

Managing the Liquidity Risk of Commercial Real Estate Portfolios

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The current liquidity crisis has come about because of three factors: (1) the credit crisis creating the expectation of losses for banks, (2) the lack of transparency so that counterparties do not know the real creditworthiness of each bank and (3) lack of planning by treasury for funding lending operations. Many articles have been written on the credit crisis so it will not be covered here. The lack of transparency can be considered to be both between banks and within banks. The lack within banks is because many banks do not themselves know the detail of the assets they are holding; that information is in spreadsheets, paper files or notebooks. This internal transparency is being addressed by data consolidation efforts driven both by the current crisis and Basel II. The banks who responded to Basel II are now far ahead and their efforts are bearing fruit. This leaves the set of questions around the treasury operations for funding the lending operations.

The first point to be recognized is that this liquidity crisis is an extreme event. Liquidity crises like this come along every 50 to 100 years, but that does not quite let treasury off the hook; typically, the planning requires treasury to be able to cope with a 99 percentile event. Many treasuries have been able to weather this storm, but many more have had difficulties. One of the primary reasons for the difficulty is that there have been very few tools to show treasurers the liquidity profile of their commercial real estate assets. Once treasurers know the liquidity profile, they can manage against that profile by a combination of keeping a reserve of liquid assets such as government bonds and by ensuring that the maturity ladder of the liabilities is sufficiently long to match the income from the loan portfolio. Without a clear picture of the liquidity profile of the loans, treasurers will be more tempted to use cheap short-term funding. This article explains the objectives in quantifying the liquidity profile of commercial real estate assets and describes how it can be done. The article does not focus on the uncertainties on the liabilities side, which have their own dynamics, especially to the extent that funding relies on the behavior of retail customers.

The treasurer's task is illustrated in Exhibit 1. The stepped line represents the cumulative payments that the bank must make to repay liabilities as they mature. The continuous line represents the cumulative cashflows to the bank for all the existing assets to which the bank is committed.

For an ongoing operation, the cashflows over the nearest few months will fluctuate between positive and negative as new loans are disbursed, lines are drawn down and repayments are made. Farther into the future, all disbursements have been completed and the net cashflow from the loan portfolio is dominated by repayments. Exhibit 1 also shows a final spike of income representing the sale of the liquid asset portfolio, for example, government bonds. Eventually, the cumulative income must be greater than the cumulative payments to the liabilities; otherwise, the bank has negative value. The gap between the cumulative liabilities and the cumulative income is the funding gap that must come from new sources of funds if the liquid assets are not to be sold.

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Another way of illustrating this situation is in Exhibit 2 where the liquid assets are assumed to be sold as required to repay the liabilities. This shows the minimum external funding that will be required to refinance expiring liabilities.

In normal times, the profile of the payments from the loan book has fluctuations due to, for example, borrowers drawing down a little earlier or later than expected, refinancing, or prepaying their principal. In more difficult times, some borrowers will lose tenant income and fail to make their full debt-servicing payment. More dangerously, from a liquidity point of view, is that there will be failures of borrowers to refinance loans. In commercial real estate, it is common to underwrite loans that only partially amortize over the loan's life with the expectation that the loan will be able to be refinanced at maturity. In other cases, a repayment of a loan or part of a loan may be expected from selling a property. Due to today's economy that sale may not happen or may be insufficient to pay off the loan.

For construction deals, for instance, repayment may be delayed substantially by slower than expected sales or lease-up. If Exhibit 2 represents the cashflows in normal times, Exhibit 3 represents the net cashflows in the 99% worst case showing the gap to be funded from external sources. Exhibit 4 shows the detail over the first 12 months of the 99% worst case additional funding requirement. The cause of this worst case is broken out according to the source of uncertainty. In Exhibit 4, the allocation is in terms of risk type. Similar allocations can be made in terms of currency, geography or asset type. This can help to identify the main sources of liquidity risk and could prompt further investigation into the assets generating those risks.

Once the funding requirement is understood, the last piece of the conceptual framework is to ask, "Could we get that money in a crisis?" This is a fundamentally difficult question, but there are three components to the answer:

- What is the prevailing risk appetite of the market likely to be?
- What is the perceived value of our bank likely to be?
- What is our perceived liquidity position likely to be?

If the market is confident the bank's assets will remain greater than its liabilities, funding sources will have the confidence to lend knowing that eventually they, or the next lender, will get repaid. If they also understand the bank's liquidity position, that will increase their confidence that they will be paid on time. These factors together can be represented as a multidimensional probability distribution of cash required and bank value, with a cutoff line above which it is not possible to raise the amount required given the bank's value. (The explanation of this probability space is outside the scope of this article, but it is worth keeping in mind that there is a strong correlation between value and liquidity.)

Now let us turn from the conceptual framework to the practicalities of getting the information needed to generate the net funding liability graph. Fortunately, this can be done in the same framework and with the same data that many banks have already installed for credit risk measurement, that is, with cashflow simulation and cashflow stressing.

For assessing *credit risk*, simulation stresses the cashflows under thousands of alternative scenarios for factors such as interest rates, inflation, rental rates, construction costs, sales times, property values, tenant

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defaults, or vacancy rates. In assessing the credit risk of a loan, we are interested in the extent to which the net income at each time step will be sufficient, along with any reserves, to meet the debt servicing required. We are also interested in the property value underlying each loan both for refinancing and as collateral in the case of continued default and foreclosure. Stress testing uses the same logic except applying single extreme scenarios. These simulations and stresses can be run at the loan level, including the details of every lease and covenant, and then aggregated up to the portfolio level, including all correlations, to give a picture of the portfolio's correlated loss profile.

For assessing *liquidity risk*, the same framework and data may be used. However, instead of looking at whether the contractual debt-servicing payments are met, we look at the net cashflows (disbursements, fees, interest and principal repayments), including the effects of all the uncertainties used in assessing the credit risk. With thousands of simulations, we can give the probability distribution for the likely and worst-case funding requirements. By standing on the shoulders of the work done for Basel II, banks can see further into the future of their liquidity needs.

Exhibit 1: Cumulative Net Inflows from Assets and Maturity of Liabilities

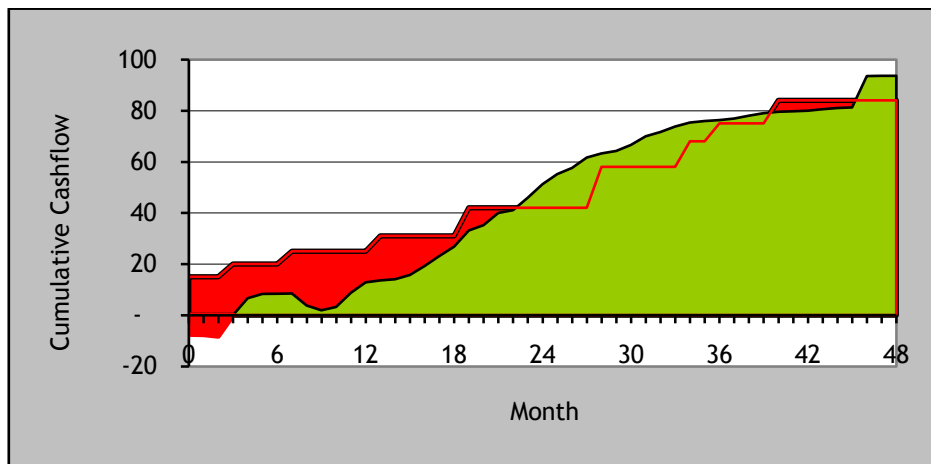
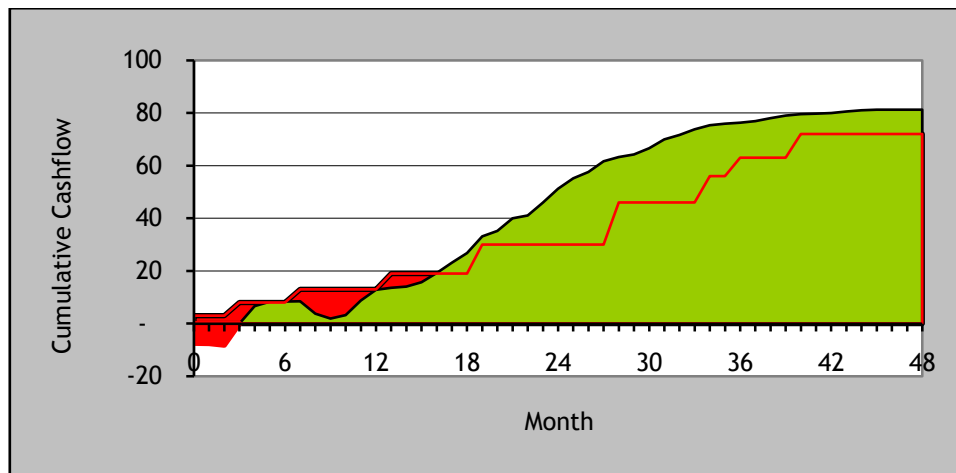


Exhibit 2: Net Funding Requirements Beyond the Liquid Portfolio



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Exhibit 3: 99% Worst Case Net Cash Flows

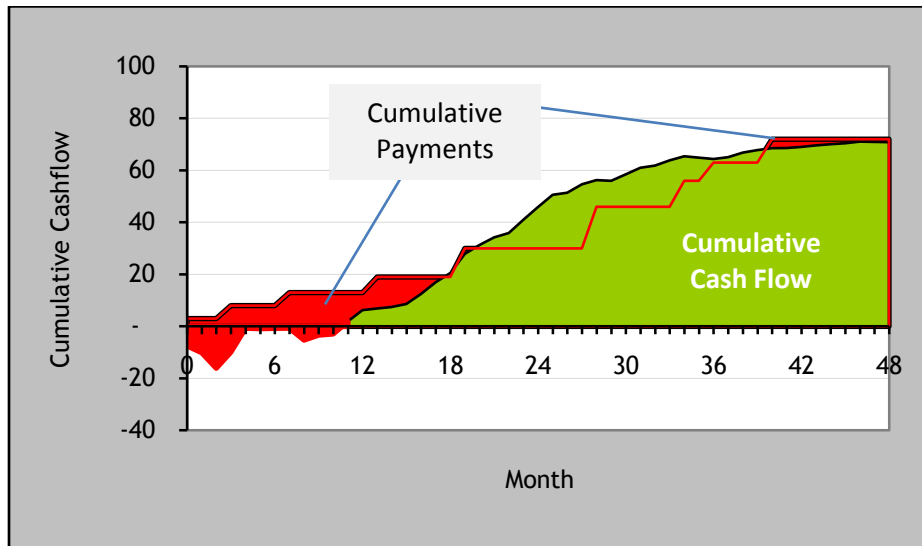


Exhibit 4: Causes of Additional Funding Requirements

