The Role of Risk Bearing by Financial Institutions, Part 1

By PETER J. BARRY, Professor and Distinguished Chair of Agricultural Finance, University of Illinois

This series of two articles is adapted from a speech given by Professor Barry at the 2003 CGA Accounting Research Centre conference.

Introduction

One of the traditional features of financial intermediation is the specialization of financial institutions in the compilation and analysis of information about borrowers’ credit worthiness.¹ Timely, accurate, and relevant credit risk information is essential to the successful channeling of funds from savers to investors. The goal is to provide the best information possible with an equitable distribution between lenders and borrowers. In the process, economies and reliabilities in the information-generating process contribute to financial market stability and enhance economic growth. Borrowing itself signals acceptable credit worthiness by at least one lender to the investing public, although the degrees of credit risk can range widely. The seniority of claims by debt capital over equity capital gives the further appearance of moderating the lender’s risk position. Such moderation, however, may not always hold.

The purpose of this series is to explore the role of financial markets and institutions in contributing to the information, risk management, and control functions during the investment process. This goal is accomplished by, first, in Part 1, reviewing the concepts that underlie financial relationships and contracts; then by identifying the risk bearing roles and practices of financial institutions; and lastly, by considering, in Part 2, how new capital adequacy guidelines proposed for financial institutions in the New Basel Accord will influence the markets for information.

An underlying premise is that further emphasis on the financier’s role in ensuring safety and soundness will expand the scope for controlling periodic, unanticipated behaviour by various types of organizations. Included in such behaviour are the incidences of fraud, conflicts of interests, erroneous earnings, and other opportunistic behaviour experienced recently by several large corporations. Because these factors result in increased credit risks and potential for loan losses by financial institutions, they have important stakes in risk detection, management, and control. Augmenting the financial institution’s role in this process is the public’s interest in a safe and sound financial system as expressed through an extensive and rigorous regulatory system.

¹ Other pillars include the channeling of savings into investment, the production of financial products and services, and participation in the payments system.
Financial relationships — Contracts and concepts

Several elements of the modern theory of the firm (also called the economics of organizations and new institutional economics) elucidate the key attributes of contracts that underlie financial intermediation. The lender is the principal who allocates loan funds to a borrower, with the goal of having the borrower return the funds plus interest in a safe and timely fashion. The borrower’s actions are intended to contribute directly to the lender’s goal attainment. However, due to informational differences between the two parties, misaligned incentives, and uncertain expectations, the performance of the loan contract may be highly uncertain and the terms of the contract inherently incomplete. Agency costs attributable, in general, to monitoring, bonding, and residual losses then are incurred in structuring, administering, enforcing, and adapting contracts in order to better align incentives, reduce informational problems, and respond to uncertainties (Jensen and Meckling, 1976).

Two of the lender’s major concerns are: (1) whether the borrower is riskier than believed when the loan was originated (an adverse selection problem), and (2) whether the borrower will take on greater risks during the term of the loan than were originally anticipated (a moral hazard problem). These conditions are attributable to asymmetries in both incentives and information between borrowers and lenders. The borrower is motivated by profitability and wealth accumulation, and shares directly in the return (favorable or unfavorable) earned by the loan proceeds. In contrast, the lender is restricted to the fixed return of the loan funds plus interest as established in the loan contract, although additional benefits may come from growth over time in a successful borrower’s financing needs. Downside risk dominates for the lender in evaluating a borrower’s credit worthiness. Between the two parties, the lender emphasizes loan re-payability and safety, while the borrower focuses more on profitability and wealth.

Asymmetric information is also directly involved because the lender may lack information about the borrower’s goals and actions, as well as about the risks of the project being financed. Borrowers are the initial source of loan performance and are considered to know better than lenders about their abilities, experiences, and intentions. Much of both parties efforts are, thus, directed toward resolving information problems.

Adverse incentives for borrowers may also arise because they do not bear the full consequences of their actions. As leverage increases, the consequences of more of the borrower’s actions that lead to default are born by the lender (Stiglitz, 1985). A borrower, then, has an increasing incentive to take riskier actions and ultimately to employ a go-for-broke attitude in the quest for survival. This attitude counter-balances the normal discipline exerted by the borrower to meet financial obligations, increases the cost of financing for the lender, and increases the lender’s likelihood of becoming an owner of the borrower’s assets. The lender, in turn, has an increasing incentive to control the borrower’s actions.

Incomplete contracting and property rights then come into play to modify the design of the contract and to better align control rights with the incidence of risk bearing, where the residual rights of control (those not designated by the financial contract or by law) are synonymous with ownership (Hart, 1995; Berglof, 1990). The allocation of control and ownership under this approach is state dependent — under normal conditions, equity holders own and control the firm’s assets. Under extreme adversity, financial contracts are designed so that ownership and control revert to the debt holders, according to seniority and size of claims. Debt capital, thus, represents a form of contingent ownership of the firm.

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2 Such a transfer of ownership and control is subject to the borrower’s potential claim to bankruptcy. Such a claim, however, usually follows enough adversity that lenders have already exerted greater control.
In effect, the incomplete contracting approach suggests that the parties to the contract must determine at the outset who is best suited to control the firm in various situations and what performance levels will signal the need for a transfer of control. Reallocation of control and the sharing of return streams are intended to provide the appropriate incentives for the exercise of efforts by the parties commensurate with their respective ranges of control (Berglof, 1990). That is, the party holding residual control rights over a specified range of states should bear the risk and reap the expected returns associated with decisions in these states.

In practice, the control delineations that distinguish between debt and equity capital may reflect the lender exercising control through a narrowing range of decision making for the firm’s equity holders (see the discussion below) and ultimately by the conversion of debt to equity claims on the borrower’s income and assets. The process is further complicated by the possibility that borrowers may file for bankruptcy, thus gaining time to protect their assets from lenders’ claims, and involving the court system in the ultimate resolution of the problem.

**Financial markets and risk bearing**

Financial institutions and markets can contribute to the efficient bearing of risks and the resolution of information and incentive problems in a variety of ways. These ways are discussed in the following sections.

**Risk rating systems for borrowers**

The goals of collecting and processing information about the credit risk of borrowers are to reduce the likelihood of adverse selection and moral hazard problems, minimize probabilities of loss, tailor financing terms and requirements to the borrower’s credit risk, and to determine the level of economic capital needed by the lender for withstanding expected and unexpected losses.

For manageability, lenders generally group their borrower’s into a designated number of risk classes (typically 10 or more classes for larger lenders), in some cases using or mapping to the ratings provided by external credit rating agencies. In other instances (e.g., smaller loans, retail loans), a credit score or quantitative analysis alone determines loan decisions. Generally, larger commercial scale borrowers are rated through a combination of judgmental and quantitative analysis involving financial information and other attributes such as quality of management, industry standing, and access to financial markets. The larger the loan, the greater is the reliance on the more expensive judgmental evaluations, because the higher costs of these evaluations can be allocated over greater loan volumes. High quality accounting information is essential to credit analysis, although lenders may assemble it in measures important to them (e.g., coverage ratios, debt service capacity, loan to value measures, collateral positions).

In recent years, financial institutions are giving greater attention to dual rating systems that estimate: (1) probabilities of default based on borrower characteristics, and (2) loss-given-default based on characteristics of the loan transaction (e.g., collateral, guarantees, seniority of claims) (Smithson, 2003; Saunders, 2002; Caouette, Narayanan, and Altman, 1998). Greater credit risk is associated with high probabilities of default while more secure/collateralized loans reduce rates of loss-given-default. Such an approach adds precision and flexibility to credit risk assessments, because the probabilities of default and loss-given-default do not move together in lock-step. While often positively correlated, well-secured loans that experience relative high frequencies of default may have moderate levels of loan loss.

These measures of frequency and severity of default then are combined to determine expected and unexpected losses, correlations among loan classes, and the counterbalancing level of
Economic capital financial institutions should hold to meet the financial institution’s tolerance for risk (e.g., safe 99 years out of 100). These safety margins represent “value-at-risk” information that helps institutions make better decisions about capital adequacy, capital allocation within the institution, loan pricing analysis, and profitability indicators (risk-adjusted return on capital, or RAROC) at all levels of the institution — loan, customer, loan department, loan portfolio, and institutional levels.

Financial institutions and specialized financial rating companies are unique in generating these comprehensive risk ratings. No others with a direct financial claim on an entity provide comparable risk assessments. The risk ratings compiled by insurance companies, for example, generally focus on specific contingencies (health, life, property) rather than overall performance. Ratings of equity securities are seldom as fine-tuned and granular as credit ratings.

The generality of lender’s risk ratings is limited, however, by the differences cited earlier in the perspectives of borrowers and lenders. Borrowers tend to emphasize profitability and wealth, while lenders emphasize re-payability and security. Thus, the credit risk ratings primarily reflect the lender’s perspective.

In validating the risk ratings, lenders develop loan review processes that may occur in several ways: monitoring by those who initially assign ratings, regularly scheduled review activities, periodic reviews of rating assignments by a specialized loan review unit, and reliance on periodic examinations of loan quality by regulatory agencies. The goals of monitoring and reviews are to alert the rater to timely, needed changes in risk grades. The loan review function at most institutions is critical to maintaining the discipline and consistency of the overall rating process. Even the anticipation of the review function and the potential use of sanctions for inaccurate and unreliable ratings help to ensure that lending personnel have the necessary incentives and motivation for effective use of the rating process.

**Performance monitoring of borrowers**

Closely related to the risk rating and scoring procedures is the lender’s monitoring of the borrower’s performance. Monitoring is intended to reduce asymmetric information between the lender and the borrower throughout the time of the loan contract, and to guard against potential opportunistic behaviour. Monitoring, therefore, contributes to the cost of managing credit risk. Lenders attempt to minimize these costs by tailoring the extent and style of monitoring to the borrower’s characteristics. An extreme example is the case of the very large, multi-national, highly-leveraged firm that has lender personnel located on site in the borrower’s business, and where the lender has on-line access to the borrower’s accounts. An opposite extreme is the case of microfinance in developing countries in which monitoring helps ensure the lender that the borrower is “still there.” Between these extremes are various degrees of monitoring of repayment performance, collateral valuations, and changes in the borrower’s financial conditions and management practices.

In some cases, the lender’s monitoring function is outsourced through the use of warehousing companies or other entities to monitor collateral, and field servicing companies to handle the borrower’s payment transactions. Outsourcing makes more explicit the costs of utilizing specialized monitoring services. It also brings another principal-agent relationship into the process, along with the attendant agency costs (i.e., monitoring the monitor).

**Financial constraints on debt and equity**

Credit rationing by lenders is a plausible outcome in response to information asymmetries that hamper the lender’s distinction between high and low risk borrowers (Stiglitz, 1985). The mechanisms are credit denials to potentially creditworthy borrowers or limitations on loan sizes to all potential creditworthy borrowers. This form of credit rationing reflects uncertainties about loan performance, and thus constrains the borrower’s financial risks, at
least from the lender’s point of view. Stiglitz’s and Weiss’s (1981) contributions are landmark ones in relating borrower’s adverse incentives to asymmetric information and the resulting potential for credit rationing.

In general, lenders can successfully manage credit risks in other ways before resorting to credit rationing, although the option of not lending always exists. Ultimately, the primary constraint for borrowers is equity capital rather than debt capital. Under asset-based lending or when limits are placed by lenders on the borrower’s financial leverage (i.e., the debt-to-equity ratio), increases in equity capital are needed to expand access to debt capital.

Financial contracting and constraints on decision making

Besides financial constraints, lenders may also exercise various controls over the borrower’s decision making (Smith and Warner, 1979). The “contingent ownership” feature of debt capital implies that the residual rights of control and ownership should increasingly shift to lenders as their stake in the borrower’s entity increases and as more of the costs of the borrower’s actions accrue to lenders through increased credit risks. Such shifts provide lenders with the appropriate incentives to protect their debt claim. Most debt contracts are written in this fashion. That is, under extreme adversity, ownership and control revert to debt holders according to the seniority and size of their claims.

Debt contracts can accomplish this through an increasingly extensive set of credit provisions, as adversity increases and as loan situations become more complex. Included among the terms and covenants in debt contracts may be the following:

- loan size limitations
- interest rate adjustments
- length of maturity
- repayment alternatives
- collateral requirements
- use of loan guarantees
- repayment due on demand
- late payment fees
- foreclosure
- inspections
- reporting requirements
- accounting requirements
- business and loan performance benchmarks
- restrictions on asset sales
- withdrawal limitations
- insurance requirements
- compliance certification

These contract provisions are intended to forestall, correct, or constrain the actions of borrowers that cause adverse selection and moral hazard problems, thus improving the prospects for successful loan performance. The greater are the complexity and potential adversity of loan situations, the more extensive are the provisions in loan contracts. As debt instruments, these contracts cannot directly involve lenders in the borrower’s decision making. At the same time, however, the provisions may increasingly constrain the range of choices available to borrowers, thus resembling the effects of managerial participation. The end goals are to control the borrower’s risk position and, thus, safeguard the lender’s debt claim.

Borrower behaviour

Financial institutions may also motivate changes in borrower behaviour that increase the prospects for effective risk controls. Borrowers search for ways to signal to lenders that they are acceptable risks. Signaling makes direct use of information channels to distinguish lower
risk borrowers who are better able to clearly display their distinctive risk positions. Lower risk borrowers may, for example, use new technologies, sophisticated risk management practices, and bonding alternatives (pledges of collateral, loan guarantees, co-signing) to convey their risk attributes and, thus, reduce the lender’s concerns about potential severity of default.

Michael Jensen’s (1986) free cash flow concepts also apply to the relationship between credit risk and financial obligations. The idea is that external obligations can discipline borrowers to put forth greater effort to meet these obligations, thus reducing the chances for lax and inattentive management behaviour. Such relationships were part of the motivation for numerous leveraged buy-outs in recent decades. Excessive obligations, however, can create conditions for borrower’s adverse incentives and go-for-broke behaviour. The latter reflects the increasing perception that lenders will bear the costs of increasing financial problems as borrowers’ leverage positions increase.

**Encouraging risk management**

The borrower-lender relationship may also influence and encourage the borrower’s risk management in less direct ways. Improved accounting, especially by smaller entities, risk-reducing marketing plans, insurance, enterprise diversification, and other practices will improve the prospects of successful loan performance, protect lenders more fully against credit risk, and perhaps allow greater, more flexible credit availability at lower cost. Experienced borrowers recognize these lender responses and may employ risk management more rigorously in order to solidify the lender-borrower relationship.

**Pooling and spreading risk**

Financial markets and institutions also are able to reduce aggregate risks through the larger size and diversity of loan portfolios. The non-systematic portions of stand-alone credit risks of individual loans are diversified away by adding individual loans to a large, well-diversified portfolio. As a result, the average risk premium contained in borrower’s loan rates, as well as the institution’s economic capital need only cover systematic risks, thus reducing the lender’s costs of risk bearing. The resulting risk premiums in loan rates and economic capital requirements then can be allocated among borrowers based on their respective levels of systematic risk. Both of these measures — interest rates and economic capital — can be reduced by the larger size and greater diversity of loan portfolios.

Larger sizes and expanded geographic scope of institutions further add to potential gains in risk efficiency from loan diversification, although the marginal gains likely diminish significantly as these expansions continue. These patterns were confirmed by us in the simulation of portfolio credit risks for securitized agricultural mortgage loans with relatively strong underwriting characteristics (Sherrick, Barry, and Ellinger, 2000). Much of the gains in risk efficiency are realized by loan pools in the $50 million to $100 million range and above. The risk reduction in basis points of interest rates may appear low, but it becomes significant when considered across institutions with large size and high leverage positions.

Peter J. Barry is a professor of Agricultural Finance at the University of Illinois and Director of the Center for Farm and Rural Business Finance. Prior positions included faculty assignments at Texas A & M University and the University of Guelph in Canada. His research and outreach activities focus on financial markets and institutions; federal, state credit policies for agriculture; and financial management of agricultural firms. He has had extensive involvement in projects, workshops, and conferences with agricultural lenders, policy groups, farmers, agribusinesses, and others. Professor Barry has served as President of the American Agricultural Economics Association (AAEA) and Editor of the American
Journal of Agricultural Economics. He was recently elected a Fellow of AAEA and holds the Distinguished Chair of Agricultural Finance at the University of Illinois.

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