Liquidity Risk Measurements

The Good, the Bad, and the Ugly

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It's been my observation that our industry has a real love-hate relationship with liquidity.

We love to have it when loan demand is high and we can use it to fund quality loans, but we hate to have it when loan demand is low and we're stuck earning very little (or even losing) on it. That is, we want it when we don't have it, and when we have it, we don't want it (maybe that makes it a hate-hate relationship???). Regardless of your personal feelings on liquidity, I can tell you that it has become an extremely hot topic at Regulatory exams. Not only are examiners again taking a close look at actual liquidity levels, but they're also using new metrics to evaluate the overall level of funding risk. In this Plansmith Liquidity Whitepaper, we'll take a look at the good, the bad, and the ugly when it comes to liquidity risk measurements. Specifically, we'll dive deeper into the four most commonly used liquidity measurements, which are "the liquidity ratio," cash flow modeling, the Net Non-Core Funding Dependency Ratio, and Funding Concentrations. Can you guess which is "the good," which is "the bad," and which is "the ugly?"

"The Liquidity Ratio"

Despite what people that know me say, I am a "glass half full" sort of guy, so, let's start with "the good," and that is "the Liquidity Ratio." The "Liquidity Ratio" has been used to measure liquidity since examiners started assessing funding risk. It's generally straight-forward, easy to calculate, and good for trend analysis. With that said, there are a few issues with using "the Liquidity Ratio" that need further discussion.

You'll note that I keep putting quotes around the Liquidity Ratio. That is because there is no official Regulatory definition for that ratio. In most cases, I see it defined to include all liquid assets as a percent of either total assets, or as a percent of the sum of total deposits and borrowings. Liquid assets include cash, Fed funds sold, and unpledged securities. Pretty simple, right? Well, maybe not. Should all unpledged securities be included? What about securities with significant depreciation, or even impairment? What about sub-investment quality bonds? What about thinly traded municipal bonds? What about loans held for sale?

The simple answer is "can you turn the asset in question into cash in a timely manner?" That doesn't mean "can you sell the asset," because you don't necessarily have to sell something to turn it into cash. That is, if someone will take it as collateral for a borrowing, then it's a liquid asset. Of course, its liquidity value is only what someone will lend you on the asset; the asset's book value has no real relevance. So, if you have a sub-investment rated muni bond with a book value of $1 million and market value of $700K, and a counter party will advance 50% of the market value, then I'd say that bond has a liquidity value of $350K. The BV and MV don't matter; for liquidity purposes, you can get $350K for the asset if necessary. Of course, this scenario assumes you can make

that all happen in a timely manner, which arguably means you have the borrowing line in place now. As for loans held for sale, I'd argue that they should be included as liquid assets, as long as you have a pre-arranged sale or if they meet secondary market standards and you regularly sell such loans through reliable distribution channels.

So now that we know how to calculate "the liquidity ratio," I'm sure you're asking, "How much should I have?" The simple answer is "it depends." That also is the typical answer you'll get from an examiner, because it really does depend; liquidity is not a one-size-fits-all measurement. Other factors to consider include, but are not limited to, your capital level, asset quality, the stability of your shares, and (perhaps most importantly) the level and reliability of your secondary funding sources. What I can tell you is that we typically see well-run credit unions have liquidity ratios of at least 10% to 15%. If the ratio drops into single digits, we usually see examiners get pretty excited, and not in a good way.

Cash Flow Modeling

Next, we're going to take a closer look at one more of "the good" liquidity measurement techniques, and that's cash flow modeling. Unlike "the Liquidity Ratio," which is based on a point in time in the past (like looking in the rear-view mirror), cash flow modeling gives the institution a view into the future (like looking out the windshield). Moreover, it can (and should) be dynamic, allowing the institution to change assumptions (usually loan and deposit growth and run-off), to assess the potential impact of various changes in strategic direction, balance sheet mix, and alternate funding source availability.

Prior to 2010, most credit unions were only really expected to be doing cash flow modeling if they were using non-core funding sources like brokered and internet deposits. However, with the FFIEC's issuance of the 2010 Interagency Policy Statement Funding and Liquidity Risk Management (the Policy Statement), the bar was raised. Now, liquidity risk measurements and monitoring systems at virtually all credit unions are expected to include an "assessments of the current and prospective cash flows or sources and uses of funds" (i.e., cash flow modeling).

While most credit unions now at least do some cash flow modeling, many programs still fall short of Regulatory expectations. Detailed below are the four most common cash flow modeling weaknesses we see.

1. Cash flow modeling that does not include meaningful, or any, stress events. Institutions are expected to model both "base-case" ("business-as-usual") cash flows AND multiple stressed scenarios. While there are no requirements for any specific scenarios that should be modeled, examples noted in the Policy Statement include the stability of retail and brokered deposits, secondary market issuances and borrowings, and deterioration in the institution's asset quality or capital adequacy. One thing that is abundantly clear is that if your institution is using brokered or internet deposits, examiners will expect at least one of your modeled stress scenarios to assess the impact of losing access to those funds.

2. Cash flow modeling that is only done once or twice a year. The magnitude and frequency of stress testing should be commensurate with the complexity of the financial institution and the level of its risk exposures. We've found that examiners generally expect most credit unions to do cash flow modeling quarterly (rather than annually). The results of the quarterly cash flow modeling should also be reported to both the ALCO and the Board, with any policy exceptions noted in the minutes.

FOUR MOST COMMON CASH FLOW MODELING WEAKNESSES

3. Cash flow modeling that does not include both institution-specific and systemic events. Credit unions that conduct regular liquidity stress testing typically include a variety of institution-specific events; however, stress events often fail to include "market-wide" or systemic events as recommended in the Policy Statement. Such events would typically include more macro-economic factors such as payment system disruptions, a loss of confidence in the banking system, and/or limited alternate funding source availability.

4. No limits or bad limits. Many financial institutions that conduct base-case and stressed cash flow modeling either have no limits or unreasonable limits for the stress tests. Limits should vary depending on the level and type of stress assumed, much like how interest rate risk modeling limits vary with the degree of stress modeled (i.e., limits for the +/-100 bp shock levels are not the same as the limits for the +/-400 bp shock levels). As stress is assumed to intensify, limits for both on- and off-balance sheet liquidity should be adjusted accordingly.

The Worst Ratio Ever

Now that we've covered two "good" liquidity measurements, we'll skip right over "the bad" and go straight to "the ugly," and what I think is the "worst ratio ever." Well, as much as I hate the gap ratio as an interest rate risk measurement, this whitepaper is about liquidity, so I'll have to go with the Net Non-Core Funding Dependence (NNCFD) Ratio as the worst ratio ever.

To understand why this ratio is so awful (and why you should care), we'll need to first dive a bit deeper into how it's calculated, and what impact it has when examiners come in to assess your level of funding risk. The definition for the ratio is "noncore liabilities less short term investments divided by long term assets." If you're asking, "what is a noncore liability, what is a short-term investment, and what is long-term asset," here you go.

- **Non-core liabilities** equals the sum of total time deposits of more than $250,000, other borrowed money, foreign office deposits, securities sold under agreements to repurchase, federal funds purchased, and insured brokered deposits less than $250,000.
- **Short term investments** equals the sum of interest-bearing bank balances, federal funds sold, securities purchased under agreements to resell, and debt securities with a remaining maturity of one year or less.
- **Long term assets** equals the sum of net loans and leases, loans and leases held for sale, held-to-maturity securities, and available-for-sale securities; less debt securities with a remaining maturity of one year or less and other real estate owned (non-investment).

After reading that, I'm guessing you're saying "what does all that mean; what is this supposed to be telling me; and what is a good, or bad NNCFD ratio?" Simply put, the ratio is meant to determine if your credit union is using non-core (volatile) liabilities to fund long-term assets. It basically is looking to see if you have more non-core liabilities than short-term investments, and if so, how much of your long-term assets does that imbalance represent. Obviously, if you are using volatile funding sources (i.e., funding sources that could go away) to fund long-term assets, and you lose access to those funding sources, you could have a real liquidity problem.

So, at its basis, the purpose of the ratio makes complete sense. However, the calculation methodology is so flawed that its results are often completely meaningless. Worse yet, all too frequently examiners use the ratio as one of the few key measurements they consider when assigning the "Liquidity" rating.

So let's look at why this ratio is so bad.

- **First, it considers all CDs over $250,000 as noncore.**
  As any CFO knows, some of the most stable deposits are often CDs with balances over $250,000. Those frequently include CDs of directors and/or CDs held as collateral for loans. In those cases, it would seem clear that those deposits are, in fact, core deposits, and do not increase funding risk, regardless of their balance.
- **Second, it ignores term structure/maturities of the "noncore" sources.**
  As noted in the ratio definition, it includes all non-core liabilities, regardless of their maturity. As such, you could have a five-year brokered CD, or even a 10-year non-callable FHLB borrowing, and the ratio would consider both to be "non-core" funding sources. You should certainly be aware of when such liabilities mature, and consider that in your assessment of funding risk. However, automatically considering them to be non-core funding sources, and then by default, liabilities that increase funding risk, is short-sighted and inappropriate. Under this definition, you could use a five-year non-callable FHLB advance to match fund a 5-year FHLB bond, and the ratio would indicate you increased your funding risk.

- **Third, it only includes investments with maturities less than a year.**
  This is perhaps the most egregious weakness of the NNCFD Ratio. As we just pointed out, the ratio definition considers the noted liability categories, regardless of their maturities, to be non-core. However, it only measures the extent to which investments maturing in less than one year cover all non-core funding sources (regardless of their maturities, as just discussed in the second point). As such, the ratio would not give you credit for a Treasury note maturing in 366 days, but one maturing in 364 days would be included. It would seem far more appropriate to include any unencumbered marketable security at its market value. That is, why should maturity have any relevance if it could be sold or pledged to get cash to pay off a maturing non-core liability?
- **Fourth, it ignores pledging.**
  All short-term investments are included, regardless of if they are pledged. So, going back to our example in the third point, you could have a security maturing in 364 days that is fully pledged, and the ratio would consider it as an offset to the non-core liabilities. However, a completely unencumbered bond (not pledged) maturing in 366 days would be excluded from the calculation (because it matures in more than one year).
- **Fifth, it fails to include many liabilities that are, in fact, volatile in nature (which actually understates risk in many cases).**
  Examples of liabilities not included as "non-core" by definition are internet/listing service CDs under $250,000 and high-rate deposits under $250,000. In many cases, these CDs are certainly "rate-driven" and likely to leave the institution if competitive rates are not paid. As such, it would appear that these deposit are non-core by nature, and in turn, increase funding risk.

So hopefully if you're still reading this, I have you convinced that the NNCFD Ratio is a terrible measurement for assessing funding risk. If so, join the movement to get rid of it all together. While writing your Congressman likely won't do anything, you should at least strongly object to any examiner ever mentioning it, and certainly ever considering it as a factor when rating your institution. Share this whitepaper with them, or at least pass it on to anyone else you know in the industry.

Funding Concentrations, Potentially Volatile Funding Sources, and "High-Rate" Deposits

In staying with our original theme of "the good, the bad, and the ugly," we're left with "the bad." For that, we're going to look at a few measurements that examiners have only recently begun to emphasize. Specifically, we're going to look at the concept of funding concentrations, "potentially volatile funding sources," and "high-rate deposits."

Let me start by saying that the concept of monitoring funding concentrations is extremely valuable and should be part of any sound funds-management program. All financial institutions should monitor their sources of funds, understand the risks of each specific source, and set targets for their funding composition. Furthermore, institutions using non-core funding sources should also set individual and aggregate limits for their use. Where "the bad" comes into play are the liberties the regulators are sometimes taking with what should be considered as non-core funding sources. For the most part, both credit union managers and examiners agree that non-core funding sources include brokered deposits; internet deposits; correspondent and FHLB borrowings; and in some cases, large deposits and uninsured deposits. However, examiners have recently expanded the traditional view of non-core liabilities and coined a new term – "potentially volatile funding sources" (PVFSs). Note that you won't find this term in any formal Regulatory guidance.

Not only has the guidance for this calculation been limited, but its application has been extremely inconsistent, and there is no clear formal guidance as to what should be included as a PVFS. Perhaps even worse, examiners are often including what they consider to be "high-rate deposits" (HRDs) in the calculation. Again, in concept, monitoring the level of deposits that may be purely "rate driven" (and thus, volatile) is extremely relevant when assessing funding risk. However, the big question is "what is a high-rate deposit?" That is, what is the rate threshold that makes it high-rate? And for that, there is again no clear guidance, which allows for a lot interpretation by examiners.

So what should you do about it? First, if you're not already doing it, I'd suggest that you start closely and regularly (at least quarterly) monitoring your funding composition and set limits

for individual and aggregate funding source concentrations. Regulators expect that, and it's part of a sound liquidity management program. Second, you should find a reliable source to track deposit rates in your market. That might be as simple as anonymously calling those banks and credit unions or finding a good market or internet source. Be sure that your source includes deposit promotions and not just standard rates (many national rate services do a poor job of getting promotional deposit rates). I've found that depositaccounts.com is a very good source, depending on what geographic market you're in. And lastly, you should use the results of the rate survey to either specifically track deposits categories where you pay above market rates, or at least use that information to estimate what portion of your deposits could be considered PVFSs and the resulting impact they have on your liquidity risk profile.

Conclusion

It's almost certain that competition for deposits will further intensify, which will require comprehensive deposit monitoring and funding concentration management strategies. It's critical that all credit unions have a sound grasp on their liquidity levels and funding composition. Managing on- and off-balance sheet liquidity has a material impact on both profitability and funding risk. Striking the proper balance (an effectively managing that position) is more important now than ever.