Portfolio Theory and Bank Lending
Avoiding Concentrations of Credit Risk through Strategic Diversification

by Paul Bennett

How can a lender profitably add value using the comparative advantages to be gained from understanding its customers without becoming overly exposed to specific categories of credit risk? Portfolio management theory points to a strategy for successfully balancing the goals of creating valuable loan assets and avoiding excessive risk concentration.

An accepted credo among a growing number of banks is that lending risks must be managed not only at the individual borrower level but also at the portfolio level. A well-capitalized, well-diversified lender generally can remain strong even when several borrowers encounter credit problems.

It’s not easy, however, for lenders to determine when larger concentrations within a portfolio may be exposed to risk. Such concentrations of risk often are revealed only after the fact by such events as major commodity or asset price movements, economic slumps, or foreign exchange rate shifts.

While avoiding large concentrations of exposure is a key responsibility of loan portfolio management, most experienced lenders would agree that successful portfolio management involves much more than simple diversification across a large number of borrowers. In a competitive environment, success lies in strategic diversification, which, in turn, lies in a lender’s comparative advantages—and the essence of both sound bank lending and competitive advantage is to know your customer. Today, when almost any financial asset can be bought, sold, or securitized, the lending officer adds value through his or her specialized understanding of the customer’s strengths, weaknesses, and needs.

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Financial portfolio theory provides practical insights into how a bank should structure a loan portfolio in light of its goals. At the risk of oversimplification, a bank’s goals can be seen as threefold:

1. **Earn strong profits.** A bank’s profitability is ultimately...
derived from its ability to add economic value for its customers. Although this point may seem obvious, in the context of risk management it is helpful to remember that profits are sine qua non.

2. **Avoid large losses.** A bank’s economic value as an ongoing franchise is at stake if poor lending threatens the organization with failure. Careful loan underwriting and effective risk diversification help keep the likelihood of failure tolerably low.

3. **Maintain high shareholder value.** Here, portfolio theory makes an interesting contribution. The theory emphasizes that the market value of an asset cannot be determined in isolation based on its risk and return features. Rather, the real issue faced by bank owners is how their shares in the bank will affect risk and return in their own portfolios.

The third goal puts a different twist on risk and return. A classic example from portfolio theory is a stock that is “risky” in the specific sense that its price fluctuates widely. However, if these movements have low correlation with the overall stock market, then within a larger portfolio they should tend to wash out due to a law-of-large-numbers effect. In contrast, another stock might appear less volatile, but if it is highly correlated with the overall market, then adding it to the investor’s portfolio would raise its volatility disproportionately. Portfolio theory predicts that investors seeking stable portfolio values will bid up the prices of low beta stocks (stocks that are less correlated with the market) relative to high beta stocks.

It is important for lenders to know how portfolio theory, introduced in the third goal, helps to reconcile the apparent tension between the first two goals, that is, the trade-off between profitability through specialization and the need to spread risk through diversification. Because of the expertise required for sound and profitable lending, a bank aiming to diversify into new industries, countries, or elsewhere faces the heightened risk of weak underwriting and diluted profitability. By attempting to diversify, a bank could lose its shirt! Portfolio theory, however, emphasizes that a bank’s owners already can diversify their own risks to a large extent by spreading purchases over a large number of investments.

**Strategic Diversification**

Portfolio theory does not imply that a bank can neglect diversification; rather, it suggests that a bank should diversify strategically. Owners and investors will place a high value on the bank that exploits its comparative skill advantages to make profitable loans. At the same time, the bank requires sufficient diversification to avoid the types of risk concentrations that would seriously weaken its organization, franchise, and deposit base.

In short, a business strategy consistent with portfolio theory principles requires—in addition to an ability to identify profitable lending opportunities—a sound approach to measuring the risk of a loan portfolio as well as an effective means of managing that risk.

**Measuring Portfolio Risk Concentrations**

Lenders can find it difficult to identify potential concentrations of credit risk in a loan portfolio because most borrowers have never experienced major problems. Unfortunately, this factor diminishes the value of recent history as a guide to potential risk. For this reason, models based primarily on statistical track records of loan performance will have limited ability to measure correlations of credit risk across loan assets. Therefore, a deeper understanding of the factors influencing borrowers’ financial conditions is needed.

The same knowledge and information that bankers use to guide lending decisions can also be organized for portfolio management purposes. The trick is to organize this information efficiently. There are so many subtle distinctions among individual loans and loan customers that it is easy to lose sight of the forest for the trees. As a practical matter, it is very difficult for individual loan level information to “percolate up” into a useful understanding of overall risk concentrations.

An alternative to traditional organizational methods is “scenario analysis.” Initiated from the top, scenario analysis is a potentially effective tool for cutting through the individual loan detail and revealing major portfolio risk concentrations.1

Scenarios are built in three stages. First, the portfolio is tested for its sensitivity to each of several selected economic, financial, or other variables affecting loan quality. Variables chosen might be commodity prices, U.S. or foreign econo-
In the second stage of scenario analysis, the selected variables are clustered into reasonable worst-case scenarios. The effects of a U.S. recession, a drop in commodity prices, and a fall in interest rates and the dollar, for instance, could be combined. Loans that could withstand one of these events in isolation could go bad in the scenario. Or other loans could find offsetting effects, such as lower interest rates or dollar exchange rates compensating for lower demand.

In the third stage, adjustments are made to capture the potential portfolio effects of market liquidity changes and the effects of other lenders’ behavior under the scenario. Experience has shown that such behavioral shifts can raise correlations sharply and unexpectedly. There are a number of examples:

- In the case of intermediaries carrying complex “hedged” positions involving diverse market instruments, in a bad scenario the hedges have broken down, that is, negative correlations have become positive.
- Diversification of stock market investments across national borders has not always been a reliable means of offsetting risk in domestic investments because of investor spillover selling when markets are at their worst. However, the degree to which such effects could worsen a risk concentration is very difficult to assess in advance. Fragile funding sources, rapid credit growth, and optimistic lender assumptions may indicate a need to give particular attention to a risk concentration.

Managing Portfolio Risk Concentrations

Having identified an uncomfortably large concentration of credit exposures, a lender faces the challenge of reducing the concentration while protecting profits as much as possible. Methods might include loan sales or securitizations, depending on the asset types. A specialized lender with a strong reputation for developing high-quality assets could continue to capture at least some of the return, first from underwriting the loans and then by finding investors willing to take on those particular risks. Credit derivatives are other potential mechanisms for reducing risk concentrations.

Note that portfolio theory offers an intuitively appealing prediction about how easily a lender will be able to adjust his or her exposures. If the lender’s larger exposures are very specialized and are unlike those in other lenders’ portfolios, then, in principle, the exposures should have a higher price in the secondary loan market because of the diversification opportunities they provide for others. However, if the exposures are high...
beta loans—that is, if their downside is highly correlated with the downside scenarios of many other outstanding assets—then they will have a lower secondary market value and a higher required return. A bank that finds certain loans easy to make but hard to sell might well want to ensure that it is not absorbing excessive portfolio risk without adequate compensation.

**Conclusion**

Lenders typically enjoy profits when they have a comparative skill or information advantage in assessing a borrower’s risks. This specialization, though, can also lead to concentrations of credit risk in a loan portfolio. Since bank stockholders can diversify their own assets, it is not desirable for a bank to diversify for its own sake, because that action involves the risk of lending outside its expertise and weakening its assets. Nevertheless, lenders have to protect their franchises by being able to identify, measure, and manage concentrations of credit risk. Lenders can achieve these goals by using an approach based on analyzing the impact of reasonable worst-case scenarios on their loan portfolios.

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