was not even a real word, and today we hold seminars on the concept."

According to Rose and Hudgins (2010), securitization of loans and other assets is a simple idea for raising new funds and reducing risk exposure. Securitizing assets require setting aside a group of relatively illiquid assets, such as home mortgages or credit card loans, and issuing relatively liquid securities or financial claims against those assets in the open market. As the borrowers repay the principal and interest owed on their loans – that returns flow to holders of the securities. Consequently, loans are transformed into publicly traded securities. Therefore, securitization is using the security markets to fund a portion of a lender's loan portfolio, allocate capital more efficiently, diversify funds sources, and possibly lower the cost of fundraising. For its part, the securitizing institution receives back the money it initially expended to acquire the assets and uses those funds to buy new assets or to cover operating expenses.

Gomez (2008) also defined securitization as a method of funding receivables of whatever kind (mortgages, debts, leases, loans, credit card balances, etc.). It involves producing bearer asset-backed securities that can be freely traded and secured on a portfolio of receivables. Donaldson, in Henderson & Scott (1988) defined securitization as the process of structuring and issuing negotiable investments to investors in order to spread a risk that is usually taken by a single lender or syndicate, over a broad group of investors. Cox (1990) and Kendall (1996) state that securitization is the process where pools of individual loans, receivables or debt instruments are pooled and packaged into securities, that are rated and enhanced, and finally distributed to investors. The Comptroller of Currency (1997), states that asset securitization is the structuring process of packaging loans and other receivables and selling them as asset-backed securities, using the services of an underwriter.

From the viewpoint of credit originators, the securitization market allows them to transfer some of the risks of ownership to investors who are more willing to manage them. By so doing, originators can access the funding markets at debt ratings higher than their overall corporate ratings, to give them access to broader sources of finance at more favourable rates. By removing the assets and supporting debt from their balance sheets, they can save part of the costs that arise out of on-balance-sheet financing and manage potential asset-liability mismatches and credit concentrations.

Asset securitization, according to the Comptroller of Currency (1997), started with the funding of mortgage pools in the 1970s. Years before that, banks acted as portfolio lenders and held loans until they matured, or borrowers repaid them. The banks often used deposits or debt to fund these loans. However, after World War II, the depository institutions simply could not meet increasing demand for housing loans. Bank and the other financial intermediaries identified a market opportunity and sought ways to increase the sources of mortgage financing. To attract investors, investment bankers eventually came out with an investment vehicle to isolate clear mortgage pools, segment the credit risk, and structure the cash flows from the underlying loans. Although it took several years for originators to develop efficient mortgage securitization structures, loan originators eventually realised that the process was readily transferable to other types of loans as well. Since the mid-1980s, smart technology, and more sophisticated investors have together made securitization of assets the fastest growing activity in the capital market.

The market for mortgage-backed securities was boosted by the government agencies that stood behind these securities. To facilitate the securitization of nonmortgage assets, businesses substituted private credit enhancements. First, they over-collateralized pools of assets; shortly after that, they improved third-party and structural improvements. In 1985, securitization techniques that had been developed in the mortgage market were applied for the first time to a class of nonmortgage assets — automobile loans. A pool of assets second only to mortgages, auto loans were a good match for structured finance. Their maturities, considerably shorter than those of mortgages, made the timing of cash flow more predictable, and their long statistical histories of performance gave investors' confidence. The first significant bank credit card sale came to market in 1986 with a private placement of \$50 million of bank card outstanding. This transaction demonstrated to investors that, if the yields were high enough, loan pools could support asset sales with higher expected losses and administrative costs than was true within the mortgage market. Sales of this type — with no contractual obligation by the seller to provide recourse — allowed banks to receive sales treatment for accounting and regulatory purposes (easing balance sheet and capital constraints), while at the same time enabling them to retain origination and servicing fees.

After the success of this initial transaction, investors grew to accept credit card receivables as collateral, and banks developed structures to normalise the cash flows. The next growth phase of securitization will likely involve nonconsumer assets. Most retail lending is readily "securitizable" because cash flows are predictable. Today, formula-driven credit scoring and credit monitoring techniques are widely used for such loans, and most retail programs produce

relatively homogeneous loan portfolios. Commercial financing presents a greater challenge. Because a portfolio of commercial loans is typically less homogeneous than a retail portfolio, someone seeking to invest in them must often know much more about each credit, and the simpler tools for measuring and managing portfolio risk are less effective. Nonetheless, investment bankers and asset originators have proven incredibly innovative at structuring cash flows and credit enhancements. Evidence of this can be seen in the market for securitized commercial real estate mortgages. Commercial real estate is one of the fastest-growing types of nonconsumer assets in the securitization markets, which fund approximate 10 percent of commercial mortgage debt (Comptroller of Currency 1997).

According to Lieske and Blumenfeld (1999), a typical securitization process is in six steps:

- Step 1: The lender, also called the originator, in most cases a financial institution, grants a loan to a borrower (the obligor). The originator is the entity that offers the assets subject to the securitization (Sargent 1995). Securitization is not limited to only banks and financial institutions. Any company that is characterised by financial stability, as well as standardised and centralised servicing of debt is well suitable for securitization (Elmgren 1995). Fergus & Jacobs (2000) indicate that the success of securitization depends on the originator's ability to offer new assets of a similar or better quality on an ongoing basis.
- Step 2: The loan has to be kept until the lender has a sufficient volume of loans to securitize (Lieske & Blumenfeld 1999).
- Step 3: The lender then sells the loans to a special purpose vehicle (Lieske & Blumenfeld 1999). The special purpose vehicle (SPV) is an independent entity, specially formed to purchase the loans from the originator (Wood 1995). It is organised for a particular purpose and its activities limited to those necessary to achieve such a purpose in the transaction (Taplin 2001). The SPV has to keep the underlying assets and issue the relevant asset-backed instruments to the interested investors. The SPV is usually insulated to ensure that events that happen to the originator, such as bankruptcy, do not affect the SPV. This process is referred to as making the SPV 'bankruptcy remote'. Secondly, the transfer of funds from the originator to the SPV must be done through a 'true sale' of receivables and without any interference (Schwarcz 1991).
- Step 4: The special purpose vehicle (SPV) pays for the loans by simultaneously selling certificates, representing ownership of the loans, to investors. A credit rating agency has to rate the securities issued by the SPV (Lieske & Blumenfeld 1999). This rating should reflect the quality of the securitization issue (Fergus & Jacobs 2000). The rating is aimed at providing a view of the credit risk of the security to the investor. The role that rating agencies play in the securitization process can thus not be over emphasized (DCR 1999 and Baum 1996). The rating agency also continues to assess the performance of the assets in the portfolio and credit enhancement levels throughout the life of the transaction, through which relieve provided to the trustee.
- Step 5: A servicer is appointed to provide administrative duties for the duration of the issue (Lieske & Blumenfeld, 1999). Its duties should involve the collection of cash from borrowers, management of arrears, and client relationship management. The originator usually performs this function, but there should also be a 'standby servicer' in place to continue this function should the originator is unable to continue this task (DCR 1999). The servicer charges a market-related fee for the administrative services (Oliver & Sallis 2000). A trustee can also be appointed to ensure that investors are paid by the terms of the securities and to monitor the performance of the servicer (Lieske & Blumenfeld, 1999). The trust is established for the benefit of the investors in the paper issued by the SPV and the trustee handles protecting the rights of the investors. It controls and monitors the SPV and can close down the vehicle in circumstances it deems appropriate. If the trustee appointed is a highly reputable bank or auditor, this introduces integrity into the securitization process (Oliver & Sallis 2000).
- Step 6: The borrower is instructed to make payments to the servicer and direct all inquiries to the servicer (adapted from Lieske & Blumenfeld 1998, DCR 1999, Koornhof 1996, and Thompson 1995)

Asantey (2013) however, agrees with Antoine et al. (2013) and Gambacorta & Marques-Ibanez, 2011, that the process involves two steps. In step one, a company with loans or other income-producing assets, the originator, identifies the assets it wants to remove from its balance sheet and pools them into what is called the reference portfolio (Antoine et al., 2013). It then sells this asset pool to an issuer, such as a special purpose vehicle (SPV); an entity set up, usually by a financial institution, specifically to purchase the assets and realise their off-balance-sheet treatment for legal and accounting purposes.

In step two, the issuer has to finance the acquisition of the pooled assets by issuing tradable, interest-bearing securities that have to be sold to capital market investors (Antoine et al., 2013). The investors receive fixed, or floating rate payments from a trustee account funded by the cash flow generated by the reference portfolio. In most cases, the originator services the loans in the portfolio collects payments from the original borrowers and passes them on less-a-servicing fee directly to the SPV or the trustee.

The securitization process, according to Cetorelli and Peristiani (2012), redistributes a bank's traditional role into several specialised functions. The securitization process includes issuer, underwriter, a rating agency, servicer, and trustee. The issuer (sometimes referred to as sponsor or originator) has to put the collateral assets together for the asset-backed security. Sponsors are often the loan originators of the portfolio of securitized assets. In a securitization, assets are pooled together and sold to the external legal entity, often referred to as a special-purpose vehicle (SPV). The SPV has to buy the assets from the issuer or sponsor with funds realised from issuing the security tranches to the investors. The transfer of these assets to the SPV legally obtains a true sale opinion that sets issuer ownership separate and insulates asset-backed investors in the event of an issuer's bankruptcy. The SPV often transfers the assets to another special-

purpose entity—typically a trust. This second entity issues the security shares backed by those assets under GAAP sale rules.

Another important role in the securitization process is the role of a servicer, a party in charge of processing payments and interacting with borrowers, enforcing the collection measures prescribed by the pooling and servicing agreements and, if needed, liquidating the collateral in the event of default. In cases in which the issuer is also the lender of the underlying assets, there is a greater likelihood that the issuer would retain these servicing rights. In addition to managing payment flows, servicers are expected to provide administrative help to the trustee. The trustee is an independent firm with the fiduciary responsibility for managing the Trust and representing the rights of the investors (that is, the note holders). The primary role of the trustee is to disperse payments to investors and to oversee the security on behalf of the investors by collecting information from the servicer and issuer while validating the performance of the underlying collateral. The role of underwriters in structured finance is similar to that in other methods of securities issuance. Asset-backed security underwriters fulfill traditional arranger roles of representing the issuer (here, the SPV or Trust). The primary job of the underwriter is to analyse investor demand and design the structure of the security tranches accordingly. Consistent with traditional, negotiated cash-offer practices, underwriters of asset-backed bonds would buy at a discount a specified amount of the offer before reselling to investors. In addition to marketing and selling these securities, underwriters provide liquidity support in the secondary trading market. Because asset-backed securities trade in over-the-counter markets, the willingness of underwriters to participating as broker-dealers by maintaining an inventory and making a market enhances the issuance process. The underwriter, working closely with the rating agencies, helps design the tranche structure of the SPV to accommodate investors' risk preferences. Under the guidance of rating agencies, the expected cash flows from securitized assets are redirected by the underwriter into multiple tranches.

Rating agencies provide certification services to investors who need to carry out an investigation of the underlying assets and evaluate the structure of the security. Ratings are necessary because many large institutional investors and regulated financial firms are required to hold mostly investment-grade assets.

Frost (1997) argues that asset securitization is a financial revolution in which corporations sell financial assets to a specially formed entity that in turn taps financial markets for the purchase price. The device provides firms with an alternative to raising capital through traditional debt and equity markets. Securitization is a means through which a firm can lower its overall cost of capital by limiting the risk facing investors in the securitized assets. Commentators have described asset securitization as "one of the most important financing vehicles in the United States." Interest in the device is increasing dramatically as more companies see it as a way to decrease their cost of capital. His article examined the reasons for which asset securitization had become such an attractive financing device and developed an analytical model that focused on the market failures that explained the reasons firms used asset securitization — identifying two possible explanations of the device and examining the normative problems associated with each.

Loutskina (2004) conducted an extensive study to establish that by allowing banks to substitute cash and securities for loans, securitization reduced the sensitivity of bank lending to the availability of the external sources of funds thus diminishing the need for the monetary authority to affect bank lending through open market operations. Ferguson (2008) evaluated the position of securitization of non-performing loans in Russia and concluded that asset securitization was a growing trend in Russia as companies troubled by poor credit ratings sought access to capital at lower costs than they would be allowed in traditional equity or debt markets. Ketkar and Ratha (2001) recommended that emerging countries should not obtain low-cost, long-term loans during financial crises. Thus, securitization of future receivables could help investment-grade public and private sector entities in these countries to obtain credit ratings higher than those of their governments and raise funds in international capital markets. Kothari and Gupta (2004) studied the development of the mortgage-backed securities market in India and examined the relevance of securitization. Both agency-backed securitization (i.e. MBSs issued by government sponsored agencies which promote mortgage secondary markets) and private label securitization (i.e. mortgage-backed issues securitized by non-agency financial institutions) over the development of housing refinance market in India. The research focused on the theoretical aspects mostly with little emphasis on empirical research.

Nibedita Roy (2011) also conducted a study to examine the position of securitization in the Indian banking industry and the impact of securitization on the performance of not-performing assets, loans and advances to ascertain whether securitization was able to cast the beneficial impact on the Indian banking industry's performance and risk management. The study concluded that as banks increased the volume of securitization the performance level of banks increased by reducing the level of non-performing assets, improving the liquidity, performance and risk management. Nibedita and Chakraborty (2011) conducted a study, using regression analysis to identify the driving factors that influence the securitization mechanism amongst a sample of banks, nonbanks from the Indian banking industry. Various parameters were studied such as Net NPA, Interest Income, Net Profit/Loss, Liquidity Ratio, Investments, Capital Adequacy Ratio, Cost of Funds and Net Worth with the regression analysis and it was concluded that the most effective drivers for securitization in the Indian Banking Industry are Quick Ratio (Liquidity Ratio), Net Worth and Interest Income as a percentage of the total assets.

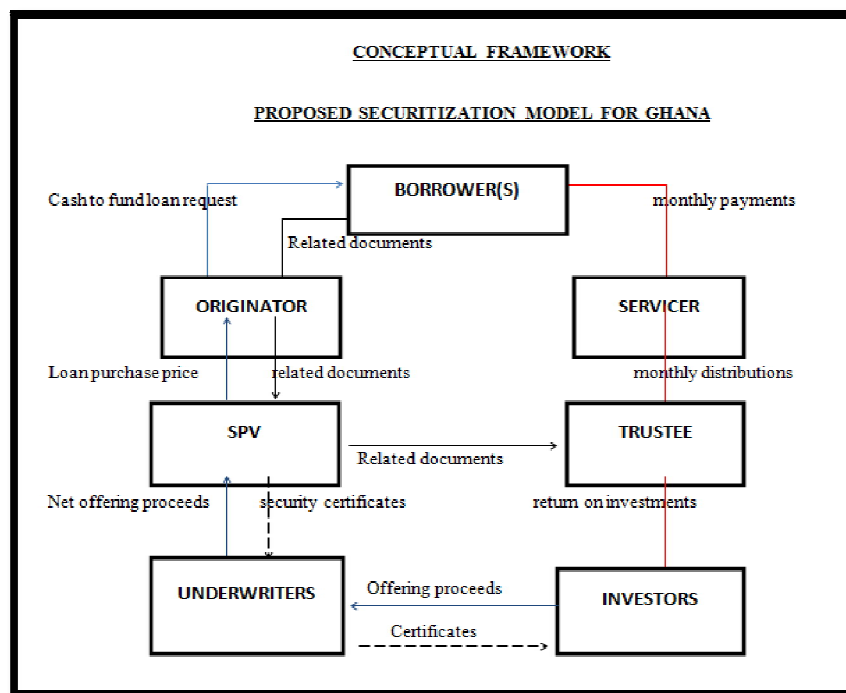


Figure 1: Conceptual Framework

Source: Augmented from Meritage Mortgage Loan Trust 2005-2,
Asset-Backed Certificates, Series 2005-2

3. Empirical Strategy

This study sought to analyze how securitization could be used by Ghanaian rural banks to improve their liquidity and expand credit to the rural communities with the aim of reducing poverty in Ghana. The study used descriptive statistics, regression analysis and correlation co-efficient to test the hypotheses set for the study. The study used data on rural banks' assets that span from 2011 to 2014. The study also used the case study approach by creating scenarios to demonstrate the application of securitization to increasing the liquidity of three selected rural banks for credit expansion.

3.1. Derivatives

The study calculated the liquidity ratios of the sample study from 2011 to 2014. These liquidity ratios are described below.

3.1.1. Cash Position Pointer

The cash position pointer compares vault cash and due from other banks to the total asset base of the institution under study and this is defined as:

$$\text{Cash Position Pointer} = \frac{\text{cash and deposits due from banks}}{\text{Total assets}}$$

This ratio ranges between 0 and 1. A larger proportion of cash indicates that the institution is in a stronger position to handle immediate cash needs.

3.1.2. Capacity Ratio

The mirror image to the cash position pointer is the capacity ratio, that is understood as a negative liquidity indicator:

$$\text{Capacity Ratio} = \frac{\text{Net loans}}{\text{Total assets}}$$

where net loans are defined as total loans minus the accumulated loss allowance for bad loans. The capacity ratio is an indication of the extent to which an institution has loaned out its funds; a higher capacity ratio is an indication of a lower institution's liquidity.

3.1.3. Total Deposit Ratio

A high total deposit ratio shows a large base of retail deposits.

$$\text{Total Deposit Ratio} = \frac{\text{Total customer deposits}}{\text{Total assets}}$$

Higher total deposit ratio goes with lower perceived liquidity risk because contrary to purchased funds, retail deposits are less sensitive to changes in interest rates or a minor deterioration in business performance.

3.1.4. Borrowed Funds Ratio

The borrowed funds ratio measures the amount of commercial short-term funding to the total balance sheet volume. This is defined as:

$$\text{Borrowed Funds Ratio} = \frac{\text{Short term borrowings}}{\text{Total assets}}$$

A large proportion of short-term borrowings represents a liquidity risk, because this kind of funds is very sensitive to interest rates movements and the perceived credit risk of the borrower.

3.1.5. Loan-to-Deposit Ratio:

Many banks and financial analysts monitor loan-to-deposit ratios as a general measure of liquidity: **Loan - to - Deposit Ratio = $\frac{\text{Net loans}}{\text{Total deposits}}$**

Loans are considered the least liquid of assets, while deposits are understood as the primary source of funds. A high ratio indicates illiquidity, because in this case a bank is fully loaned-up relative to its stable funding. Implicitly, it is believed that new loans must be financed with largely borrowed funds. A low ratio indicates that a financial institution has additional liquidity, since it can grant new loans financed with stable deposits.

4. Discussion of Results

4.1. Derivative Data Information and Analysis

The following liquidity ratios of banks: cash position pointer, capacity ratio, total deposits ratio, loan to deposit ratio and borrowed funds ratio, were calculated using the balance sheet of the sample study (Mumuadu Rural Bank, South Akim Rural Bank, and Adonten Community Bank), spanning from 2011 to 2014.

Name of Institution	2011	2012	2013	2014
Mumuadu Rural Bank	18.31%	16.56%	11.27%	10.31%
South Akim Rural Bank	21.10%	17.13%	16.71%	18.74%
Adonten Rural Bank	13.59%	13.69%	13.01%	11.21%

Table 1: Cash Position Pointer

Source: Financial Statements of Mumuadu Rural Bank, South Akim Rural Bank and Adonten Community Bank 2011 To 2014

The cash position pointer compares vault cash and demand deposits at other banks including the central bank to the total asset base of the institution. From Table 2, Mumuadu Rural Bank's liquidity level was a low percentage score of 18.31 percent in 2011, which reduced to 16.56 percent in 2012 and further fell to 11.27 percent in 2013 and 10.31 percent in 2014. South Akim Rural Bank also had 21.10 percent in 2011, which had to fall in 2012 to 17.13 percent, and a further drop to 16.71 percent in 2013, showed a slight increase to 18.74 percent in 2014; though slightly higher than Mumuadu Rural Bank, South Akim Rural Bank's liquidity level was not safe. Adonten Community Bank also had 13.59 percent in 2011, maintained the 13 percent level in 2012 and 2013 and dropped to 11.21 percent in 2014, still a dangerous liquidity level. The low liquidity levels indicate that the sample study was unable to handle immediate cash needs within the period under study.

Name of Institution	2011	2012	2013	2014
Mumuadu Rural Bank	55.36%	61.02%	62.23%	62.90%
South Akim Rural Bank	39.06%	37.35%	41.05%	42.45%
Adonten Rural Bank	42.02%	35.47%	36.17%	33.33%

Table 2: Capacity Ratio

Source: Financial Statements of Mumuadu Rural Bank, South Akim Rural Bank, And Adonten Community Bank 2011 To 2014

The capacity ratio indicates the extent to which an institution has loaned out its funds the higher the capacity ratio, the lower the institution's liquidity. The capacity ratio of Mumuadu Rural Bank in 2011 was 55.36 percent and increased steadily in 2012 to 61.02 percent. There was a slight rise to 62.23 percent in 2013 and a further increase to 62.90 percent in 2014, indicating that the bank had given quite a lot of credit from its deposits and exposing the bank to slightly high liquidity risk. Adonten Community Bank's capacity ratio was 42.02 percent in 2011, reduced to 35.47 percent, 36.17 percent and 33.33 percent in 2012, 2013, and 2014 respectively. South Akim Rural Bank earned a score of 39.06 percent in 2011 but showed a slight reduction to 37.35 percent in 2012. It further increased to 41.05 percent in 2013 and 42.45 percent in 2014 respectively. These two low capacity ratio levels show that Adonten Community Bank and South Akim Rural Bank used bigger portions of their deposits for other less risky investments.

4.1.1. Total Deposit Ratio

The higher the total deposit ratio, the lower is the perceived liquidity risk.

Institution	2011	2012	2013	2014
Mumuadu Rural Bank	76.96%	76.04%	76.84%	76.23%
South Akim Rural Bank	76.96%	84.44%	81.82%	74.97%
Adonten Rural Bank	74.95%	76.60%	72.23%	75.59%

Table 3: Total Deposits Ratio

Source: Financial Statements of Mumuadu Rural Bank, South Akim Rural Bank and Adonten Community Bank 2011 To 2014

It could be seen from Table 3 that all the four banks maintained their total deposits ratios at relatively appreciable levels. Mumuadu Rural Bank maintained a 76 percent level, moving up and down yet within the 76 percent range. South Akim Rural Bank's level was 76.96 percent as Mumuadu Rural Bank in 2011, it increased to 84.44 percent in 2012, and fell to 81.82 percent in 2013 and a further drop to 75.59 percent in 2014. Adonten Community Bank also maintained 74.95 percent in 2011, increased to 76.60 percent in 2012, dropped to 72.23 percent in 2013 but increased again to 75.59 percent in 2014. The above average total deposits levels indicate that the sample study depended on more deposits for their credit than borrowed funds, thereby reducing their liquidity risks to tolerable levels.

4.1.2. Loan-to-Deposit Ratio

Name of Institution	2011	2012	2013	2014
Mumuadu Rural Bank	71.85%	80.24%	80.99%	82.51%
South Akim Rural Bank	46.69%	44.23%	50.17%	56.62%
Adonten Rural Bank	56.07%	46.30%	50.07%	44.09%

Table 4: Loan-To-Deposit Ratio

Source: Financial Statements of Mumuadu Rural Bank, South Akim Rural Bank, and Adonten Community Bank 2011 To 2014

Many banks and bank analysts monitor loan-to-deposit ratio as a general measure of liquidity. A high ratio indicates illiquidity. Table 4 above indicates that in 2011, Mumuadu Rural Bank's loan-to-deposit ratio was as high as 71.85 percent. It increased to 80.24 percent in 2012 and a slight increase to 80.99 percent in 2013, with a further increase to 82.51 percent in 2014, which showed illiquidity. South Akim Rural Bank, on the other hand, had a ratio as low as 46.69 percent in 2011. The score dropped to 44.23 percent in 2012, but increased again to 50.17 percent in 2013 and showed a further increase to 56.62 percent in 2014. Relatively, South Akim Rural Bank was more liquid than Mumuadu Rural Bank. Adonten Community Bank's loan-to-deposit ratio was 56.07 percent in 2011. It dropped by 10 percent to 46.30 percent in 2012, but increased slightly to 50.07 percent in 2013 and dropped again to 44.09 percent in 2014, also indicating a relatively higher liquidity level. It could be concluded that Mumuadu Rural Bank, in this case was fully loaned-up about its stable funding, implying that new loans had to be financed with largely borrowed funds. The other two banks' (South Akim Rural Bank and Adonten Community Bank) relatively low ratios suggest that the banks have additional liquidity since they can grant new loans financed with stable deposits.

4.1.3. Borrowed Funds Ratio

Name of Institution	2011	2012	2013	2014
Mumuadu Rural Bank	3.13%	2.34%	0.91%	0.05%
South Akim Rural Bank	0.97%	0%	1.45%	7.72%
Adonten Rural Bank	9.49%	3.77%	2.51%	2.91%

Table 5: Borrowed Funds Ratio

Source: Financial Statements of Mumuadu Rural Bank, South Akim Rural Bank and Adonten Community Bank 2011 To 2014

The borrowed funds ratio measures the amount of commercial short-term funding to the total balance sheet volume. A large proportion of commercial short-term borrowings represents a liquidity risk. Table 5 represents the borrowed funds ratios of the sample study from 2011 to 2014. Mumuadu Rural Bank's borrowed funds ratio was 3.13 percent in 2011, indicating a very low liquidity risk. The bank continued to reduce this liquidity risk further to 2.34 percent in 2012, 0.91 percent in 2013, and 0.05 percent in 2014. South Akim Rural Bank, however, in 2011 had 0.97 percent, reduced it to 0 percent in 2012, but increased to 1.45 percent in 2013 and 7.72 percent in 2014. This bank's exposure to liquidity risk during the period under study was also very low. Adonten Community Bank had a relatively high borrowed funds ratio of 9.49 percent in 2011, but managed to reduce this ratio to 3.77 percent in 2012, 2.51 percent in 2013, and 2.91 percent in 2014, all indicating very low liquidity risk.

4.2. Application of Securitization in Ghana: Case Study of Three Selected Rural Banks

The study presents three case studies: South Akim Rural Bank, Mumuadu Rural Bank and Adonten Community Bank. On the balance sheet of South Akim Rural Bank in the year 2011, the bank had GH¢ 7,264,309 in loans and advances, that could be used as an underlying asset. Mumuadu Rural Bank, in 2014, had GH¢ 17,346,957 in advances which can also serve as an underlying asset (see Appendix 3, page 85), and Adonten Community Bank, in 2013 had GH¢ 3,683,647.23 in loans and advances that could also be used as an underlying asset

4.2.1. Case Study 1: South Akim Rural Bank

South Akim Rural Bank is one of the rural banks in the Eastern Region in Ghana. The study presents the bank's liquidity ratios in 2011 in the table below.

Ratio	2011
Cash Position Pointer	0.2110
Capacity Ratio	0.3906
Total Deposits Ratio	0.8367
Loan to Deposit	0.4669
Borrowed Funds Ratio	0.0097

Table 6: South Akim Rural Bank's Liquidity Position in 2011
Source: Financial Statements of South Akim Rural Bank 2011

From the Table above, it could be concluded that South Akim Rural Bank's liquidity to meet immediate cash request was relatively low and its capacity ratio of 39 percent also implies that the bank could not honour all the loan requests that it received. The bank's perceived liquidity risk of 84 percent is an indication of a lower liquidity risk, implying that the rural bank needs additional source of funds to meet customers' loan requests.

4.2.1.1. Scenario 1

In this scenario, South Akim Rural Bank's balance sheet for 2011 indicates net loan of GH¢ 7,264,309. Suppose South Akim Rural Bank creates a special purpose vehicle and sells the illiquid assets to it or sells these assets to an existing vehicle. In a case where the sample study initially securitizes GH¢ 7,264,309, the liquidity ratios are likely to improve and the liquidity level of this bank will also improve. South Akim Rural Bank has the option to use the new funds to increase its loan portfolio or use the funds to restructure its balance sheet about its asset composition. For example, the bank can use the proceeds from the sale to meet the demand for more loans from its customers. In this instance, profitability of the bank is expected to improve tremendously. Suppose the new funds are disbursed as follows: 80 percent of the new funds (GH¢ 5,811,447.20) goes into new loans and the remaining 20 percent (GH¢ 1,452,861.8) is used as deposits with other banks, the liquidity levels of the bank will slightly change as illustrated in Table 7 below.

Ratio	Value (Before)	Value (After)
Cash position pointer	0.2110	0.2892
Capacity ratio	0.3906	0.3125
Total deposit ratio	0.8367	0.8367
Loan to deposit	0.4669	0.3735
Borrowed fund ratio	0.0097	0.0097

Table 7: Liquidity Ratios of South Akim Rural Bank after Securitization in 2011
Source: Financial Statements of South Akim Rural Bank 2011

It could be seen from Table 7 that the bank's cash position pointer would increase from 21.10 percent to 28.92 percent implying that the bank would be better prepared than before to meet immediate cash demands after the securitization exercise. The capacity ratio would drop from 39.06 percent to 31.25 percent, also implying that the bank's liquidity level would improve after the securitization exercise. The loan-to-deposit ratio would also drop from 46.69 percent to 37.35 percent implying that the sample study would have raised additional funds to be able to grant new credit financed with stable deposits.

4.2.2. Case Study 2: Adonten Community Bank

4.2.2.1. Scenario 2

In this scenario too, Adonten Community Bank's balance sheet for 2013 indicates net advances of GH¢ 3,683,647.23. Suppose Adonten Community Bank creates a special purpose vehicle and sells the illiquid assets to it or sells these assets to an existing vehicle so that the bank could remove these assets from its balance sheet for 2013. Suppose again that the bank securitizes GH¢ 3,683,647.23, and, therefore, removes that same amount from its balance sheet, it could use the proceeds in either of two ways: it could use the GH¢ 3,683,647.23 to diversify its investments, obtain additional liquid assets, or increase its loan portfolio. It is believed that the income level of this bank will rise, the bank's use of borrowed funds as a source of liquidity will decline, and the bank's standing within the banking community will be enhanced, thus opening up alternative sources of funds that have not been previously accessible. Alternatively, the bank

could use the new funds to restructure its balance sheet regarding asset composition. For example, suppose GH¢ 3,315,282.51 is used to acquire new loans, and GH¢ 368,364.72 is kept with other banks, the liquidity ratios of this bank will change as illustrated in Table 8 below.

Ratio	Value (Before)	Value (After)
Cash position pointer	0.1301	0.1662
Capacity ratio	0.3619	0.3255
Total deposit ratio	0.7223	0.7223
Loan to deposit	0.5007	0.4507
Borrowed fund ratio	0.0251	0.0251

Table 8: Liquidity Ratios of Adonten Community Bank after Securitization in 2013
Source: Financial Statements of Adonten Community Bank 2013

From Table 4.8, it could be seen that the bank's position to handle immediate cash needs would increase from 13.01 percent to 16.62 percent after the securitization programme. Its capacity ratio would also drop from 36.19 percent to 32.55 percent, indicating a stronger liquidity position. The loan-to-deposit ratio would also drop from 50.07 percent to 45.07 percent implying that the bank would have additional funds to be able to grant new credit.

4.2.3. Case Study 3: Mumuadu Rural Bank

4.2.3.1. Scenario 3

Scenario 3 is the case of Mumuadu Rural Bank. The balance sheet of this bank for 2014 is presented in Appendix 3. In this scenario, Mumuadu Rural Bank's balance sheet for 2014 indicates net loans of GH¢ 17,346,957. Suppose Mumuadu Rural Bank creates a special purpose vehicle and sells the illiquid assets to it or sells these assets to an existing vehicle to raise new funds for immediate use so that it can remove these assets from its balance sheet for 2014. Suppose again that the bank securitizes the GH¢ 17,346,957, the liquidity level of this bank will improve. Mumuadu Rural Bank has the option to use the new funds to increase its loan portfolio, or use the funds to restructure its balance sheet in relation to its asset composition. Suppose, for example, the bank uses 80 percent, GH¢ 13,877,565.60, of the proceeds from the sale to meet the demand for more loans from its customers and uses the remaining 20 percent (GH¢ 3,469,391.40) against withdrawals. In this case, the liquidity ratios will change as illustrated in Table 4.9. Profitability of this bank will also be expected to increase.

Ratio	Value (Before)	Value (After)
Cash position pointer	0.1031	0.2289
Capacity ratio	0.6290	0.5032
Total deposit ratio	0.7623	0.7623
Loan to deposit	0.8251	0.6601
Borrowed fund ratio	0.0005	0.0005

Table 9: Liquidity Ratios of Mumuadu Rural Bank after Securitization in 2014
Source: Financial Statements of Mumuadu Rural Bank 2014

From Table 9, it could be seen that the bank's position to handle immediate cash needs would increase from 10.31 percent to 22.89 percent after the securitization programme. Its capacity ratio would also drop from 62.90 percent to 50.32 percent, indicating a stronger liquidity position. The loan-to-deposit ratio would also drop from 82.51 percent to 66.01 percent implying that the bank would have additional funds to be able to grant new credit. Total deposit ratio and borrowed funds ratio would remain the same in all the three scenarios.

4.3. Data Normality Analysis

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Before securitization	.142	15	.200*	.910	15	.137
After securitization	.114	15	.200*	.942	15	.406

Table 10: Tests of Normality

a. Lilliefors Significance Correction

*. This Is a Lower Bound of the True Significance

Table 10 presents the normality test of the secondary data used for the study. The Shapiro-Wilk column of the table indicates that the data used passed the normality test.

4.4. Reliability Analysis

Cronbach's Alpha	No of Items
.983	2

Table 11: Reliability Result

Table 11 presents result of the reliability test. The Cronbach's Alpha of 0.983 indicates a very high overall internal consistency between the two items representing the information-sharing factor.

4.5. Correlation Analysis

		Before Securitization	After Securitization
Before securitization	Pearson Correlation	1	.973**
	Sig. (2-tailed)		.000
	N	15	15
After securitization	Pearson Correlation	.973**	1
	Sig. (2-tailed)	.000	
	N	15	15

Table 12: Correlation Results

** Correlation is Significant at the 0.01 Level (2-tailed)

Table 12 presents the correlation results. It could be seen from the results that the two variables are positively correlated and this positive relationship is very significant ($r = 0.973$, $p < 0.001$). This means that as the bank securitizes its illiquid assets to increase liquidity, its liquidity ratios also improves.

4.6. Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.973 ^a	.947	.943	.0659728

Table 13: Model Summary

a. Predictors: (Constant), before Securitization

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.005	1	1.005	230.897	.000 ^a
	Residual	.057	13	.004		
	Total	1.062	14			

Table 14: ANOVA^b

a. Predictors: (Constant), before Securitization

b. Dependent Variable: after Securitization

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.031	.028		1.079	.300
	Before securitization	.871	.057	.973	15.19 5	.000

Table 15: Coefficients^a

a. Dependent Variable: After Securitization

The prediction equation is: $Y = a + bX$, where Y = the predicted dependent variable, a = constant, b = unstandardized regression coefficient, and X = value of the predictor variable. For example, if a bank's cash position indicator is 0.1031 and the bank increases its cash and due with other banks by 0.20 after securitization, its liquidity ratio cash position is predicted as:

$Y = 0.031 + 0.871(X)$, therefore, $Y = 0.031 + 0.871(0.2) = 0.2052$. However, in Table 13, the standard error of the estimate is 0.0659728. This means that at the 95 percent confidence interval, the predicted cash position pointer ratio after securitization lies between the levels of 0.06597 (0.2052 - (1.96 x 0.06597)) and 0.3345 (0.2052 + (1.96 x 0.06597)). The coefficient of determination (R - square) in Table 13, which is 0.947 means that 94.7 percent of the changes in the liquidity ratios after securitization is caused by the percentage changes in the liquidity levels of the rural banks.

Table 14 presents results from the test of the null hypothesis that there is no significant relationship between securitization and liquidity of rural banks. The table shows a computed F statistic of 230.897 and an observed significance level of 0.001 to confirm that the null hypothesis (that there is no significant relationship between securitization and liquidity of rural banks) has been rejected by this study.

5. Findings and Conclusions of Derivative Analysis

The following conclusions have been drawn from the analysis of the balance sheets of the three rural banks namely: Mumuadu Rural Bank, South Akim Rural Bank, and Adonten Community Bank. First, the low liquidity levels show that the sample study was in a weak financial position to handle immediate cash needs within the study period. Second, the low capacity ratio levels of Adonten and South Akim show that the two banks would use bigger portions of their deposits for other less risky investments. Third, the above average total deposits levels indicate that the banks under study depended on more deposits for their credit than borrowed funds, thereby reducing their liquidity risks to tolerable levels. Fourth, the loan-to-deposits calculation results all indicated an illiquid position and, therefore, the need for an additional source of liquidity. Again, it could be concluded that Mumuadu Rural Bank, had fully loaned out its stable funding, implying that new loans had to be financed with largely borrowed funds. Lastly, the sample study maintained very low liquidity levels to reduce their liquidity risk by using other sources of funds rather than short-term borrowings. The study failed to accept the hypothesis that there is no significant relationship between securitization and bank liquidity. The study, therefore, concludes that when the banks securitize their illiquid assets, the liquidity levels of these banks will improve significantly.

5.1. Policy Recommendations

First, Ghana is yet to enact laws to govern the adoption of securitization as an efficient alternative source of funds for banks in Ghana. This study recommends that the Bank of Ghana should embrace and enact laws to govern the use of securitization.

Second, education on securitization in Ghana is not pronounced, so many people, including bank managers, have hazy knowledge about securitization. Once technocrats and academics create the awareness, financial institutions will appreciate the benefits and embrace it as an additional source of liquidity.

Third, asset securitization has many benefits. However, a continuous securitization programme is necessary to ensure a relieve of liquidity pressures on the banks and result to a real diversification of liquidity sources.

Fourth, management of banks, and for that matter, rural banks, must be mindful of their liquidity ratios and levels with emphasis on the cash position pointer, capacity ratio and loan-to-deposit ratio to ensure that the banks which they manage are always free from liquidity risk.

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