How to Quantify and Manage Liability Stickiness

By Leonard Matz

A practical guide for evaluating deposits and nondeposit liabilities.

Liquidity risk management is not just about liquid asset reserves. It isn't even mainly about liquid asset reserves. Face it: Most banks hold relatively small amounts of unencumbered, marketable assets compared to potential liquidity needs under stress conditions. It is not unusual to see banks with "marketable securities" equivalent to less than 20 percent of total assets—with half of that only marketable in normal capital market conditions—and half of that 10 percent already encumbered for one purpose or another. Unencumbered, marketable securities equivalent to just five percent of total assets isn't a whole lot of protection in a stressed funding environment.

Did someone say "core deposit"? Okay, but what is a core deposit? A deposit obtained through a branch office? An insured deposit? A deposit obtained from a consumer or small business? Notice that all of these questions attempt to define a stable deposit by virtue of a single characteristic of stability.

The problem for liquidity risk managers is actually bigger than how or how accurately we define core deposits. The truth is that some nondeposit liabilities are more stable than some deposits. The question is not: Which *deposits* are least likely to be withdrawn during a liquidity event? The question is: Which *liabilities* are least likely to be withdrawn during a liquidity event?

What Is Stickiness?

Liquidity risk managers need to forecast future cash flows. Part of that exercise requires forecasting potential liability losses in different scenarios and at different stress levels. We need a method to estimate liability stability—what we now call "stickiness."[1] For the most part, stickiness is the result of the funds providers' confidence in the bank. The Bank for International Settlements (BIS) defines stickiness as the tendency of funding not to run off quickly under stress.[2]

Let's first identify eight characteristics that individually—but especially in combination—determine stickiness.

1. **Is the liability an insured deposit?** Once upon a time, all government-insured deposits were confidently assumed to be sticky. Despite the occasional panic, government insurance is undoubtedly a major factor that increases stickiness. But, as the following anecdote makes clear, government insurance is no longer sacrosanct.

   > The rush to withdraw money ... came a day after fears arose that Countrywide Financial [the biggest home-loan company in the United States] could file for bankruptcy protection because of a worsening credit crunch stemming from the sub-prime mortgage meltdown.
   >
   > The parent firm borrowed $11.5 billion Thursday by using up an existing line of credit from 40 banks, saying the money would help the lender meet its funding needs and continue to grow.
   >
   > "It's because of the fear of the bankruptcy," said [Bill] Ashmore, President of Irvine's Impac Mortgage Holdings … . "It's got my wife totally freaked out," he said. "I just don't want to deal with it. I

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don't care about losing 90 days' interest, I don't care if it's FDIC-insured—I just want it out."[3]

2. **Is the liability secured?** Whether it is a deposit or a capital markets borrowing such as a repo, backing by quality collateral is another strong contributor to stickiness.
3. **Are the funds controlled by the owner?** When the funds placed in your bank are controlled by an agent or manager of the money, that agent may have a legal or quasi-legal responsibility to preserve the principal. For example, pension fund managers. On the other hand, if the controller of the money is the consumer or small business that owns the funds, the bank is less likely to lose this money at the first sign of trouble.
4. **Does the depositor or liability counterparty have other relationships with the bank, such as loans?** A funds provider that has a relationship with the bank may be reluctant to incur the costs, time and effort needed to transfer all of his or her accounts. More typically, the stickiness of the funds from counterparties who have relationships with the bank stems simply from familiarity.
5. **Is the depositor or liability counterparty a net borrower?** Funds providers who owe the bank sums larger than the amount of the funds that they provide may simply take comfort in their right of offset.
6. **Does the funds provider lack Internet access to the funds?** Typically, few, if any, administrative hurdles restrain transfers from e-banking accounts. Customers with only an online relationship, who can more easily move funds electronically, may be significantly more prone to changing firms to obtain better rates or to react to negative news about their current firm.[4] For purposes of liquidity stress testing, ATM withdrawals can be considered separately from evaluations of deposit stickiness.
7. **Is the depositor or liability counterparty financially unsophisticated?** For example, not likely to follow financial news closely. "Even outside of the e-banking sphere, well-informed consumers may prefer not to deal with a bank whose reputation is questioned, simply to avoid the frictions of recovering funds if a failure occurs, even if their funds are fully covered by deposit insurance."[5]
8. **Did the bank obtain the deposits directly rather than through a third-party deposit broker?** Two related concerns apply to brokered deposits. First, it is plausible to assume that access to funds from this source will be constrained—if not cut off—in bank-specific stress scenarios likely to involve a loss of confidence in the bank. Second, severe stress scenario forecasts must reflect that fact that deposits obtained by U.S. banks from brokers are legally restricted to "well-capitalized" banks. (Exceptions can be made.) Accordingly, forecasts for bank-specific scenarios that might lead to a reduction in the bank's capital should treat all deposits obtained from brokers as volatile—not sticky.

Putting It All Together

Step 1

Using the eight characteristics defined above, we can begin to identify the sticky and volatile liabilities. The obvious problem is that the information we need comes from different sources in the bank's records. For example, two types of liabilities, Internet deposits and brokered deposits, are identified by the marketing channel.

Exhibit 1 shows a work sheet that can be used to identify the sources for the information we need.

Step 2

We will always lack a clear, bright line separating sticky from volatile liabilities. Instead, we must recognize a continuum. Once we know the information sources we need to quantify sticky and volatile liabilities, with as much granularity as possible, we can combine all of our information and create such a continuum.

We can use the work sheet in Exhibit 2 to reflect a stickiness continuum.[6] (Replace the list of counterparty and product types shown in the exhibit with your own categories.)

Step 3

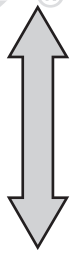
Stickiness is scenario dependent. Most of the eight characteristics discussed above are descriptors for counterparty confidence. This is vital information for bank-specific scenarios involving a loss of confidence in the bank—especially moderate and high-level

Exhibit 1. Stickiness Worksheet

Stickiness Characteristic	Identification Sources*
Are the funds insured?	Deposit size.
Are the funds secured?	Liability type (for example, repo) or counterparty type (for example, municipal).
Funds controlled by the owner rather than a manager, agent or fiduciary?	Customer information records.
Does the funds provider have other relationships with the bank?	Customer information records.
Is the funds provider a net borrower?	Customer information records.
Does the funds provider lack Internet access to the funds?	Channel. All deposits not obtained through the Internet.
Is the depositor or liability counterparty likely to be relatively insensitive to financial information?	Combination of account size and customer demographics (for example, age, income).
Did the bank obtain the deposits directly rather than through a third-party deposit broker?	Channel.

* Avoid double-counting. For example, many customers with small accounts are also relatively insensitive to financial information.
* The more granularity the better. For example, for secured counterparties, list repo borrowings and municipal deposits separately. For funds providers who are managers, agents or fiduciaries, list pension funds, mutual funds and other counterparty types separately.

Exhibit 2. A Stickiness Continuum

Tolerance for credit quality or liquidity concerns	Entity	Amount	Percent
Very sensitive to perceived deterioration in credit quality or safety	Money market mutual funds		
	Rating sensitive providers		
	Pension funds		
	Insurance companies		
	Other funds providers with fiduciary responsibility		
	Broker/dealers		
	Regional and money center banks in your country		
	Foreign banks		
	Large corporations		
	Community banks in your market area		
Only sensitive to credit quality and liquidity when problems are very bad and highly publicized	Local, uninsured, unsecured depositors		
	Customers who are net borrowers (their loan balances exceed their deposit balances)		
	Local, secured funds providers		
	Insured depositors		

stress tests under those scenarios. For most systemic scenarios, on the other hand, the information developed in steps 1 and 2 is barely relevant.

Stress tests involving systemic scenarios should consider quite different influences on liability stickiness. Examples include the following:

- Loss of rate-sensitive deposits in scenarios in which market rates are likely to be high
- Early withdrawal of retail time deposits in scenarios where market rates are likely to be high
- Loss of funds from capital markets counterparties during capital markets flights to quality
- Reduced availability of funds from all sources during so-called credit crunches

Maturity of Time or Term Liabilities

Up to this point, we have not considered remaining life as a characteristic of stickiness. This is not because the remaining life of time or term liabilities is less important or less influential than any of the eight stickiness characteristics previously defined.

Quite the contrary, remaining life is, in some scenarios, the single most important determinant of stickiness. In any bank-specific scenario, the remaining life for liabilities that cannot be redeemed prior to maturity is arguably more important than any of the eight characteristics defined here. The same is true for systemic scenarios that do not involve a significant increase in market rates.

Remaining life is addressed separately from the other eight stickiness factors for two reasons:

- Remaining life is conceptually different from the other eight factors. Remaining life is not identifiable by product type, counterparty type, marketing channel or depositor demographics. Instead, it arises from the defining element of term liabilities.
- For liquidity risk–management purposes, best-practice diversification treats maturity diversification (also known as rollover risk) separately from diversification by type or product.

Stickiness: A Messy Concept

Readers looking for a simple formula or packaged solution are undoubtedly dissatisfied with the approaches outlined in this article. While the remaining life of term liabilities can be clearly and accurately established, for the most part, stickiness is a messy concept. It is hard to identify, hard to quantify and varies based upon scenario and degree of stress.

Nevertheless, even subjective quantifications of stickiness can be a huge help to liquidity risk forecasts and stress tests. All forecasts are by definition subjective because they require estimation of future conditions or changes that cannot be known in advance with total certainty. And, since useful liquidity stress tests must address very low probability events, little historical data is available for reference.

The goal is not an unachievable level of perfection. Instead, our goal is to use stickiness concepts to disaggregate liabilities into a stickiness continuum and, in combination with remaining life, use that information to make the most accurate assumptions we can make.

Careful application of the concepts and practical procedures outlined here should substantially improve all liquidity forecasts based on broad assumptions.

Endnotes

1 Describing liability stability as stickiness is a coinage from the mid-1980s, probably attributable to Brian Ranson, then at the Bank of Montreal.

2 Basel Committee on Banking Supervision, BIS, *Principles of Sound Liquidity Risk Management and Supervision*, Paragraph 30 (Sept. 2008).

3 E. Scott Reckard and Annette Haddad, *A Rush to Pull Out Cash*, L.A. Times, Aug. 17, 2007, *www.latimes.com/business/la-fi-countrywide17aug17,0,1835165.story?coll=la-home-center.*

4 International Institute of Finance, *Principles of Liquidity Risk Management* (Mar. 2007), at 17.

5 *Id.*

6 Adapted from a chart developed by the Office of the Comptroller of the Currency.