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How Financial Firms Manage Risk

Over the past several years, there has been a steady march toward financial integration across product lines among larger financial firms. The trend is in part due to the increasing globalization of financial markets, the development of new financial instruments, and advances in information technology. In the United States, the Gramm-Leach-Bliley Act of 1999 permits financial firms to engage in banking, securities exchange, and insurance under a new charter type that creates financial holding companies (FHCs). The Federal Reserve is the primary supervisor for FHCs, and it had granted 640 FHC charters to top-tier holding companies as of January 24, 2003.

The attraction to firms of offering an array of financial services can stem from the potential advantages of cross-selling several products to customers or from the similarity in underlying expertise and information systems used. However, from a supervisory perspective, it is important to recognize that different financial activities typically give rise to different types of underlying risks. This *Economic Letter* outlines these risks and the differing risk management techniques commonly used for banking, securities, and insurance activities.

Common risk categories

Financial firms face four common risks: market risk, credit risk, funding risk, and operational risk. Market risk refers to the possibility of incurring large losses from adverse changes in financial asset prices, such as stock prices or interest rates. Standard risk management involves the use of statistical models to forecast the probabilities and magnitudes of large adverse price changes. These so-called "value-at-risk" models are used to set capital against potential losses. In practice, while models provide a convenient methodology for quantifying market risks, there are limitations to their ability to predict the magnitude of potential losses. To address these limitations, firms also use stress tests that examine the impact of large hypothetical market movements on their portfolio values.

Credit risk is the risk that a firm's borrowers will not repay their debt obligations in full when they are due. The traditional method for managing credit risk is to establish credit limits at the level of the individual borrower, industry sector, and geographic area. Such limits are generally based on internal credit ratings. Quantitative models are increasingly used to measure and manage credit risks (see Lopez, 2001, for further discussion).

Funding (or liquidity) risk is the risk that a firm cannot obtain the funds necessary to meet its financial obligations, for example short-term loan commitments. Three common techniques for mitigating funding risk are diversifying over funding sources, holding liquid assets, and establishing contingency plans, such as backup lines of credit. Generally, firms set funding goals as benchmarks to measure their current funding levels, and take mitigating actions when they are below certain thresholds.

Finally, operational risk is the risk of monetary loss resulting from inadequate or failed internal processes, people, and systems or from external events (see Lopez, 2002, for a more complete discussion). Although operational risk management is a rapidly developing field, standard risk mitigation techniques have not yet been developed.

Common risk management techniques

A key element of financial risk management is deciding which risks to bear and to what degree. Indeed, a financial firm's value-added is often its willingness to take on specific risks. Correspondingly, risk management involves determining what risks a firm's financial activities generate and avoiding unprofitable risk positions. Other important components are deciding how best to bear the desired

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risks and what actions are needed to mitigate undesired risks by shifting them to third parties.

Financial firms protect themselves from risk by setting aside funds to cover losses. Broadly speaking, these funds are known as provisions and capital. Provisions are funds set aside to cover expected (or average) losses, and capital refers to funds set aside to cover unexpected (or extraordinary) losses. Capital takes several forms on the balance sheets of financial firms, but typically it includes such items as shareholder equity. The reliance on provisions and capital varies among financial firms engaging in banking, securities, and insurance activities due to differences in their underlying risks.

Since financial firms have similar general goals regarding risk bearing, some of their risk management techniques are similar. For example, all firms have procedures to ensure that independent risk assessments are conducted and that controls are in place to limit the amount of risk individual business units take. In addition, hedging—i.e., paying third parties to take on some of the risk exposure—is common to all types of financial activities. Market risk is the easiest to hedge, because of the wide variety of exchange-traded and over-the-counter derivatives available. Increasingly, credit risk is hedged using credit derivatives, which are over-the-counter derivatives for which payments are based on borrower credit quality. Finally, certain risk exposures arising from insurance activities can be hedged using the reinsurance market.

At the same time, important differences in risk management techniques exist. As noted in the 2001 report by the Joint Forum consisting of international bank, securities, and insurance supervisors, financial firms tend to invest more in developing risk management techniques for the risks that are dominant in their primary business lines. The report also found that risk management still is conducted mainly on the basis of specific business lines. The following sections highlight the key differences in risk management techniques across financial activities.

Financial risks of commercial banking

A defining characteristic of commercial banking is extending credit to borrowers of all types. Hence, commercial banks' main risks are the credit risk arising from their lending activities and the funding risk related to the structure of their balance sheets. Banks hold loan loss provisions to cover expected losses, but capital to cover unexpected credit accounts for a larger share of the balance sheet. Banks are required to hold minimum levels of regulatory capital, and bank regulators in most countries adhere to the 1998 Basel Capital Accord. As mentioned, credit risk management is placing greater emphasis on producing detailed quantitative estimates of credit risk. These measures are used to form better estimates of the amount of provisions and capital necessary at the portfolio level and to price and trade individual credits; in addition, they would be used for regulatory capital purposes under proposed changes to the Basel Capital Accord.

Commercial banks are particularly vulnerable to funding risk because they finance illiquid longer-term lending commitments with short-term liabilities, such as deposits. Broadly speaking, funding risk management consists of an assessment of potential demands for liquidity during a stressful period relative to the potential sources of liquidity. To avoid a shortfall, banks seek to expand the size and number of available sources, for example, the interbank market. In the United States, banks also have access to the Federal Reserve discount window.

Financial risks of securities activities

Securities firms engage in various financial activities, but key among these are serving as brokers between two parties in transfers of financial securities and as dealers and underwriters of these securities. The degree to which individual securities firms engage in these activities varies widely. In general, a large share of securities firms' assets are fully collateralized receivables arising from securities borrowed and reverse repurchase transactions with other market participants. Another asset category is securities they own, including positions related to derivative transactions. The main risk arising from securities activities is the market risk associated with proprietary holdings and collateral obtained or provided for specific transactions. Securities firms generally do not maintain significant provisions because their assets and liabilities can be valued accurately on a mark-to-market basis. Hence, hedging techniques and capital play dominant roles in risk management for securities firms.

With respect to credit risk, securities activities generate fewer credit exposures than commercial bank lending. With fully secured transactions, securities firms mitigate their credit risk exposures by monitoring them with respect to the value of the collateral received. For partially secured or unsecured transactions, such as funds owed by counterparties in derivative transactions, they mitigate credit risk by increasing or imposing collateral requirements when the creditworthiness of the counterparty deteriorates. In addition, with frequent trading counterparties, securities firms enter into agreements, such as master netting and collateral arrangements, that aggregate and manage individual transactions exposures.

Securities firms have significant exposure to funding risk because a majority of their assets are financed by short-term borrowing from wholesale sources, such as banks. The liquidation of their asset portfolios is viewed as a source of funding only as a last resort. Accordingly, the primary liquidity risk facing securities firms is the risk that sources of funding will become unavailable, thereby forcing a firm to wind down its operations. To mitigate this risk, securities firms hold liquid securities and attempt to diversify their funding sources.

Financial risks of insurance activities

Insurance activities are broadly divided into life and non-life insurance, and firms specializing in either category face different risks. Specifically, these two types of activities require firms to hold different technical provisions, by virtue of both prudent business practices and regulatory mandates. For life insurance companies, technical provisions typically are the greater part of their liabilities—about 80%, according to the Joint Forum report—and they reflect the amount set aside to pay potential claims on the policies underwritten by the firms; capital is a relatively small percentage. Thus, the dominant risk arising from life insurance activities is whether their technical provisions are adequate, as measured using actuarial techniques. While term-life insurance policies are based solely on providing death benefits, whole-life insurance policies typically permit their holders to invest in specific assets and even to borrow against the value of the policies. Hence, life insurance companies also face market and credit risks.

For a non-life insurance company, technical provisions make up about 60% of liabilities, which is less than observed for life insurance companies. The different balance between provisions and capital for non-life insurance companies reflects the greater uncertainty of non-life claims. The need for an additional buffer for risk over and above provisions accounts for the larger relative share of capital in non-life insurance companies' balance sheets.

Regarding funding risk, insurance activities are different from other financial activities because they are prefunded by premiums; for this reason, insurance companies do not rely heavily on short-term market funding. Life insurance companies have more than 90% of their assets in the investment portfolio held to support their liabilities. Hence, whether the investment portfolio generates sufficient returns to support the necessary provisions is a major financial risk. Investment risks include the potential loss in the value of investments made and therefore include both market and credit risk. These investment risks traditionally have been managed using standard asset-liability management techniques, such as imposing constraints on the type and size of investments and balancing maturity mismatches between investments and liabilities.

Conclusion

Several factors have contributed to the convergence of the financial service sectors. Yet, significant differences in their core business activities and risk-management techniques remain. There are also important differences in the regulatory capital frameworks, reflecting differences in the underlying businesses.

As firms become active participants in new markets and take on new types of financial risks, it is important that appropriate policies and procedures be put into place to measure and manage these risks. However, risk management still is conducted on the basis of specific business lines. Hence, the challenge for risk managers is to aggregate different financial risks across the firm accurately. At present, there are significant practical and conceptual difficulties associated with these calculations. Because of differing time horizons and the difficulty of precisely measuring correlations across financial risks, many firms calculate the amount of economic capital separately for each risk type and aggregate. Clearly, simple summation is too conservative, since it ignores any possible diversification. Much further research is necessary to determine the best methods for firm-wide risk management for FHCs.

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