P1.T1. Foundations of Risk

Stulz, Governance, Risk Management and Risk-Taking in Banks

Bionic Turtle FRM Study Notes

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ASSESS METHODS WHICH BANKS CAN USE TO DETERMINE THEIR OPTIMAL LEVEL OF RISK EXPOSURE, AND EXPLAIN HOW THE OPTIMAL LEVEL OF RISK CAN DIFFER ACROSS BANKS. ............ 3
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Stulz, Governance, Risk Management …

Assess methods which banks can use to determine their optimal level of risk exposure, and explain how the optimal level of risk can differ across banks.

Describe implications for a bank if it takes too little or too much risk compared to its optimal level.

Explain ways in which risk management can add or destroy value for a bank.

Describe structural challenges and limitations to effective risk management, including the use of VaR in setting limits.

Assess the potential impact of a bank’s governance, incentive structure and risk culture on its risk profile and its performance.

Assess methods which banks can use to determine their optimal level of risk exposure, and explain how the optimal level of risk can differ across banks.

The most compelling argument for managing financial risks is that bad outcomes can lead to financial distress, and financial distress can be very costly. The optimal level of risk is the level that maximizes bank value subject to the constraints imposed by regulators, laws, and regulations. A bank should accept any project that is expected to earn more than its cost of capital, while taking into account the costs associated with the impact of the project on the bank’s total risk.

Banks are different from most industrial companies because banks create value for shareholders through their liabilities as well as their assets. They attract deposits that, thanks to their liquidity and the federal guarantees behind them, provide most banks with a low-cost source of funding.

- For “retail” banks, the value of the franchise depends largely on the bank’s success in gathering deposits. A bank’s ability to issue deposits depends importantly on the perceived risk of the bank. For this reason alone, risk management is a critical part of the business model of banks in a way that it is not for non-financial firms.

Anticipating the effects of new projects on a bank’s risk is complicated by the reality that risk-taking decisions are made throughout the organization. Decisions to take on new projects and associated risks cannot be evaluated in isolation. They must be assessed in terms of their impact on the overall risk of the bank.
If there is an optimal level of risk for a bank, the costs associated with taking on a new project or activity that increases the bank’s total risk should be traded off against the potential gain from taking the risk. There are some projects it would never make sense for a bank to take on such as activities that are clearly negative-NPV projects that can be expected to destroy value as stand-alone risks. We will call these projects “bad risks” to distinguish them from the other, potentially value-adding activities. Such projects have negative expected outcomes.

- **Example:** A trading desk’s writing of underpriced, deep-out-of-the-money puts based on traders’ expectation that if the puts are not exercised and the desk ends up booking the premiums as income, the traders will receive higher bonuses. For the traders themselves, this seems like a can’t-lose proposition. If the puts do end up being exercised, the traders would have been unlikely to receive a bonus anyway because asset values would have had to have fallen by a lot. But for the bank’s shareholders, such a trading strategy is a negative NPV project as a stand-alone project since the bank is selling an asset for less than it is worth.

Consider the case of writing puts that traders believe to be overvalued. The trading strategy would be a positive-NPV project on a stand-alone basis, and so a “good risk.” But whether taking such a risk adds value for the bank as a whole depends on its effect on the overall risk position of the bank.

In both cases, the one involving a bad risk and the other a good risk, there is an increase in the bank’s total risk. While it is clear that taking the bad risk makes no sense for the bank, whether it makes sense to take the good risk cannot be decided on a stand-alone basis. In evaluating the case for taking on the good risks, a bank’s risk managers must try to ensure that the expected gains outweigh the costs associated with the expected increase in the bank’s overall risk.

There is another major challenge for risk management in banks. **When risk-taking is decentralized for most risk-taking actions, the tradeoff between a project’s contribution to the bank’s risk and its expected return cannot be made in real time.** Instead, a short-cut is needed, and it must be one that enables traders and their supervisors to focus on individual risks separately while at the same time giving the bank’s management the means to manage the bank’s overall risk. The main challenge in developing and operating such a two-level risk evaluation system is to prevent the oversight function from rejecting projects that are valuable for the institution despite their risk.

**Risk appetite**

A bank’s credit rating and risk posture reflect what is often referred to as its “appetite” for risk. A bank’s risk appetite is top management’s assessment of the expected effect on the bank’s risk and value of taking on more risky investments and activities. Because this assessment can change with changes in the bank’s opportunities, a bank’s risk appetite should not be determined once and for all, but continuously monitored and reevaluated. A bank’s risk appetite should not be defined in such a precise way that a small shift in opportunities will affect it.
Describe implications for a bank if it takes too little or too much risk compared to its optimal level.

Laws and regulations play a special role in the case of banks because the failures or weaknesses of banks can have damaging effects on the financial system and the economy. When thinking about the effects of regulation, it’s important to recognize that market forces also play a role in causing banks to limit their risks.

If a bank is managed to maximize shareholder wealth, it will choose a level of risk that is consistent with that objective. Banks that operate with too much risk cannot conduct their business even if regulators allow them to do so because they find it hard to fund themselves. While deposit insurance guarantees depositors against losses, it does not guarantee their continuous access to their deposits.

- **Many short-term liabilities of banks are not insured.** To the extent that safe and liquid deposits are a source of value for banks, the market’s perception that a bank has too much risk can reduce its value by limiting its ability to attract such deposits. Some borrowers have no reason to care if the bank they borrow from is too risky, but others will care. Borrowers that rely on their relationship with the bank could see that relationship jeopardized or lost if the bank becomes distressed and those borrowers may seek to borrow elsewhere rather than deal with a risky bank.

- If the bank is in the derivatives business, counterparties will be reluctant to deal with it if it is too risky. A bank that is perceived as fragile might also find it difficult or expensive to hire potential employees reluctant to make bank-specific investments in human capital.

**Other reasons can be cited for how excessive risk can reduce a bank’s value in the eyes of its shareholders.** A bank that takes no risk probably won’t be worth anything. As a general rule, banks have to take some risks to create wealth for their shareholders. There are many ways to define risk. For risk to affect the value of a bank to its shareholders, it must affect either the bank’s expected future cash flows or the rate at which these cash flows are discounted.

- The possibility that an unexpected downturn in a bank’s cash flow could lead to its financial distress sometime in the future should reduce the value of the bank today. The market will adjust its estimate of the bank’s going concern value for the probability that the bank will experience financial distress and will no longer be able to carry out its strategy and maintain operations as before.

- The optimal rating of a bank is unlikely to be the highest rating, which is AAA. For almost all public corporations, achieving a AAA rating would require the sacrifice of too many valuable risky projects. No U.S. bank holding company today has an AAA rating, and only a handful outside the U.S. do.

- Suppose that the value of a specific bank is expected to be the highest when operating with an A rating. The first point to keep in mind here is that an A rating, although several notches below AAA, is still consistent with a very low probability of default. By targeting a certain credit rating, a bank’s management is also targeting a specific probability of default and the bank’s desired level of risk. For that institution, a rating higher than A will necessarily limit its activities, possibly forcing it to give up some existing operations as well as planned projects. However, a rating lower than A could make it difficult or impossible for the bank to continue some value-creating activities.
Banks with very different strategies, or liability and asset structures, could end up having very different credit ratings, and different attitudes toward risk. Figure 1 shows the relation between credit ratings and bank value for two different kinds of banks—and let’s call them “Bank Safe” and “Bank Risky.”

![Figure 1: Bank Value as a Function of Bank Risk Measure by the Bank’s Credit Rating](image)

In both cases, the relation between ratings and bank value is “concave,” which means that there is a single value-maximizing credit rating or risk posture.

- In the case of **Bank Safe**, the value of the bank falls sharply if it turns out to be riskier—whether because of a shift in management strategy or a change in external circumstances—than its target rating. Banks with large amounts of non-insured deposits tend to look like Bank Safe.

- **Bank Risky** has a very different relation between its value and its rating. Its target rating is BBB, and its value increases substantially as it increases its risk towards its target—and falls sharply when it exceeds it. For both banks, having too much risk is extremely costly in terms of their value. But, for Bank Safe having too little risk appears to have little cost while for Bank Risky it has a large cost.

The main lesson here is the importance of expected financial distress costs when determining the value-maximizing risk profile for banks. And the size and importance of financial distress costs—and hence a bank’s optimal credit rating—will depend on a bank’s business model and investment opportunities.

Most banks that expect to add value mainly through “traditional” activities such as deposit-gathering and relationship lending will choose to maintain a low-risk profile. And the same is true of financial institutions with credit-sensitive operations like derivatives dealing and third-party guarantee businesses. By contrast, banks and other financial institutions with less reliance on deposit-gathering activities are likely to see more value in targeting a less restrictive credit posture.