

## Managing the Liquidity Risk of Commercial Real Estate Portfolios

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The current liquidity crisis has come about because of three factors: i) the credit crisis creating the expectation of losses for banks, ii) the lack of transparency so that counterparties do not know the real credit worthiness of each bank, and iii) 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 do not themselves know the detail of the assets they are holding. That information is hidden away in spreadsheets or analog paper files and notebooks.

The push for internal transparency is being addressed by data consolidation efforts driven by the current crisis and by 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.

### Liquidity Crisis

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 because typically the planning requires treasury to be able to cope with a 99th 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 today is that there are very few tools available in the marketplace to show treasurers the **liquidity profile of their commercial real estate assets**.

Once treasurers know their liquidity profile, they can manage against it with 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 loans portfolio. Without a clear picture of the liquidity profile of the loans, treasurers will be more tempted to use cheap short-term funding.

### Liquidity Profile

This article explains the objectives in quantifying the liquidity profile of commercial real estate assets and describes how it can be done. It does not focus on the uncertainties on the liabilities side, which

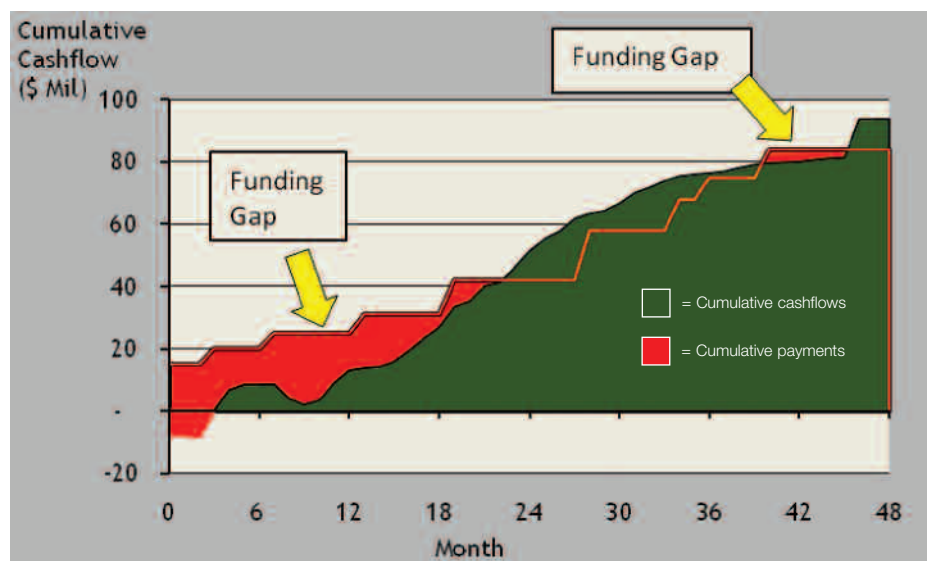


Figure 1: Cumulative Net Inflows from Assets and Maturity of Liabilities

have their own dynamics, especially to the extent that funding relies on the behavior of retail customers.

The treasurer's task is illustrated in Figure 1. The stepped, red line represents the cumulative payments that the bank must make to repay liabilities as they mature. The continuous, green line represents the cumulative cashflows the bank receives from its existing assets. 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 (e.g., for construction), and repayments are made. Further into the future all disbursements have been completed and the net cashflow from the loan portfolio is dominated by repayments.

Figure 1 also shows a final spike of income representing the sale of the liquid asset portfolio, e.g., government bonds. Eventually the cumulative income must be greater than the cumulative payments to the liabilities, otherwise the bank has negative value.

### Funding Gap

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. Another way of illustrating this situation is in Figure 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, for example, to clients drawing down a little earlier or later than expected or refinancing and prepaying their principle. In more difficult times, some clients will lose tenant income and fail to make their full debt service payment.

More importantly, from a liquidity point of view, there will be failures of clients to refinance loans. In commercial real estate finance it is common to give loans that only partially amortize over the loan's life with the expectation that the loan will be refinanced at maturity. In other cases a repayment of a loan or part of a loan may be expected from selling a property, and that sale may not happen, or may not be sufficient to pay off the loan. For construction deals, repayment may be delayed substantially by slower than expected sales or letting.

If Figure 2 represents the cashflows in normal times, Figure 3 represents the net cashflows in the 99% worst case showing the widening gap that needs to be funded from external sources. Figure 4 shows the detail over the first 12 months of the 99% worst case additional funding requirement. The cause of this worst case is allocated out according to the source of uncertainty.

Figure 2: Net Funding Requirements Beyond the Liquid Portfolio

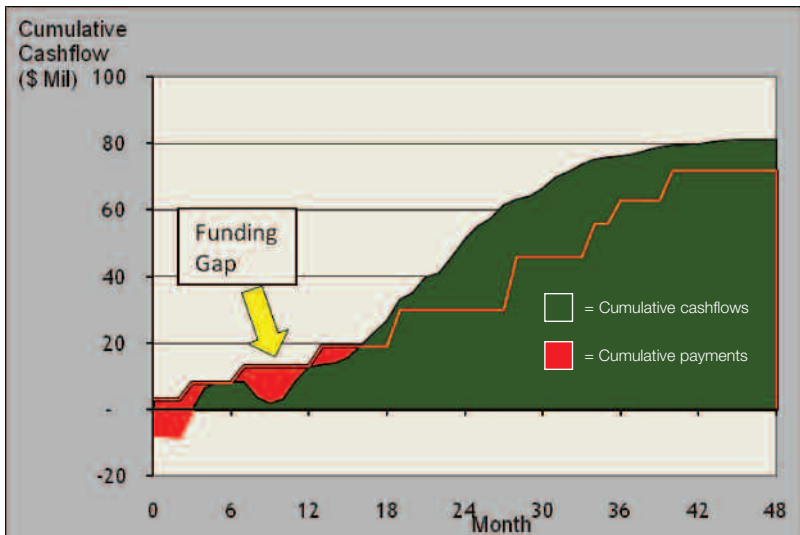


Figure 3: 99% Worst Case Net Cashflows

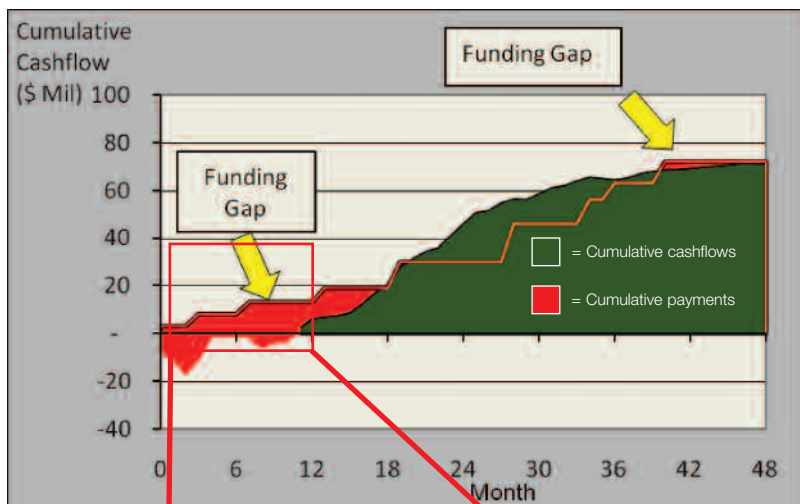
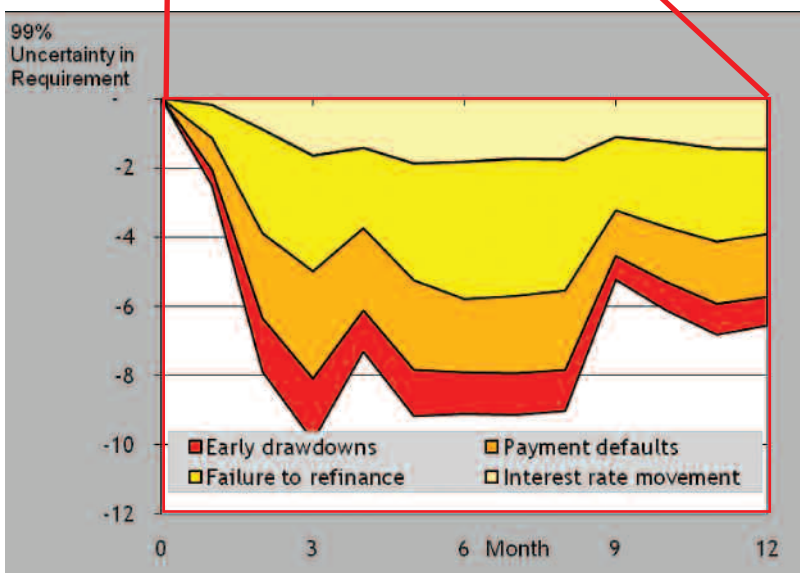


Figure 4: Causes of Additional Funding Requirements



In Figure 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 prompt further investigation into the assets generating those risks.

**Market Perception**

Knowing the funding requirement, the last piece of the conceptual framework is to ask whether the bank could get that money in a crisis. This is a very tricky question, but there are three components to the answer:

1. What is the prevailing risk appetite of the market likely to be?
2. What is the perceived value of our bank likely to be?
3. What is our perceived liquidity position likely to be?

If the market is confident that it understands that the bank’s assets will remain greater than its liabilities, then they will have the confidence to lend, knowing that eventually they, or the next lender, will get their money back. If the market feels it understands 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 cut-off line where it is not possible to raise the amount required given the bank’s value. The explanation of this probability space is not included in this article, but it is worth keeping in mind the strong correlation between value and liquidity.

**Real World Practicalities**

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: 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 defaults, vacancy rates. In assessing the credit risk of a loan we are interested in the extent to which the net income at each timestep 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 to include all correlations. This gives a picture of the portfolio’s correlated loss profile.

For assessing liquidity risk the same framework and data can be used, but instead of looking at whether the contractual debt servicing payments are met, we look at the net cashflows including disbursements, fees, interest and principle repayments, including all 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 framework they have put in place for Basel II, banks can easily see in great detail, their current and future liquidity needs. ■