Exposing the Fallacy of the Loan-to-Deposit/Share Ratio

Measuring liquidity in the modern era

We commonly hear from our members that one of the reasons they choose to use either brokered deposits or online listing service deposits instead of FHLBank advances is their desire to improve the institution's loan-to-deposit/share (LTD) ratio.

We often hear that institutions are motivated in this manner because of regulatory scrutiny to have a high LTD ratio or the institution's self-imposed operating limits established in policy.

The LTD ratio is a misunderstood and arcane ratio from a bygone era of banking that is not an effective measure and should not be used as a basis for evaluating liquidity or making funding decisions.

In this paper, we will explore the genesis of the LTD ratio, take a short trip down memory lane about the history of banking and describe why the LTD ratio is no longer an effective indicator of liquidity or measure of an institution's financial condition. We'll also provide more appropriate and relevant measures that can be used in evaluating an institution's liquidity profile and liquidity risk position.

June 1, 2020

The Genesis of the LTD Ratio

The LTD ratio was born out of a time in which banks were predominately privately owned, profit-seeking enterprises. The LTD ratio was originally designed in the early to mid-1900s to measure the extent to which an institution's only stable funding source was tied up in assets that couldn't be converted readily to cash.

That was an era of banking where the financial system was very different from our present system. In the mid-1900's a financial institution's balance sheet and the available sources of funding were very simplistic and limited. The balance sheets of today's modern era financial institutions are significantly different and much more complex.

The LTD ratio was originally developed based on the following assumptions about an institutions balance sheet, underlying asset composition and potential sources and availability of funding. These two primary assumptions were:

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1. Deposits were the only stable source of funding for a financial institution.
2. Loans were illiquid and could not be readily converted to cash.

Historically, the LTD ratio was originally intended to be used by regulators, bankers and others as a measure to assess:

- If an institution bank had sufficient reserves or liquidity on hand for contingencies and any unforeseen funding requirements.
- Determine an institutions ability to cover loan losses and withdrawals by its customers.
- Indicate how well an institution was doing in attracting and retaining customers.
- Determine if an institution overextended themselves by lending too much of their deposits, particularly in an economic downturn.
- Identify opportunity costs if an institution was lending too few of their deposits, allowing these funds to sit on their balance sheet earning no revenue.
- Determine if an institution had stable funding based on the belief that deposits, especially insured deposits, are a stable source of funding.
- Assess an institution's financial health.

Perhaps, back in the day, one financial measurement could convey an accurate story about all those aspects of an institution's business. However, the LTD ratio does not provide insight or answers to most, if not all, of the areas it historically was used to assess.

Today, the LTD ratio and all the other financial measures available to us only begin to tell the story about how an institution is performing. If you really want to know the whole story you must dig deeper to understand what lies behind the numbers.

As we all know, today there are many different sources of stable funding that an institution can employ. Also, loans can be very liquid either from selling into the secondary market or as pledged collateral to access wholesale funding in the form of FHLBank advances.

A Bygone Era of Banking

Financial institutions in the 1950s through the 1970s primarily accepted deposits from businesses and households — money that they are required to return to the depositor on demand or pay to a third party when ordered by the depositor.

On the other hand, to make a profit — which is their reason for being — they put the bulk of this money to work, either lending it to local businesses and households or investing it in securities.

"Ours is a country predominately of independent local banks," said Thomas McCabe, Chairman of the Federal Reserve in 1950.

Banking was then mostly a local business. There were at that point 13,446 commercial banks and 5,992 savings and loan institutions. Today, there are 5,177 banks and thrifts and 5,281 credit unions. The total number of banks and thrifts fell from 19,438 in 1950 to 5,177 today — a decline of over 73%.

The previous multitude of banks was the result of unique American politics in which agrarian

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interests protected small, local institutions. The reduced numbers have moved closer to what a market outcome would ordain.

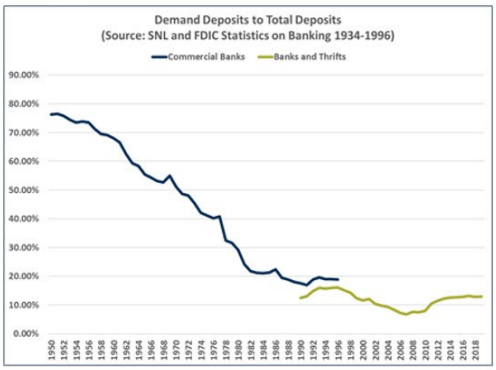
In 1950, demand deposits comprised the great majority of the typical bank's funding and comprised 75% of the total liabilities in the banking system. That meant by law back then that 75% of a bank's funding had a zero interest cost. Those days are long gone with demand deposits now representing only 11% of deposits.

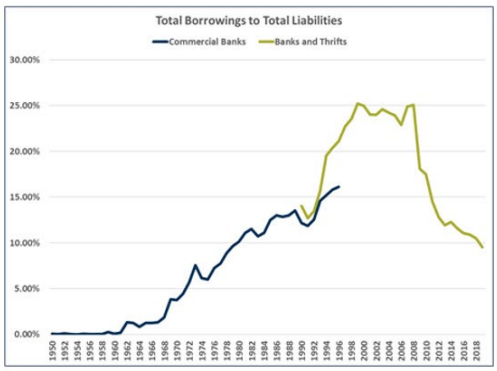
I remember, as a bank trainee in the 1970s, being told by an banker that "banks succeed or fail according to this one number – demand deposits." Obviously, that is not true today.

We know that normally no business can pay out money it does not have. Under ordinary circumstances an institution would not be expected to do so. Forty or more years ago, institutions were able to count on inflows of new deposits that roughly matched the amounts depositors ordered it to pay out.

They were able to keep on hand only a modest amount to cover possible excess outflow. This may still be true for some institutions today. However, most institutions in today's environment with increased competition for deposits and the migration of deposits away from community institutions must rely on other types and sources of funding to effectively manage their cash flow.

These alternative forms of funding (including FHLBank advances, brokered deposits, online listing service deposits, repurchase agreements, etc.) were not readily available to financial





institutions years ago. Today, borrowed funds represent almost 10% of total liabilities and was as high as 25% from 1998 through 2008.

Brokered and online listing service deposits, another form of wholesale funding, now represent approximately 13% of total deposits for banks and thrifts.

Banks in the 1950s were stuffed with Treasury securities from having to help finance World War II. At that point, the banks in total owned more treasury securities than they had in loans. Total securities were 44% of their total assets — an unimaginably high proportion today. Total loans were only 31% of assets — now unimaginably low. This asset mix made the balance

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sheet of the banking system very safe. Today in contrast, institutions have only 10% of their assets in securities.

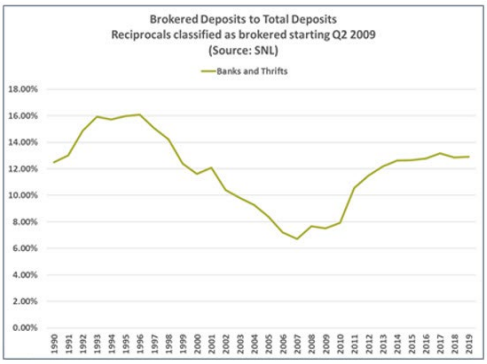
In the banking system of 1950, the government was intent on protecting banks by reducing competition for banks and each other. Arthur Burns, Chairman of the Federal Reserve from 1970-78, looking back from 1988 in his book "The Ongoing Revolution in American Banking" described the 1950's banking regime as:

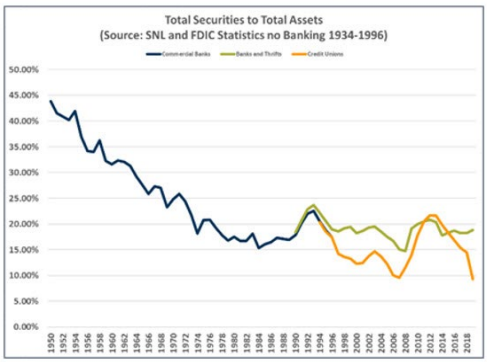
"The legislation suppressed competition not only among banks but also between banks and other financial institutions. The ability of banks to compete with one another geographically was limited by rules on chartering and branching. No new bank could set up business without acquiring a national or state charter, and the authorities were disinclined to grant a charter if existing banks would suffer.

The ability of banks to compete with one another for demand deposits was limited by a prohibition against payment of interest on such deposits. Banks could offer interest on time and savings deposits, but the amount they could pay was limited by a regulation known as Regulation Q. Competition between banks and other financial institutions was also limited by restrictions on the kind of services each could offer."

Burns summed up banking from the 1950s to 1980s with this: "This was a simple system, operating in a simple financial world."

In short, the government restricted competitive entry and limited price and product





competition. The financial services industry was staid and stable.

In the 1980s, an old employee was retiring after 45 years with the Bank of America. The chairman of the bank came to make appropriate remarks at the retirement party, and thinking of all the financial developments during those years, he asked this long-serving employee, "What is the biggest change you have seen in your 45 years with the bank?" The employee replied, "air conditioning."

Since then, banking has undergone revolutionary changes, and the process is continuing to accelerate in the modern era of banking.

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The Bygone Era Versus Today

Years ago, financial institutions – banks, thrifts, and credit unions – were mainly engaged in providing their local communities with the traditional banking services of accepting deposits and making loans and investments. They operated, more or less comfortably, behind the walls of government regulation and business practices that separated them from other financial institutions.

Regulation Q price controls, a big political deal in their day, proved a painful problem in the severe "credit crunches" of 1966 and 1969. They were obviously outdated by the time interest rates went into double digits in the 1970s and 1980s and were belatedly removed.

From the 1960s to 1990s, the financial services landscape was significantly altered by 29 different pieces of banking legislation, which also affected the structure and make-up of financial institutions' balance sheets. Barriers to forming bank holding companies, interstate banking, branching, deposit pricing and products were removed.

The enactment of the Federal Reserve Act of 1913, which created the U.S. Central Bank, led to the creation of an "elastic currency." The ability of the Federal Reserve to create more money allowed financial institutions to expand. This ability, in its original form, was subject to the gold standard, which meant keeping dollars freely convertible to gold. In 1971, the gold standard was eliminated, and the Federal Reserve became able to expand the currency and the credit, or deposit, base of banking by as much as it wanted. Historically, banks were essentially limited in their lending by the size of their deposit bases. The total volume of assets any financial institution could acquire depended on the volume of deposits it could attract locally.

In 1950, 1-4 family residential real estate loans were only 19% of the total loans of banks. Since that time, real estate loans have grown to be a more predominant form of bank credit, reaching 27% of total loans in 2006, just before the real estate collapse. Including commercial real estate loans, total real estate loans are over 40% of total loans. The shift in bank assets from securities to loans and the growth in real estate lending has changed the asset side of the balance sheet.

The change in assets, along with the significant migration away from demand deposits as the primary source of funding, represent a complete metamorphosis away from an era of banking where the LTD ratio had relevance.

Since the birth of the LTD ratio in the 1950s, U.S. banking has become significantly more competitive, innovative, international and interesting but also risker. Deposit gathering and lending are no longer just local in nature. Financial institutions no longer rely solely on local deposits that come through their front doors as a stable source of low cost funding. They became free to "buy" lendable funds in the domestic and international marketplace.

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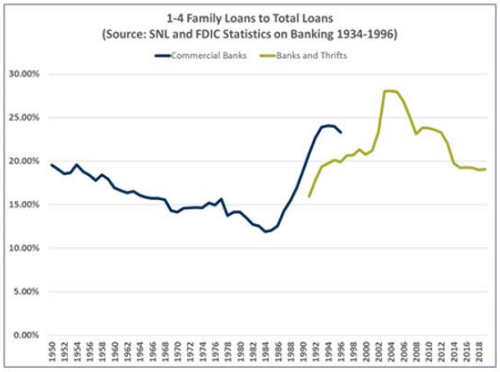
While the foundation for the internet was laid in the 1960s with the creation of the Advanced Research Projects Agency Network funded by the U.S. Department of Defense, the internet as we know it today didn't exist until 1991. Technology has and continues to play a major role in revolutionizing financial markets.

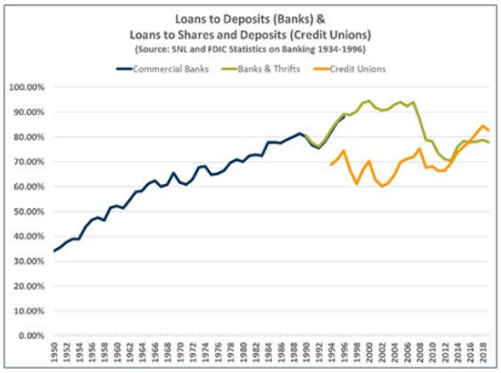
Today, because of deregulation, advances in technology, the advent of the internet and innovations in financial practices, financial institutions are engaged in intense competition with other institutions and non-banking companies offering similar products. Competition is no longer just at the local level but in national and global markets. This competition is not just for traditional banking business but also for other kinds of financial services, many of them new and exotic.

LTD ratios have consistently risen from around 35% in 1950 to around 80% in the second half of the 1980s and remain around 80% today. Two factors have contributed to this rise over the years. The first factor has been greater competition for deposits. The effect of the new competitive environment — making deposits more expensive to attract, keep and more likely to be withdrawn — has reduced the advantage of funding loans with deposits versus wholesale funds.

A second factor behind the rise in LTD ratios has been the increase in the number of financial institutions taking advantage of funding from FHLBanks.

FHLBanks are government-sponsored entities that provide stable sources of funding with a wide range of maturities and pricing





options to help institutions manage their liabilities and risk profile. Thus, FHLBank advances serve the same purpose as core deposits and are a stable source of funds.

They allow small institutions to continue their residential real estate lending in the face of rising market interest rates or declines in Gross Domestic Product (GDP), according to a study "Federal Home Loan Bank Advances and Commercial Bank Portfolio Composition" published in the Journal of Money.

Use of LTD Ratio Today

The LTD ratio was conceived and designed for a bygone era. Unfortunately, through either tradition or misunderstanding, it is still used in

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the assessment of an institution's financial condition. Many people still place undo emphasis on the LTD ratio as a measure of an institution's liquidity position and risk.

The FDIC Manual of Examination Policies currently states:

"Historically, most financial institutions used single point-in-time (static) measurements (such as loan-to-deposit or loan-to-asset ratios) to assess their liquidity position. Static liquidity measures provide valuable information and remain a key part of a bank's liquidity analysis. However, cash flow forecasting can enhance a financial institution's ability to monitor and manage liquidity risk."

The National Credit Union Administration's (NCUA) Examiner's Guide currently states - "loans-to-shares ratio focuses on a credit union's ability to fund loans from member and non-member shares. The higher the ratio, the greater the likelihood a credit union might need to obtain funding from external sources."

It also states that "the higher the loans-to-shares ratio, the less liquid the balance sheet. The loans-to-shares ratio excludes funding from borrowings and capital. Examiners should check a credit unions capital level and ability to manage borrowed funds to determine if a high loans-to-shares ratio indicates a problem. Further, if a credit union is relying on short-term nonmember shares, an examiner should determine if the credit union can maintain its loan volume in light of the higher volatility of these shares.

Limitations to the LTD Ratio

- Does not measure the quality of loans a bank has issued
- Does not reflect the number of loans that are in default or might be delinquent in their payments
- Does not reflect potential call features or options of assets or liabilities
- Does not measure the stability or volatility of the deposit portfolio
- Does not measure the eligibility of loans to be pledged as collateral for borrowing

For a well-capitalized credit union, a ratio in the range of 80 to 100% may be indicative of elevated liquidity risk; examiners should determine how management is managing liquidity risk."

Institution managers also continue to use the LTD ratio to guide funding decisions within their institutions. They use the LTD ratio as a measure of liquidity and to make decisions on what types of funding are used to fund gaps or needs on the balance sheet.

LTD is a Crude Measure of Liquidity

The LTD ratio is a relatively crude measure of an institution's liquidity. Recently, regulators have focused on more sophisticated measures of liquidity such as the liquidity coverage ratio and the amount of high-quality liquid assets an institution holds. Both measures provide a more accurate picture of an institution's ability to weather a sudden and unexpected withdrawal of funds or a rise in the cost of funds.

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There is anecdotal evidence from bank regulators that a small bank with an LTD ratio of around 80% would have been a concern in 1990, but now this is no longer the case. For small banks now, regulators consider an LTD ratio of around 80 to 90% as acceptable and the new normal.

Under historical measures such as the LTD ratio, an institution with an LTD ratio of 50% is generally considered to be more liquid than an institution with an LTD ratio of 90%. However, consider the balance sheets of Institutions A and B.

Institution A's cash and securities portfolio is predominately pledged to support a large portfolio of public unit deposits and is therefore unable to be converted to cash in a liquidity stress event. In addition, the loan portfolio is comprised primarily of consumer auto loans and commercial/industrial operating loans and therefore provides limited collateral value to support borrowings. The deposit portfolio is comprised of public unit deposits, short-term brokered and online listing service deposits and a small mix of demand, savings and retail CDs.

Institution B's cash and securities consist of high quality U.S. treasuries that are unencumbered and therefore easily converted to cash. The loan portfolio is predominately comprised of conforming single-family mortgage loans and commercial real estate loans that are eligible collateral to support borrowings from FHLBank. The deposit portfolio is predominately comprised of demand deposits, savings and retail time deposits.

Which institution is more liquid? Arguably, Institution B has greater liquidity than Institution A. In this instance, the LTD ratio is misleading as

Summary Balance Sheet	Institution A	Institution B
Cash and Securities	$45,000	$9,000
Loans	$45,000	$81,000
Other Assets	$10,000	$10,000
Total Assets	**$100,000**	**$100,000**
Deposits	$90,000	$90,000
Borrowings	$0	$0
Other Liabilities	$1,000	$1,000
Capital	$9,000	$9,000
Total Liabilities and Capital	**$100,000**	**$100,000**
Loan-to Deposit Ratio	**50%**	**90%**

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to each institution's liquidity profile. Institution A with the 50% LTD ratio and a volatile deposit base is actually very illiquid. Institution B has a significant amount of liquidity available from both on and off-balance sheet sources and a more stable deposit base.

The true measure of an institution's liquidity profile can only be determined by looking under the hood and evaluating the underlying characteristics of the assets and liabilities on the balance sheet and the various on and off-balance sheet sources (and uses) of funds.

Simply relying on ratio analysis — and especially using the LTD ratio — may lead to an inaccurate view of an institution's liquidity profile and risk.

Other historical approaches to measuring liquidity include a volatile liability dependence or non-core funding dependency ratio (NCFDR). The NCFDR is defined as all borrowings plus certificates of deposit and open account deposits over $100,000 plus brokered deposits, less short-term investments, divided by long-term assets. The objective of this measure is to determine the percentage of longer-term assets supported by non-core funding.

This ratio unfortunately considers some very reliable funding sources as volatile while ignoring the fact that many deposits considered "core" in the NCFDR are more prone to run-off than implied in the ratio. For example, all advances from FHLBank are considered as volatile while all retail CDs (CDs under $100,000) are considered as non-volatile. FHLBank advances are fully collateralized. As a result, it is very unlikely that FHLBank borrowings will not be renewed or be replaced at maturity so long as collateral is available.

History has proven that retail certificates of deposits are often not renewed at maturity or may even be withdrawn prior to maturity despite being subject to an early withdrawal penalty. If the depositor is concerned about the financial viability or reputation of the institution or is attracted by a competitor's above market "special," they will move their funds. Neither the LDR ratio or the NCFDR ratio can provide answers to questions regarding an institution's liquidity.

More Precise Measures of Liquidity

As mentioned, regulatory agencies and financial institutions have used financial data in the past to track static measures of liquidity. Reliance on traditional liquidity measures such as LTD ratio, volatile liability dependence, longer-term cash flow forecasts or non-core funding dependency analysis will not provide an institution with the proactive liquidity management process required in today's environment.

The industry is moving toward a more dynamic evaluation of liquidity that considers cash flows as they relate to the balance sheet. The movement to cash flow-based liquidity measurement systems reduces the reliance on historical liquidity ratios as the primary measures of an institution's liquidity while taking into consideration the role of an institution's business plan or strategy.

We consider the following approaches to be more precise and recommended measures

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of liquidity. A future Financial Intelligence article will provide an in-depth discussion on the Basic Surplus approach, Cash Flow Gap analysis and the Liquidity Coverage Ratio (LCR).

Basic Surplus Approach

The Basic Surplus (or deficit) is a measure of the cash a financial institution can cost-effectively raise from on-balance sheet sources within a 30-day timeframe, without principal loss, adjusted for the estimated volatility of liabilities and, in addition, the liquidity that can be provided or obtained from off-balance sheet sources. The Basic Surplus approach — along with a complementary cash flow gap analysis — represent the best approach for measuring and managing liquidity today.

Cash Flow Gap Analysis

To get a picture of current and prospective cash flows, a sources/uses of funds approach is used. Sources and uses of funds reports that measure liquidity gaps are one of the most important tools used by an institution's Asset and Liability Committee (ALCO) for triggering actions.

These gap reports provide a framework for measuring liquidity risk in day-to-day operations and in stress scenarios. A sources and uses forecast measures the cash flows to see the impact on the overall liquidity position. These reports generally look at cash flows month by month for the next three months and then quarterly over specified time frames.

Liquidity Coverage Ratio

The Liquidity Coverage Ratio (LCR) was originally devised by the Basel Committee on Banking Supervision. The LCR was subsequently modified and adopted for U.S. regulated institutions. The LCR as modified and adopted in the U.S. only applies to the very largest banks, those over $50 billion in total consolidated assets. However, this approach while not required for community financial institutions, provides a framework that can be used by all institutions to assess liquidity adequacy.

Net Stable Funding Ratio

In 2009, the Basel Committee proposed a second liquidity measure, known as the Net Stable Funding Ratio (NSFR), as a complement to the LCR short-term liquidity measure. The NSFR is a long-term liquidity risk measure designed to ensure a stable funding structure. It measures an institution's available stable funding sourced from capital and liabilities compared to the required stable funding for the institution's assets over a one-year time horizon.

The NSFR became effective for internationally active banks on a consolidated basis in 2018. U.S. banking regulators have proposed a similar measure, however a final measure has not been published or adopted for domestic institutions.

Summary

The LTD ratio is an archaic and ineffective measure of an institution's liquidity. We do not recommend using the LTD ratio to guide management's decisions as to the types of funding that should be used by an institution. The LTD ratio should also not be used as a measure of an institution's liquidity profile or liquidity risk position and should not be

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referenced in an institution's liquidity policy. The policy and funding plan should utilize more appropriate and relevant measures such as cash flow gap ratios, basic surplus ratios or a modified form of the LCR ratio.

The cost, structure and stability of the funding that is most appropriate to meet the institution's business plan and goals should be the determining factors in deciding what sources of funding to use. Funding decisions should not be based on whether a certain type of funding (brokered or online listing service deposits) helps improve the LTD ratio.

FHLBank Topeka is available to help our member institutions review, evaluate and enhance their liquidity policy, risk management framework and identify key metrics that you can use.

In addition, we can help you enhance your funding plan and overall funding capacity. The Member Solutions group at FHLBank Topeka has developed a liquidity analysis tool that is available to help you with cash flow gap and basic surplus analysis. We invite you to contact us today.

Contact FHLBank Topeka today to discuss your advance solutions

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