2

Corporate Financing: Some Stylized Facts

2.1 Introduction

One of the goals of corporate finance theory is to help predict or advise on security issues and payout policies at various stages of a firm's life cycle. There is much discretion involved in specifying a security's cash-flow rights, control rights, and other rights (collateral, options) and the contingencies under which these rights are triggered and exercised. As for corporate governance in Chapter 1, the purpose of this selective review of corporate financing and payout policies is to guide the later theoretical construct and to enable future feedback concerning the accuracy of its predictions.

This chapter offers a succinct description of the financing of firms, focusing on their main financial instruments: debt and equity, in their different varieties.

2.1.1 A Wide Variety of Claims

The simplest form of debt is a claim to a predetermined level on the firm's income. Equityholders receive any profit, that is, are "residual claimants," beyond that level. On the other hand, if debt is not repaid, shareholders receive nothing and debtholders are entitled to the existing income. The view of debt and equity as claims with concave and convex return structures, respectively, is represented in Figure 2.1 for some arbitrary reimbursement level D.

Note that debt in a highly leveraged or "undercapitalized" firm (D high) resembles equity in a modestly leveraged or "well-capitalized" one (D low), in that in both cases claimholders are basically residual claimants at all income levels. Thus, securities that are labeled one way (e.g., debt) may have cash-flow features (and, as we will later see, functions) that are more characteristic of another type of securities (e.g., equity).

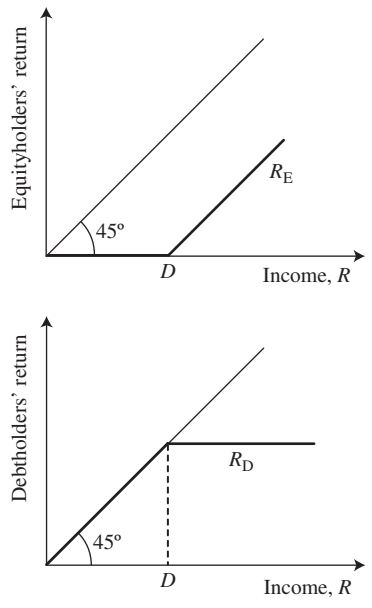

Figure 2.1

This elementary description of financial claims is a useful starting point, but it is oversimplistic. In particular, it ignores the following considerations:

• The firm is usually an ongoing entity, which produces a stream of returns rather than a single one. The one-dimensional representation of Figure 2.1 is at best a condensed view of the stream of returns attached to the claim.

• Who holds the claim in general matters. Corporate governance, for example, depends on whether equity is held by "insiders" (managers, entrepreneurs) or by "outsiders"; on whether share ownership among outsiders is concentrated in the hands of one or a couple of main shareholders or is spread among many shareholders; and on whether debt is held by a large player (such as a bank) or by dispersed investors.

• Claims are not simply defined by their attached returns streams. Claimholders also receive control rights, that is, the right to make decisions, whose scope is either specified in advance or is defined by default (residual rights of control), in circumstances that are defined contractually. For example, shareholders usually have control rights as long as debt covenants are satisfied, but debtholders acquire some control rights in case of violation of these covenants.

• Income (R) may be hard for outsiders to verify in the case of small entrepreneurs. Medium and large firms in contrast usually have a fairly reliable accounting structure, although accounting manipulations may enable managers to shift reported income between years (for instance, through the choice of date of recognition of expenses and revenue), and more generally to distort the overall picture of earnings performance and capabilities.

• Debt may be decomposed into ordinary debt and *secured debt*. When debt is not fully reimbursed, secured debtholders do better than ordinary debtholders as they can seize the assets used as collateral as part of their lending contract.

• The debt–equity dichotomy does not do justice to the richness of claims encountered in the corporate world. Rather than giving a comprehensive description of the many existing claims,[1] here we shall describe a few of the most common intermediate claims between debt and equity.

First, one must distinguish between *senior debt* and *subordinated* or *junior debt*. In the case of default, more senior debtholders are reimbursed first; holders of subordinated debt are then repaid if enough is left, as they have priority over equityholders. Junior debt must therefore deliver a higher yield than senior debt in order to compensate for the higher risk of default. Figure 2.2 depicts the returns attached to subordinated debt when the firm must pay D to senior debtholders and d to junior debtholders. The return schedule for subordinated debt is neither convex nor concave. For d large, subordinated debt resembles equity: a severely undercapitalized (that is, highly leveraged) firm is unlikely

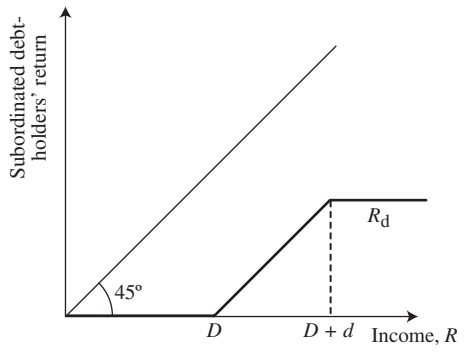

Figure 2.2

to produce much income for its shareholders, so the holders of subordinated debt are almost residual claimants once senior debt is reimbursed. Conversely, for small amounts of senior debt D, the preferences of junior debtholders resemble those of ordinary debtholders.

Another common intermediate claim is (*cumulative*) *preferred stock*. Preferred stock is like debt in that its holders are entitled to a fixed, predetermined repayment. Unlike debt, the firm is not obliged to pay back this specified amount, and thus nonrepayment does not trigger default. However, the firm cannot pay a dividend on (common) stock unless the cumulative (past and current) payments due to preferred stockholders have been made. Preferred stockholders are thus senior to (common) stockholders. Also, while common stocks usually carry voting rights, preferred stockholders often do not have voting rights. They thus have little control over the firm. Their claim is junior to debt, and so for a financial structure made of debt, preferred stock, and equity the returns attached to preferred stocks are also depicted by Figure 2.2 in a single-period context. However, in an ongoing context, preferred stock gives the firm more flexibility on the repayment schedule than subordinated debt.

Subordinated debt and preferred stocks are instances of *mezzanine finance*, that is, of investments that occupy a middle-level position between common equity and senior debt in the firm's capital structure. Mezzanine investments[2] (with exceptions: preferred stocks are usually publicly traded)

1. See, for example, Allen et al. (2005) for more details. Finnerty (1993) provides an overview of some sixty recently introduced types of (debt and equity) security.

2. See Willis and Clark (1993) for more on mezzanine finance.

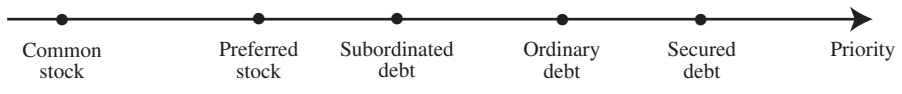

Figure 2.3 Priority structure.

generally are privately placed[3] and often include equity participations in the form of warrants[4] and stock appreciation rights.[5]

The priority structure of the main claims described so far is summarized in Figure 2.3.

A last major intermediate claim is *convertible debt*, one of the many claims that take the form of an option, which the holders can elect to exercise if circumstances are favorable. Convertible debt is basically debt, except that its holders can exchange it for the firm's shares at some predetermined conversion rate.[6] The holders of convertible debt may exercise this option and acquire shares, for instance, if the firm's prospects become favorable, or if for a given expected income of the firm the riskiness of the firm's income has increased due to changes in the environment or to managerial choices (well-diversified holders of a convex, respectively concave, claim like, respectively dislike, risk). Indeed, Jensen and Meckling (1976), among others, have argued that the convertibility option protects debtholders against excessive risk taking by the firm. To see why, consider a corporate move that does not affect the firm's expected profit, but increases its riskiness.[7] For example, the firm may put all its eggs in the same basket by investing in a single risky activity, or by refraining from hedging against market risk (e.g., foreign exchange, interest rate, or raw material risk). Risk-neutral or well-diversified investors benefit from this increase in risk if they hold a convex claim, and they lose if their claim's return profile is concave. In this sense, (diversified) equityholders like (mean-preserving) increases in risk while debtholders dislike such increases in risk. Indeed, equityholders may gain even if the increase in riskiness reduces total investor value (value of debt plus equity), the case of a mean-decreasing increase in risk. For this reason, debtholders are particularly wary of decisions that affect riskiness. To protect themselves against abusive risk taking by the corporation, debtholders may demand covenants that force the firm to exert care; but it may be difficult to force the firm to hedge adequately and so the debtholders may be further protected by a convertibility option: a move that enriches shareholders to the detriment of debtholders is then undone if the latter have the option to convert their claim into an equity claim.

2.2 Modigliani–Miller and the Financial Structure Puzzle

Why do we care about the firms' financial structure? The short answer is that insiders as well as outsiders (commercial banks, investment banks, rating agencies, venture capitalists, equityholders, etc.) devote a lot of attention to its design. But we must also ask whether this attention is warranted. As a matter of fact, economists were stunned when, in two articles in 1958 and 1961, Modigliani and Miller came up with the following rather striking and somewhat counterintuitive result. Under some conditions, the total value of the firm—that is, the value of all claims over the firm's income—is independent of the financial structure. That is, the level of debt, the split of debt into claims with different levels of collateral and different seniorities in the case of bankruptcy, dividend distributions, and many other characteristics or policies relative to the financial structure have no impact on total value. In other words, decisions concerning the financial structure affect only how

3. A private placement is an issue that is offered to a single or to a few investors. In the United States, private placements do not have to be registered with the SEC.

4. A warrant is a long-term call option, that is, an option to buy the security at a specific exercise price on or before a specified exercise date.

5. Stock appreciation rights are stock options which enable their holder to receive the capital gain relative to the exercise price without supplying cash.

6. A convertible bond resembles a package of a bond and a warrant (a warrant is an option to buy shares at a set price on or before a given date). The difference is that the payment to buy the shares is in cash in the case of a warrant, and in a bond in the case of a convertible.

7. In the sense of a mean-preserving spread (i.e., second-order stochastic dominance).

the "corporate pie" (the statistical distribution of income that the firm generates) is shared, but has no effect on the total size of the pie. Thus, an increase in debt or a dividend distribution dilutes the debtholders' claim and benefits the shareholders, but the latter's gain exactly offsets the former's loss.

To illustrate this point, consider the simple debt–equity structure of Figure 2.1, and assume that investors are risk neutral.[8] Let V_E and V_D denote the values of equity and debt for debt repayment D. Then the total value,

$$\begin{aligned} V_E + V_D &= \mathcal{E}(\max(0, R - D)) + \mathcal{E}(\min(R, D)) \\ &= \mathcal{E}(R), \end{aligned}$$

is independent of D, where $\mathcal{E}(\cdot)$ denotes the expectation with respect to the distribution of the random variable R.[9]

Add to this result the observation that efficient corporate policies should aim at maximizing the size of the corporate pie: any increase in the firm's total value brought about by a change in policy can be divided among the claimholders in a way that makes everyone better off.[10] Modigliani and Miller's conclusion then follows: the financial structure is irrelevant. Managers and investors might as well devote their time to more useful tasks and simplify their financial structure by issuing a single claim, which could be labeled "100% equity" or "equity without debt" (this is the claim depicted by the 45° line in Figure 2.1). The firm would then become an "all-equity firm."

Similarly, the payout policy (dividends and share repurchases/issuance) has no impact on firm value. To illustrate this, consider an all-equity firm, again with risk-neutral investors. Time is discrete: $t = 0, 1, 2, \ldots$. In each period t, a random net revenue R_t accrues; then a per-share dividend d_t is paid, the number of shares is adjusted from n_{t-1} to n_t, and an investment I_t is sunk.[11] Consider, for each t, a given (state-contingent) investment policy I_t, as well as an (also state-contingent) choice of dividend d_t and number of shares n_t ($n_t < n_{t-1}$ in the case of share repurchases, $n_t > n_{t-1}$ when new shares are issued). Let P_t denote the price of a share at the end of period t (after the dividend payment) and β the discount factor.

By arbitrage,

$$P_t = \beta \mathcal{E}[d_{t+1} + P_{t+1}].$$

Furthermore, at date t, there is an accounting equality between the sum of revenue and amount raised in the capital market (this amount is negative for share repurchases) and the sum of dividend and investment:

$$R_t + P_t(n_t - n_{t-1}) = n_{t-1} d_t + I_t.$$

The total value of shares in the firm at the end of period t is therefore

$$\begin{aligned} V_t \equiv n_t P_t &= \beta n_t \mathcal{E}[d_{t+1} + P_{t+1}] \\ &= \beta \mathcal{E}[R_{t+1} - I_{t+1} + (n_{t+1} - n_t) P_{t+1} + n_t P_{t+1}] \\ &= \beta \mathcal{E}[R_{t+1} - I_{t+1} + V_{t+1}] \\ &= \mathcal{E}\Big[\sum_{\tau \geqslant 1} \beta^\tau (R_{t+\tau} - I_{t+\tau}) \Big] \end{aligned}$$

by induction. Thus, the value of claims on the firm depends only on its "real" characteristics—investment policy and net income—and not on the dividend and capital market choices.

It is only recently that economists have started developing a better understanding of the role of the financial structure. And, although the theory of corporate finance is still evolving, it is fair to say that considerable progress has been made. To examine whether the business community's close attention to the financial structure is warranted, economists have questioned the idea that the size of the pie is exogenously determined. At an abstract level, one can analyze the matter in the following terms. Whenever managerial decisions cannot be perfectly specified contractually, the incentives given to those who pick those decisions affect the firm's income (the

8. The Modigliani–Miller irrelevance result is much more general than this. In particular, it holds even if investors are risk averse (the proof then employs "state-contingent prices").

9. Risk neutrality is not required for the result. Intuitively, with risk-averse investors, one can still define "state-contingent prices," that is, the prices of 1 unit of income in the various states of nature, and apply this equality to the sum of the values of equity and debt.

Also, the notation for expectations will be $E[\cdot]$ in the rest of the book. We use another notation here in order to avoid a confusion with equity.

10. Unless the winners do not have enough money, or more generally means of exchange, to compensate the losers (on this, see Chapter 3).

11. The investment, together with previous investments, will generate a random income R_{t+1} through a production function that we do not need to describe here.

size of the pie) and therefore the split of the pie matters. To clarify this point, consider the numerous decisions taken by the firm's "insiders," namely, the entrepreneurial or managerial team. As discussed in Chapter 1, there is no *a priori* reason why insiders have proper incentives to maximize total firm value. Casual observation suggests that managers do not always exert enough care in their choice of projects or in their supervision of divisions and subsidiaries; that they may waste corporate funds to build empires; that they sometimes select policies because they are easy to implement or will not jeopardize a comfortable managerial position; that some divest resources to indulge in perks (luxurious headquarters, entertainment expenses, corporate jets); or that they may select suppliers or employees on grounds (e.g., friendship) other than efficiency.

Such hazards have been known for a long time, and "governance structures" have been put in place that limit (but do not eliminate) deviations from profit maximization. As discussed in Chapter 1, there are roughly three ways of preventing insiders' misbehavior. First, some contractual constraints can be imposed on managers in the form of covenants and other clauses in financial deals. However, covenants by nature can be based only on public and therefore coarse information, and have their limits. Second, claimholders and managers can agree to build strong or "high-powered" managerial incentives to maximize profit. As pointed out in Chapter 1, though, the provision of high-powered incentives to entrepreneurial or managerial teams is costly, and is unlikely per se to achieve perfect congruence between insiders' and outsiders' interests. It is important that such incentives, if any, be complemented by monitoring and occasional intervention by outsiders: deviations from profit maximization may be detected by outsiders, who can put the firm back on track if they have the authority to do so. Because monitoring is partly a public good for claimholders and therefore is likely to generate free riding, a ubiquitous pattern in efficient corporate financing is the implicit or explicit delegation of monitoring to one or several claimholders with large enough stakes in the firm to induce them to monitor managerial policies, and with a contractual right to interfere if management goes awry. The monitoring patterns differ in their intensity and in the nature of the monitors' claims. Again from Chapter 1, we know that monitors may have debt claims (commercial banks and insurance companies, investment banks), equity claims (large shareholder, such as a pension fund, another corporation, a venture capital firm, or an LBO specialist), or no claim at all (rating agencies, whose incentives are purely based on their reputation to grade corporations accurately).

Our presentation of the main stylized facts about corporate financing emphasizes informational and control issues, which we feel are central to a good understanding of the matter. This does not mean that other considerations, such as tax or clientele effects, are irrelevant. *Tax considerations* influence the choice of financial structure. In particular, debt usually enjoys tax advantages relative to equity; relatedly, junk bonds, which are highly risky bonds, may be issued partly to avoid the corporate income tax that is borne by equity. Taking advantage of the imperfections of the tax system is a consummate and perennial exercise for financial experts (as well as for other experts), but its details are often country- and time-specific, so we will ignore them here.[12] Another important consideration is the presence of *clientele effects* in the supply side of loans. Many financial intermediaries (banks, insurance companies, pension funds, mutual funds) are subject to regulatory requirements, which penalize them for holding certain types of asset or even prohibit them from doing so.[13] The motivation for such controls is that financial intermediaries are subject to moral hazard just like nonfinancial companies, the effect of which is explored further in Chapter 13. Issuers of claims respond, of course, to the fact that financial intermediaries (the main purchasers of the claims) have for regulatory reasons higher demands for certain classes of claims.

A third consideration relates to the *enforcement of financial contracts*. We will mostly assume that such contracts are enforced. In practice, bankruptcy law may not always respect agreements and may

12. See the introduction to the book for a few references on the impact of taxes on financial structures.

13. For more institutional details as well as for a comparison between the governance structures of nonfinancial and financial companies, see Chapters 2 and 3 in Dewatripont and Tirole (1994a).

reshuffle the claims. For example, some bankruptcy laws are prejudiced against secured debt and do not fully allocate the collateral to secured debtholders. Bankruptcy laws can therefore have an impact on the financial structure of firms.[14]

The chapter is organized as follows. Section 2.3 considers debt claims and classifies them along several dividing lines: public versus private, secured versus unsecured, high- versus low-intensity monitoring, priority, covenants. Section 2.4 performs a similar analysis with respect to equity claims. Section 2.5 looks at the firm's actual financial choices, and asks the following questions: How are new investments financed? What are the determinants of leverage? Which firms are financially constrained? How are financial structures affected by business cycle-related fluctuations and by the firm's profit realizations?

2.3 Debt Instruments

A prospective borrower faces a number of choices. First, the firm must choose from whom to borrow. It can apply for a bank loan, place debt privately with institutions such as life insurance companies, issue bonds to the public at large, or use still other forms of credit such as trade credit (that is, credit from suppliers). Second, the firm can issue short-term (possibly rolled over) debt or long-term debt. Third, it can restrict its flexibility in future decision making and transfer some control rights to lenders through the writing of covenants. Fourth, it can pledge assets as collateral. And, fifth, the firm can establish a structure of priority among debt instruments in case of default.

A typical debt liability specifies:[15]

- the amount of borrowing (the principal), the term (maturity), the rate of interest, the scheduling (whether the amount borrowed is due only at maturity or a specified portion of the issue is retired each year—the case of a "sinking fund" requirement), and possibly other conditions (indexation, call provision,[16] etc.);
- a mechanism for transmitting timely, credible information to the lender(s);
- warranties (in which the borrower confirms in writing the accuracy of information about the legal status of the firm, its financial statements, the absence of pending or threatened litigation against it, the absence of previous lien on the collateral or of unpaid taxes, etc.);
- affirmative covenants, which force the borrower to take actions that protect the lender(s);
- negative covenants, which place restrictions on the borrower's ability to take decisions that hurt the lender(s); and
- default and remedy conditions, which specify the circumstances under which the lender(s) can terminate the lending relationship and their rights in such circumstances.

Debt issuance and management is thus a complex operation, and we stress only a few of its key features in this section.

2.3.1 Debt Maturity, Security, and Liquidity

(a) *Collateral.* In business parlance, lenders may lend "against assets" or "against cash flow." Lending against cash flow simply means that their lending is "unsecured," that is, not backed by assets, so that the expectation of recovering money is purely based on the assessment that the borrower will be able to generate enough cash flow. Lending against assets means that the lenders are partially protected against nonrepayment of interest or principal by a pledge of assets. That is, the lenders can repossess (seize) the specified assets in case of default. Lending is then "secured."

14. For example, Biais and Malécot (1996) argue that the low protection of creditors under the 1985 French bankruptcy law (which was reformed in 1994) and the concomitant reluctance of creditors to lend long is one of the factors explaining why French firms had more short-term debt than their American or British counterparts. French bankruptcy law still offers poor protection even to secured creditors because privately-agreed-upon procedures must be overruled by the court, which by law must favor continuation and employment over other alternatives, and because the state and the employees have priority over secured creditors in the case of liquidation.

15. See, for example, Greenbaum and Thakor (1995) for details about the way loans are structured.

16. A call provision granted to the issuer is the right for the issuer to retire the issue earlier than the stated maturity. This option is valuable because if the market interest rates fall, the issuer can retire the issue and refinance at a lower rate. The issuer must, of course, pay a higher interest rate in exchange for this privilege. Conversely, a right granted to the lender to accelerate payments or the collection of the entire loan somewhat protects the lender against default to the extent that it gives him an exit option when he receives signals of an impending default.

Various assets can be pledged: accounts receivables from trade customers,[17] inventories, real estate, equipment, or the managers' personal property. Guarantees from a government or from banks (letters of credit) can also play the role of collateral.

We will see in Chapter 4 that the pledging of assets substantially increases the availability of credit, although it comes with a number of costs (transaction costs, which are substantial, as well as other costs). For this reason, a substantial fraction of commercial and industrial lending is made on a secured basis.

(b) *Trading and liquidity.* It is customary to distinguish between public and private placements. Public bonds are issued on a "primary market" either directly by the issuer or more commonly through an underwriter (securities firm, investment bank, etc.). They are then traded in a "secondary market."[18] In contrast, private placements and bank loans are usually not traded after their issuance, although there has lately been a move toward transforming the corresponding claims into "securities" (that is, claims that are widely traded), a process called "securitization."

The chief determinant of whether a claim can be easily traded in a secondary market (is "liquid") is the symmetry of information among investors about the value of the claim. Suppose that the owner of a claim has more information about its value than prospective buyers of the claim. Buyers are then concerned by the "lemons problem": while the seller may have personal reasons to sell the claim (e.g., liquidity needs), he may also sell the claim because he knows that the claim is not worth much. The buyers are accordingly distrustful, and exchange is unlikely to occur in situations of large asymmetries of information (Akerlof 1970). This theoretical view sheds light on why some claims are liquid and others are not. As we will see, public bonds are usually fairly safe from default by the borrower. There is therefore little asymmetry of information among market participants about the value of public bonds, and public bonds are quite liquid.[19] In contrast, we will see that bank loans and privately placed debt have higher probabilities of default and may involve substantial asymmetries of information between the initial lenders and the prospective buyers in a secondary market. It is therefore not surprising that the securitization of such claims has remained limited.

(c) *Maturities.* Borrowing can be short or long term. Definitions of what short and long term mean are, of course, subjective, and depend on the instrument. For instance, public bonds with maturity under five years are labeled short term and those over twelve years long term. Bank loans under one year (which constitute roughly half of the bank loans) are short term and those over one year long term.

Short-term credit includes the following three items:

Loan commitments and lines of credit granted by commercial banks to borrowers. A loan commitment specifies a maximum loan amount, the commitment's period, and the terms of the loan (a commitment fee to be paid up front, as well as possibly a fee on unused balance; and the interest rate, often a fixed markup over a market rate of interest).

Commercial paper, the only publicly traded short-term debt. Commercial paper has had a very low default rate over the last forty years; it is unsecured, although its quality is increasingly enhanced

17. Alternatively, accounts receivables may be "factored" rather than pledged. That is, they are sold at a discount from their face value to a factoring company which then collects the payments. The supplier or trade creditor then receives cash which can be used to reduce the amount of borrowing, rather than be pledged as collateral when receivables are not factored (for an examination of the similarities and differences between the roles of cash and collateral for the availability of credit, see Chapter 4).

Similarly, the value of assets stemming from commercial transactions may be enhanced by bank guarantees (bankers' acceptances or letters of credit) granted by the buyer's bank (such guarantees are, for example, often used to finance foreign trade). The supplier's bank is then willing to provide an immediate payment to the supplier for the goods delivered in exchange for the enhanced trade credit, namely, the bankers' acceptance, because the claim on the buyer has become almost riskless. (Indeed, bankers' acceptances are widely traded and their interest rate in the market tracks closely the international cost of money to borrowers, LIBOR (the London Interbank Offered Rate on Eurodollar deposits traded between banks, that is, the interest rate corresponding to almost default-free transactions).)

18. Bonds are usually traded "over the counter" (on the OTC market), that is, through bilateral exchanges via dealers rather than in a centralized exchange as in the case of major stocks.

19. Note that the important property of bonds here is not the fact that default is unlikely, but rather its implication that information about their value is fairly symmetric. Indeed, while one might believe that low default rates make bonds pretty riskless, changes in market interest rates induce important fluctuations in their price (if they are not indexed on the market rate). So, the general rule is that symmetric information about a claim makes it more liquid regardless of its riskiness.

by "backup lines of credit" from a bank. Those backup lines of credit do not guarantee repayment by the bank to the holders of commercial paper in case of borrower default, but they provide liquidity enhancement to the borrower and therefore reduce the probability of default.[20]

Trade credit, that is, borrowing from suppliers. Trade credit is an important source of short-term financing at the individual firm level. In 1991, U.S. manufacturing firms had 13.7% of their total assets in accounts receivable and 7.4% in accounts payable. Trade credit is even more significant in some other countries (the same numbers for Japan were 24% and 13%).[21] It is typically very expensive: for instance, about 80% of the U.S. firms offer their products on terms called "2-10 net 30," which means that the buyer must pay within 30 days, but receives a 2% discount if payment occurs within 10 days. The 2% price increase over the remaining 20 days corresponds to a 37.24% annual interest rate![22]

Firms in general would prefer to be granted long-term credit because short-term credit forces them to return repeatedly to their bank or to the credit market for new money and exposes them to the risk of refusal and to the necessity of selling assets at distress prices or of cutting down on their activity. On the other hand, short-term borrowing has two key benefits: first, it returns more funds to the lenders and thus facilitates financing in the first place; second, precisely because it forces firms to return occasionally to their lenders, short-term borrowing imposes more discipline on the borrowers (the theoretical underpinnings for this argument will be examined in Chapters 5 and 6).

Long-term credit corresponds to bank loan agreements and to long-term privately or publicly placed debt. Long-term credit agreements are much more elaborate than short-term ones and involve a number of covenants. This brings us to the design of loans, to which we will turn in Section 2.3.3.

2.3.2 Credit Analysis

When contemplating short-term and especially long-term lending, lenders perform a credit analysis along several directions. They analyze the borrower's financial data (capital structure, cash flow statements, liquidity, etc.). They estimate the market and liquidation values of assets. They also look at the capability and character of the entrepreneur or top management. Bankers refer to the "five Cs of credit": character and capacity (capability), capital, collateral, and coverage (the first four Cs were just described, the fifth is simply the existence of insurance against death or disability of a key person): see Section 2.7 for more details. Chapters 3–6 will analyze the role of capital, collateral, and capability and character.

Credit analyses are also performed by third parties who do not lend to the firm. Predominant among

20. The maturity of commercial paper is often lower than one month, although it can extend to nine months. This short maturity implies that it is often rolled over. A bank line of credit is basically an insurance policy for the borrower/issuer as it allows the latter to pay back the outstanding commercial paper without having to sell off assets at "fire sale" (low) prices in case adverse market conditions or bad news about the issuer make it difficult to roll over the commercial paper.

Commercial paper in practice is meant to have low credit risk. (For this reason, only 22% of the commercial paper in the United States is issued by industrial companies, financial companies accounting for the bulk of the issues.) A clear description of the mechanics of commercial paper is Chapter 22 of Stigum (1990).

21. Rajan and Zingales (1995) report accounts payable for large firms equal to 15% of assets in the United States, 11.5% in Germany, and 17% in France. See Petersen and Rajan (1997) for an in-depth study of trade credit in the United States.

More recent numbers for the United States can be found in Frank and Goyal (2003), who more generally provide evidence about broad patterns of financing activity. They report for 1998 and for 7,301 U.S. industrial firms a percentage of book value of total assets equal to 17.7% for receivables and 10.4% for account payables.

22. Several explanations have been proposed as to why trade credit is widely observed given the high cost to the buyer. Some (e.g., Smith 1987) view it as a means for the supplier to distinguish between high- and low-risk buyers, and to learn useful information for their future relationship. Others have suggested that the underlying collateral (the products shipped, if they have not yet been resold) has higher value for the supplier than for a bank, but this does not explain why the interest rate on trade credit is much larger than that on bank loans. Brennan et al. (1988) offer a price discrimination explanation for trade credit. Wilner (1994) links the higher rate of interest on trade credit with the suppliers' poor bargaining position in a renegotiation following default: because the suppliers care much about the continuation of their relationship with the buyers, they make more concessions than banks in renegotiation. Biais and Gollier (1997) argue that suppliers may have private information about the riskiness of their clients, which implies that trade credit, if extended, provides a favorable signal about the credit quality of the clients and allows the latter to get cheap complementary financing from banks, which in turn has value to the suppliers in the context of ongoing trade relationships. Finally, Burkart and Ellingsen (2004) trace the informational superiority of trade creditors over banks to the knowledge that the transfer of the input has taken place. They argue on the basis of their theoretical model that trade credit should have a short maturity as it loses its advantage when the illiquid input is transformed into liquid output.

these are rating agencies. Their main raison d'être is that credit analysis is costly and, when claimholders are dispersed (as is usually the case for a public bond), it is efficient to centralize credit analysis in a single entity (or a small number of entities). Issuers of bonds or of commercial paper, by paying fees to rating agencies for being graded, in a sense solve the collective action problem faced by prospective bondholders.[23] One may wonder why rating agencies can have any reliability given they do not put their own money into the borrowing firm and that, even worse, they are paid by the very companies that they rate, which, of course, creates a conflict of interest. The answer is that they care about their reputation for measuring and disclosing accurately the riskiness of the claim. A good rating is worth more to an issuer if the previous issues which were given the same rating by the rating agency have had a good track record. Thus a rating agency which has the reputation for not trying to please its issuing clients can actually command higher fees from them.

Ratings are based on criteria similar to those used by banks for their credit analysis. The rating agency looks at the borrower's capital, cash flow, liquidity (including the existence of resources to meet unexpected cash demands), capability, and at the firm's line of business. What they emphasize more depends on various characteristics of the issue, in particular its maturity. For example, the main focus for commercial paper (which, recall, is very short-term public debt) is the borrower's liquidity, that is, how easy it is for the borrower to come up with cash to repay the maturing commercial paper.

While there are a number of private rating agencies, the market is still dominated by the two best known, Moody's and Standard & Poor's (S&P), which suggests that reputation is a very worthwhile asset and a strong barrier to entry. Ratings are sometimes also prepared by agencies or organizations in charge of controlling the asset quality of financial intermediaries and are then employed for prudential regulation, i.e., to verify the capital adequacy of the financial intermediary.[24]

Rating agencies use grades to measure the credit worthiness of issuers and securities. For example, S&P gives the following grades (in descending order): AAA, AA, A, BBB, BB, B, CCC, CC, C (and D for a firm in default); Moody's has a very similar notation. The grade reflects an estimate of the likelihood of default. For example, the cumulative default rate over the first ten years of a bond's life was 0.1% for an AAA rated bond and 31.9% for a B rated bond in Altman's (1989) sample. It is also customary to define a coarser partition, with "investment grade securities" being those with grades above BBB, and "below investment grade securities" or "junk bonds" being the others. As an approximation, only investment grade securities are issued, so securities below investment grade are mainly downgraded investment grade securities.[25] Needless to say, ratings, while useful, are not perfect, if only because agency problems may creep into decisions of credit-rating agencies as well (for example, they may devote insufficient resources to analyzing a security issue or they may strategically delay recognizing their past mistakes).

Lastly, like bondholders, trade creditors face a collective action problem with respect to the credit analysis of borrowers. A trade borrower often faces several dispersed lenders and it may be excessively costly for each to conduct a credit analysis. Unsurprisingly, trade creditors do rely on external ratings. Besley and Osteryoung (1985) cite a survey showing that 69% of U.S. firms use credit ratings supplied by mercantile agencies when determining credit limits for their clients.

2.3.3 The Writing of Debt Agreement Covenants

As discussed in more detail in Section 2.8, covenant writing is an important step in the lending process.

23. In the past, rating agencies collected fees from investors rather than from the issuer; but this, of course, gave rise to free riding among investors.

24. For example, in the United States, the National Association of Insurance Commissioners in 1990 issued guidelines creating six quality categories, NAIC-1 through NAIC-6, for privately placed debt. Only the top two grades, NAIC-1 and NAIC-2, correspond to investment grade ratings from major rating agencies. Investments by insurance companies in privately placed debt of below NAIC-3 quality are heavily penalized. Consequently, an important source of funding for below NAIC-3 borrowers dried up almost instantaneously. See, for example, Carey et al. (1993) and Emerick and White (1992) for more details about the guidelines (known as Rule 144A) and about their impact.

25. In the United States, below investment grade securities represented less than 4% of corporate debt in 1977. Even in the aftermath of the junk bond explosion of the 1980s, only one-quarter of the 23% of corporate debt rated below investment grade had been issued as junk bonds.

Covenants can be found to various extents in bank loan agreements, in privately placed debt agreements, and in public bonds issues. Their details depend not only on the nature of the lenders, but also on the maturity and other specificities of the claim.

It is customary to distinguish between positive and negative covenants. Positive covenants stipulate actions the borrower must take, while negative covenants put restrictions on managerial decisions. I do not find this standard distinction very enlightening: a positive covenant specifying an action may be viewed as a negative covenant prohibiting the opposite action. For instance, the obligation of maintaining assets in good repair and working order, a positive covenant, can be alternatively stated as the prohibition of letting the company's assets wear and tear. We will depart from tradition by offering a taxonomy more in line with economic considerations, which suggest two rationales for covenants.

To understand the first rationale for covenants, it is useful to recall that managers and shareholders are in control of the firm as long as the covenants are not violated.[26] Managers and shareholders often have incentives to take actions that jeopardize the payment of interest and principal to lenders (we will later divide such actions into two sets). These actions redistribute wealth from lenders to managers and mainly shareholders. Note that the fact that the actions redistribute wealth per se is not a motivation for the existence of covenants. Such actions may reduce the value of debt and increase that of equity, and yet have no impact on the total value of the firm following the Modigliani–Miller logic. Tolerating such actions through the absence of covenants lowers the value of debt, but may have no overall effect:[27] to the extent that the actions are anticipated, the *ex ante* price of bonds and equity reflects the transfer that will take place *ex post*, so that total investor value (the value of debt plus that of equity) is still the same. It is only to the extent that managers and shareholders may have incentives to take actions that reduce total firm value that covenants have a role. Thus, the first role of covenants is to prevent managers and shareholders from taking value-reducing actions that could be privately optimal because they expropriate debtholders.

The second role of covenants is to define the circumstances under which different classes of claimholder (equityholders or debtholders) receive the right to intervene in management.[28] The threat of external intervention in management is best viewed as part of the incentive package offered to insiders. As Chapter 10 will show, it may be optimal to confer control rights on shareholders in good times and on debtholders in the case of mediocre performance. The transfer of control is triggered by the nonpayment of interest or principal or by a covenant violation. This yields the second rationale for the existence of covenants. Further, to the extent that shareholders and managers are hurt by a transfer of control to debtholders, the former have incentives to manipulate the (mainly financial) measures of performance defined by this type of covenant. A further set of covenants can, however, be introduced to limit such manipulations.

Thus, our taxonomy of covenants highlights two rationales. We further divide the two sets into two subsets each.

2.3.3.1 Covenants Meant to Prevent Value Reduction (The "Conflict View")

As discussed above, the divergence of preferences between shareholders and debtholders may induce the former, when they are in control, to take actions that are meant to benefit them to the detriment of the latter. They may be willing to sacrifice total value to achieve this goal. For convenience, we subdivide the actions into two subsets depending on whether they involve an increase in the riskiness of the firm's cash flow.

Actions not increasing risk. We first consider actions that reduce the value of existing debt without

26. In principle, the shareholders, perhaps through the board of directors, are in control. In practice, asymmetric information between insiders and outside shareholders introduces an important distinction between formal authority, held by shareholders, and real or effective authority, often enjoyed by managers. For more details on this idea, see Chapter 10.

27. Unless borrowers and lenders find it easier to value debt when debt is associated with a standard set of covenants.

28. This rationale in a sense is more primitive than the first one, because it explains why claims with conflicting interests are created. The possibility of redistribution among claims, and therefore the first rationale for covenants, would disappear if there were a single claim.

per se increasing the riskiness of the firm's income flow. Covenants put restrictions on *payments* to shareholders. Payments can take different forms: cash dividend,[29] share repurchase,[30] or "affiliated transactions" (in which the firm engages in loss-making transactions, e.g., through generous transfer prices, with another unit also owned by the shareholders). Excessive payments may leave the debtholders with an "empty shell."[31]

Second, covenants impose limitations on *further indebtedness*. The issuance of new debt dilutes the value of existing debt (the reader may want to check this for the simple financial structure displayed in Figure 2.1); accordingly, limits on the amount of new debt are generally set by a covenant. Dilution is particularly strong if the new debt is either secured or senior to the current debt. It is therefore not surprising that additional covenants cover new secured or senior debt: limitations on liens; positive covenants forcing the firm to pay taxes (the government often acquiring a claim senior to that of creditors in the case of unpaid taxes) or, in the United States, to contribute to the Pension Benefit Guarantee Corporation (again, the debts to the Guarantee Corporation are senior to those of creditors); and covenants restricting leases (long-term noncancelable rental agreements may acquire some seniority, e.g., one year's lease payment, over other creditors' claims).

Actions increasing risk ("asset substitution"). As mentioned earlier, shareholders, with their convex claim, benefit from increased risk taking while debtholders, with their concave claim, are hurt. Of course, and as we noted earlier, debtholders are partially protected against gambling if their claim is convertible into equity, as they can switch to equity if the firm's income becomes riskier. But most debt claims are not convertible. Covenants are then meant to protect debtholders against increases in risk. Examples include covenants prohibiting investments into new lines of business, earmarking the loan for specified purposes, or limiting the growth of the firm; and covenants requiring life or casualty insurance for key personnel or setting minimum standards of coverage against interest rate or exchange rate risk.

It is clear that such actions, whether they increase risk or not, need not reduce total value. But each has the potential of doing so. Let us give a few examples. (i) Large payments to shareholders seriously decapitalize the firm and make it more likely that the firm will face liquidity problems or that control will be transferred to debtholders in the near future (see below). This may either demotivate the managers or induce them to "gamble for resurrection" (see, for example, Dewatripont and Tirole 1994a,b), creating value losses. (ii) Unpaid taxes in general involve late payment penalties, generating a value loss for the firm. (iii) Shareholders may benefit from issuing new debt to finance a new investment with negative net present value (NPV) simply because the loss to current and diluted debtholders exceeds the NPV loss. (iv) Risk taking may create a value loss, and yet raise the value of equity.

We now turn to the second rationale for covenants.

2.3.3.2 Covenants Defining Control Rights (The "Control View")

Shift of control in the case of mediocre performance. Some financial covenants are meant to transfer control to debtholders in the case of mediocre performance. One encounters covenants linked with the firm's (long-term) solvency. These covenants are expressed both in relative and absolute value. For example, total debt cannot exceed a fraction of total assets (leverage constraint). Or the firm's net worth (an accounting measure of equity, expressed as the difference between the book value of assets and that of liabilities) must exceed some minimum level. Interestingly, covenants also require a minimum amount of liquidity, even for long-term

29. See, for example, Smith and Warner (1979) for a description of the mathematical formulae limiting dividend distribution.

30. Share repurchases are an alternative to dividend distributions. In a share repurchase, the firm buys back its own stock and thus hands money back to shareholders (there are several modalities; see, for example, Brealey and Myers (1988, pp. 359, 360) for more details).

31. Spin-offs may be a way of expropriating debtholders. An example is Marriott Corp.'s 1992 attempt to split into two companies, a service company called Marriott International and a real-estate company called Host Marriott, a smaller and riskier concern to whom all of Marriott Corp.'s debts would have been assigned. Unsurprisingly, the initial stock market reaction at the announcement of the split was a rise of 21% of Marriott's stock price; and a bondholder lawsuit for fraud quickly ensued (*Washington Post*, November 18, 1992).

loans; for instance, the firm's working capital[32] is required to exceed some minimal level. Liquidity requirements are meant to guarantee that the firm will be able to face its short-term obligations. One may wonder why so much attention is paid to liquidity measures, since the fundamental issue is always that of the firm's solvency: for, a firm that momentarily lacks money can always make the shortfall through borrowing if its solvency is not in question. In this sense, liquidity problems are always solvency problems. Yet, and as bankers well know, solvency problems are often signaled by liquidity problems. Hence, the rationale for separate covenants on minimum liquidity.

The shift of control does not quite mean that debtholders start running the firm; they may do so occasionally if the firm is bankrupt and a receiver defending their interests is put in charge of the firm, or if they swap their debt for equity. But, more often, they will exert control indirectly by threatening not to refinance or to apply the default and remedy conditions (for example, the possibility for a bank to accelerate the collection of its entire loan) when a covenant is violated.[33] They can then impose a change in corporate policy, impose new covenants, renegotiate the claims, etc.

Completing the control view. This shift-of-control mechanism is more effective if two conditions are satisfied. First, the lenders must be well-informed in order to be able to detect a covenant violation and to properly exercise the power they have in that contingency. Second, the firm should not be able to fictitiously satisfy financial covenants through accounting manipulations.

Informational covenants. The need for lenders to be informed rationalizes a new class of covenants. Among these are covenants requiring the firm to report to the lender(s) a number of variables on a regular basis, covenants specifying extensive rights of inspection of facilities and books by the lender(s), and, in the case of a bank lender, the requirement that the firm's principal checking accounts be maintained with the bank.

Covenants limiting accounting manipulations. Financial covenants, to be effective, should not be easily manipulable. To the extent that their violation transfers part of the control to debtholders, managers and shareholders have incentives to use "creative" accounting in order to satisfy the financial covenants if needed. This motivates the existence of a further class of covenants that are meant to give credence to financial covenants. First, the lender(s) and the borrower must agree on an accounting method, in general the Generally Accepted Accounting Principles (GAAP) in the United States. But GAAP still leaves a substantial discretion. Covenants are then used to reduce this discretion by limiting instruments for creative accounting. Consider, for example, measures of the firm's solvency. The firm may have an incentive to sell assets whose market price exceeds the historical or book value, in order to increase the firm's measured net worth or to decrease measured leverage (as the cash received exceeds the accounting value of the assets on the balance sheet). The real net worth or leverage is not affected by the operation, but solvency covenants may no longer be violated. Consequently, loan agreements often prohibit the sale of more than a specified fraction (10%, 15%, or more) of the assets, or else require that the proceeds be used to pay down the debt.[34]

Another concern of borrowers is that the firm's real solvency be concealed through "off-balance-sheet activities" (recall from Chapter 1 that off-balance-sheet activities were prominent in some recent scandals in Europe and the United States). In particular, some liabilities are not incurred at present and in a noncontingent way. They are then recorded "off-balance." For example, a loan commitment promised against a fee to a borrower is off balance sheet for the bank issuing the commitment. The off-balance-sheet liabilities of a nonfinancial company include, for instance, leasing arrangements, consignment stocks

32. As measured, say, by the ratio of "current assets" (assets that will normally be turned into cash within a year) to current liabilities (liabilities that will normally be repaid within a year).

33. The borrower usually has a "cure period" of a few weeks to satisfy the covenant if the latter is violated. Because the deterioration of a financial ratio may be due to a bad realization of the environment such as a temporary shortfall in earnings rather than to managerial misbehavior, it makes sense to give the firm a chance to reestablish compliance with the agreement.

34. Another reason to limit the sale of assets may be that the proceeds of the sale could be used to buy new assets or enter new activities that would increase the riskiness of the firm's income (recall the "conflict view" of the rationale for covenants).

for dealers (who repay the manufacturer from sales), or an asset sale and repurchase agreement (which is similar to a loan, as the difference between the buyback price and the selling price constitutes de facto an interest payment). While not all off-balance-sheet financing need concern lenders, some arrangements may make the income statement and/or the balance sheet look better than they really are and help de facto breach loan or bond covenants without formally violating them. Consider, for example, a lease (long-term rental agreement) set up, as is often the case, so that lease payments are small at the start and larger later on. Suppose further that the lease specifications make cancellation costly. Then the firm's net worth is overstated as the corresponding future liabilities are off balance sheet. As another illustration, consider a firm's pledge to rescue a subsidiary if the latter gets into financial distress. This contingent liability is not recorded on the balance sheet, but is quite real. Unsurprisingly, covenants attempt to limit balance-sheet manipulations by the firm.[35]

2.3.3.3 Bankruptcy Process

Covenant violation generates trouble for the borrower. So does, of course, default. In the case of default, creditors or other interested parties, if they do not choose to roll over or forgive some of their claims, may force bankruptcy.[36] We will not discuss bankruptcy procedures both for conciseness and because the laws as well as the extent of their enforcement by courts are necessarily country- and time-specific. Let us just list a few well-known points. First, creditors are compensated according to some priority rule in the case of liquidation. For example, in the United States, (1) administrative expenses of the bankruptcy process are paid first, then come (2) unpaid taxes or debts to government agencies (e.g., the Pension Benefit Guarantee Corporation), (3) some wage claims (up to some ceiling), (4) secured and senior creditors, (5) junior creditors, (6) preferred shares, and, last, (7) equityholders. Second, many bankruptcy processes do not end up with a liquidation, although the threat of liquidation is important in the renegotiation or reorganization process. Third, secured and senior creditors obviously fare better than other creditors in liquidation. In the United States, secured creditors receive about 31% of their claims, senior creditors 36%, and unsecured creditors 8% (Brealey and Myers 1988, p. 742). For overviews of the issues with the current bankruptcy laws and for some policy suggestions, we refer the reader to, for example, Aghion et al. (1992), Bebchuk (1988), and White (1989).

2.3.4 The Overall Picture: Two Dichotomies in the Credit Market

2.3.4.1 Duality on the Lending Side

Simplifying a bit, lenders can be split into two groups, depending on the concentration of claim-holdings.

Sophisticated (concentrated, well-informed) lenders, also called relationship investors, include banks and institutional investors (e.g., life insurance companies) investing in private placements. The corresponding loans are extended by one or a few lenders, who are heavily involved in the writing of the loan, the monitoring of the covenants, and the renegotiation in case of covenant violation.

Dispersed lenders include public bondholders and trade creditors. They are numerous and face a free-rider problem. That is, they individually have suboptimal incentives to invest in information collection and monitoring of the borrower.

The empirical evidence shows that claims issued to sophisticated and dispersed lenders differ in a number of respects.

(a) *Screening.* It is customary to say that sophisticated investors perform more *ex ante* monitoring (that is, more screening or more credit analysis)

35. Our rendition of the writing of covenants is, of course, not exhaustive. For example, there are covenants restricting the purchase of claims (e.g., stocks) in other companies. Such covenants have several of the rationales discussed above: preventing the firm from engaging in self-dealing transactions with related companies, avoiding asset substitution, and increasing the transparency of financial covenants, the latter rationale being related to the issue of double gearing in prudential regulation (see, for example, Chapter 3 in Dewatripont and Tirole 1994a).

36. There is some controversy over whether creditors are well-protected by bankruptcy proceedings. In the United States (where most bankruptcy filings are made voluntarily by firm managers), Chapter 11 allows managers to remain in control and to have six months to propose a reorganization plan. The resulting procedure and the possibility of modifying priorities may enable managers to impose an unfavorable renegotiation plan to some groups of creditors.

before extending a loan. We must, of course, be careful not to take this view for granted; after all, while public bondholders perform little screening themselves, their demand for bonds on the primary market depends on the assessment or the mere presence of sophisticated agents such as rating agencies and underwriters, who have their reputations at stake. Thus, such sophisticated agents may go some way toward solving the bondholders' collective action problem and perform some of the role performed by banks and institutional investors in the case of private placements.

Yet, there is a widespread feeling that banks and institutional investors receive more information and access to management than those provided to investors in public markets.[37] Also, the illiquidity of bank loans and private placements demonstrates a superiority of the sophisticated investors' information over that of other investors.

(b) *Covenants.* Debt issued to sophisticated investors involves more and tighter covenants than public debt.[38] Commercial paper has very few covenants, and its long-term counterpart, public debt, has mainly negative covenants, while for both bank and nonbank private debt, affirmative and negative covenants are common.

(c) *Seniority/security/maturity.* There is a wide range of maturities from overnight (or even sometimes intraday) loans to very-long-term borrowing such as the 1996 successful 100-year bond issue by IBM.[39] Table 2.1 reviews the average maturities for a large sample of U.S. firms.

Loan maturity varies with the types of assets that are being financed. As Hart and Moore (1989) observe, assets tend to be matched with liabilities. Long-term loans are often used for fixed-asset acquisitions (property, machinery, etc.), while short-term loans tend to be used for working capital purposes (payroll needs, inventory financing, smoothing of seasonal imbalances). Thus the maturity of loans adjusts to the durability of the underlying collateral (if any).

Table 2.1 Maturity and priority structure of fixed claims in the United States. *Source:* Barclay and Smith (1996, Table 3). Reprinted with permission from Blackwell Publishing Ltd, Oxford.

	Percentage of total fixed claims	
	Mean	Median
Maturity		
More than one year	0.69	0.80
More than two years	0.56	0.65
More than three years	0.46	0.51
More than four years	0.39	0.39
More than five years	0.32	0.28
Priority		
Capitalized leases	0.11	0.00
Secured debt	0.40	0.31
Ordinary debt	0.38	0.21
Subordinated debt	0.10	0.00

Bank debt or privately placed debt tends to be secured and senior. Public bonds are rarely secured and are sometimes subordinated. It is also customary to distinguish the two forms of debt on the basis of maturity: bank debt often has shorter maturities. While banks indeed play a major role in providing short-term credit to firms, things are in fact a bit more complex here. First, there are forms of dispersed debt, such as commercial paper and trade credit, which have a very short maturity. Second, banks and institutional investors also issue long-term credits.[40] On the whole, James (1987) reports average maturities for the United States equal to 5.6 years for bank debt, 15.3 years for nonbank private debt, and 18 years for publicly listed debt, while Light and White (1979) report an average maturity of 35 days for commercial paper.

(d) *Renegotiation in the case of covenant violation (or nonrepayment).* According to conventional wisdom as well as some evidence, the renegotiation of

37. See, for example, Emerick and White (1992), who show how borrowers with very low or no credit ratings may still be able to obtain low-interest-rate credit from sophisticated investors, which suggests the existence of superior information acquisition.

38. See Kahan and Tuckman (1993) for a comparison of covenants for privately placed debt and public bonds. See also Smith and Warner (1979) and Carey et al. (1993).

39. IBM then borrowed $850 million in 100-year bonds.

40. For example, in the United States, insurance companies have played a major role in funding less creditworthy firms through long-term credits (five- to twenty-year debt).

covenants is easier when debt is held by sophisticated investors.[41] Asquith et al. (1994) show that 80% of the U.S. companies under distress restructure their bank debt through direct renegotiation (see also Gilson et al. 1990). Relatedly, Hoshi et al. (1990, 1991) find that Japanese firms that are in a "main-bank" coalition (*keiretsu*) invest and sell more after the onset of distress.

The ease of renegotiation may be due either to the concentration of claims or to better information of investors in the case of sophisticated lenders. It may be difficult to renegotiate with many investors, although some mechanisms are designed so as to achieve coordination among dispersed investors (nomination of a bond trustee who acts on behalf of the multitude of bondholders, possibility for the firm to offer new securities in exchange for bonds in order to lower its debt obligations).

(e) *Default and liquidity.* With the (minor) exception of junk bonds, public debt (commercial paper, public bonds) is rarely defaulted.[42] As explained above, this implies that there is little asymmetry of information among investors as to their value and that it can be widely traded in financial markets. In contrast, bank loans and privately placed debts do default (or are renegotiated under the threat of liquidation) with nonnegligible probability. There is asymmetric information among investors about their value, and the corresponding claims are much less liquid than commercial paper and public bonds.

(f) *Certification.* There is some evidence that the existence of a stake of a sophisticated investor in a firm helps the firm raise complementary funding, which suggests that the stake conveys favorable information about the creditworthiness of the firm. For example, firms raise more money in an initial public offering of shares when they have bank loans (James and Weir 1991). Also related is the evidence that the announcement of a bank loan grant raises the firm's stock price (Lummer and McConnell 1989).

(g) *Issue costs.* Issue costs (transaction costs, disclosure costs) are large for commercial paper and public debt and small for bank or nonbank private debt. In particular, issuing public bonds in the United States requires the firm to disclose key financial data, which may be a major disincentive if the firm's equity is not publicly traded (and therefore few of these data are public knowledge).

2.3.4.2 Duality on the Borrowing Side

Symmetrically to lenders, borrowers can approximately be split into two groups, depending on the riskiness of the debt they issue: high-quality borrowers tend to be well-capitalized, large, and highly rated by credit-rating agencies; conversely, low-quality (risky) issuers tend to be poorly capitalized, small, and unrated by credit-rating agencies.[43]

The two types of borrower have quite different borrowing patterns, which will later figure prominently in the theoretical analysis:

- High-quality borrowers have more long-term debt. The short-term indebtedness of large firms in the United States (recall that quality and size are strongly correlated) is 13% against 29% for small firms. The corresponding numbers in Germany are 39.5% and 55.9% (Gertler and Gilchrist 1994).
- High-quality borrowers can more easily obtain a loan commitment from a bank (Avery and Berger 1991) or issue commercial paper.[44] For this reason and the previous one, they manage their liquidity needs more easily than risky borrowers.
- High-quality borrowers can borrow (long) by issuing public debt while risky borrowers cannot. Risky borrowers must borrow from sophisticated investors.
- Unsurprisingly in view of the previous observations, high-quality borrowers suffer little and hardly reduce their investments, if at all, during a credit

41. Note that the ease of renegotiation is a mixed blessing. On the one hand, renegotiation enhances the efficiency of *ex post* outcomes; for example, it can prevent liquidation in situations in which continuation is socially optimal. On the other hand, it weakens the power of *ex ante* incentives. The firm is less concerned about the possibility of a covenant violation and the concomitant threat if it knows that the covenants will be renegotiated. That is, the prospect of renegotiation reduces discipline. For more on this, see Burkart et al. (1996), as well as the discussion of the soft budget constraint in Section 5.5.

42. For example, Stigum (1990, p. 1037) observed that only five issuers of commercial paper had defaulted in the United States during a period of fifteen years.

43. Indeed, "fewer that 25 of the over 400 industrial U.S. companies rated investment-grade by Standard & Poor's Corporation had total assets of less than $500 million as of year-end 1991" (Emerick and White 1992).

44. Commercial paper, which, recall, is unsecured short-term public debt, is mainly issued by firms with AAA or AA credit ratings.

crunch. A credit crunch is triggered by a decrease in banks' and other intermediaries' loanable funds (either because of a decrease in the intermediaries' capitalization or because of a tightening of prudential regulation or of monetary policy). Because risky borrowers are dependent on such funds, they are substantially hurt by a credit crunch. Also, bank loans to small manufacturing firms fall relative to bank loans to large firms when "money is tight" (Gertler and Gilchrist 1993; Oliner and Rudebusch 1993).

- The restrictiveness of loan covenants is inversely related to the credit quality of the borrower (Carey et al. 1993). Small borrowers also post more collateral than high-grade borrowers (Berger and Udell 1990).

2.4 Equity Instruments

Our treatment of equity financing will be a bit briefer than that of debt financing since we have already covered some of the material in Sections 1.4 and 1.5 on active monitoring by large shareholders and takeovers, respectively. We here emphasize the life cycle of equity financing from start-up and alliance financing to the initial public offering (IPO) or sale, and from there on to seasoned equity offerings. On the equity side, one central theme is, as in the case of debt, the role of delegated monitoring in alleviating the hazards attached to dispersed ownership. Since we have already reviewed the role of large shareholders, boards, and the market for corporate control in Chapter 1, we here focus on that of venture capitalists and alliance partners as illustrations of equity financing in the early stages of a firm's life (another important form of private equity with covenants with regards to the exit mechanism that are reminiscent of those for venture capital is shareholder agreements, including joint ventures[45]). We then discuss the mechanisms for issuing equity in Section 2.4.2.

2.4.1 Privately Held Equity and Sophisticated Investors: The Case of Start-up Financing

As in the case of debt, companies may need to sell their equity to some large, sophisticated investor. Three prominent classes of such investors in the case of privately held companies are venture capitalists, large customers, and leveraged buyout (LBO) specialists. As a rule of thumb, venture capitalists (venture capital partnerships, investment institutions, or wealthy individuals) and large customers provide finance for young, high-risk firms, while LBOs often concern mature firms with rather predictable cash flows. While LBO entities are highly leveraged and venture capital start-ups carry little or no debt, venture capital and LBO deals have several features in common, including high-intensity monitoring by concentrated outside equity holdings and high-powered incentives (small cash salary and substantial equity holding) for insiders. We discussed LBOs in the context of takeovers (see Section 1.5), and, not to repeat ourselves, we here focus on venture capital and large customer financing.

2.4.1.1 Venture Capital

Venture capital is used to finance start-up companies, often in high-tech industries (software, biotechnology. For instance, Apple, Compaq, Genentech, Google, Intel, Lotus, and Microsoft initially received venture capital), but also in other industries (for example, Federal Express and People Express started with venture capital). Further, venture capitalists specialize in highly risky projects (they fail to recoup their investments in many of the selected firms, but make spectacular profits on a few). Venture capitalists take concentrated equity positions[46] in the company they finance as well as seats on the board of directors. They carefully structure deals and monitor the firm. They also bring expertise and industry contacts.

(a) *Structure of deals.*[47] Like sophisticated creditors (see Section 2.3.3), venture capitalists devote much attention to the structure of deals. Screening

45. See Chemla et al. (2004).

46. In the case of a venture capital partnership, the lead venture capitalist or general partner (who performs most of the monitoring) has an average equity stake of 19% while limited partners have an average equity stake of 15%.

Our discussion of venture capital focuses on the American environment. For a discussion of the financing of high-tech start-ups in Europe, see Adam and Farber (1994).

47. For more on deal writing, see Gompers (1995), Case 9-288-014 of the Harvard Business School (1987), and Sahlman (1990). The reader will find much interesting evidence on venture capital contracts in Gompers and Lerner (1999, 2001) and Lerner (2000).

of firms is intense (a tiny fraction of proposals received are funded), and conditions imposed on firms are drastic. Venture capital deals usually include:

• A very detailed outline of the various stages of financing (e.g., seed investment, prototype testing, early development, growth stage, etc.). At each stage the firm is given just enough cash to reach the next stage.

• The right for the venture capitalist to unilaterally stop funding at any stage. That is, the venture capitalist may need no justification to stop funding. Less universally, the venture capitalist may further have a put provision, namely, a right to demand repayment of all or some of the already invested capital.[48]

• The right for the venture capitalist to demote or fire the managers if some key investment objective is not met, and a noncompete clause for key employees.

• The right to control future financing. Venture capitalists have preemptive rights to participate in new financing and have registration rights.[49]

• Often, the venture capitalist's ownership of preferred stock (often convertible into common stock), that is, of a claim senior to the manager's claim in liquidation. Eighty percent of venture capital deals in Kaplan and Strömberg's (2003) sample had the venture capitalist hold convertible preferred stocks (Sahlman (1990) and Gompers (1998) report similar findings).

• Some covenants such as the obligation to purchase life insurance for key employees.

• An exit mechanism for the venture capitalist. The expectation is that at some stage, the firm (if it has survived all previous stages) will go public and will sell shares in an IPO to other investors (e.g., pension funds, insurance companies, individual investors) and that the venture capitalist will sell part or all of her shares; or else the start-up will be purchased by a large firm.

Kaplan and Strömberg (2003) study a sample of 213 venture capital investments in the late 1990s. They document that the venture capitalists' rights (cash flow, board, voting, liquidation, and others) are often contingent on verifiable measures of financial and nonfinancial performance. An example of a financial performance measure is EBIT (earnings before interest and taxes). Nonfinancial performance measures include patent grants (or, for a pharmaceutical product, Federal Drug Administration approval), actions to be taken, or the founder remaining in the firm. Following on a good performance, the entrepreneur retains or obtains more control rights and the venture capitalist may then content himself with cash-flow rights. Conversely, a poor performance may lead to a double penalty for the entrepreneur: her financial stake in the start-up depreciates and the venture capitalist retains his control rights or acquires new ones. Selecting a subsample of 67 companies, Kaplan and Strömberg (2004) further show that, in more risky companies (entrepreneurs who are inexperienced or have failed in the past, companies whose operations are harder to observe, etc.), venture capitalists receive more control rights, have a greater ability to liquidate upon poor performance, entrepreneurs receive more contingent compensation, and financing in a given round is more contingent.

(b) *Certification and reputational capital.* Venture capitalists care about their reputational capital for (at least) two reasons (see Barry et al. 1990; Sahlman 1990; Megginson and Weiss 1991). First, a number of other parties—such as limited partners, input suppliers, providers of later-stage financing—piggyback on the venture capitalist's monitoring of the firm. A reputation for careful monitoring thus enhances the prospects of the venture. Second, if the start-up undergoes an IPO, the venture capitalist's good reputation (as in the case of a bank loan, see Section 2.3.4.1) reduces the underpricing of the firm's share at the IPO. (As one would expect, underpricing is particularly low if the venture capitalist keeps an equity position beyond the IPO to signal the quality of the new issue.) These two benefits for the firm from the venture capitalist's good reputation enable the latter to obtain a better deal from the borrower.

(c) *Comparison with sophisticated debtholders.* Debt financing is not an attractive alternative for the types of firm usually financed by venture capital.

48. Bank loan agreements usually allow the bank to collect the entire loan, that is, to accelerate its payment, only if certain covenants are violated.

49. In contrast, bank loan agreements mainly limit dilution of debt through issuance of equal priority or more senior debt (see Section 2.3.3).

First, ideas are not good collateral (recall that debt financing is often secured). Second, many such firms do not generate positive cash flows for quite a while and any short-term debt obligation could lead the firm into bankruptcy. Accordingly, such firms resort to equity financing. It is nonetheless interesting to compare the two types of financing. Venture capital deals combine several features of debt contracts with sophisticated creditors (high-intensity screening and monitoring, careful attention to the timing of funding, some control over future financing, seniority of claims, some covenants, certification) with the usual prerogatives of equity (such as a fuller right to control financing or the right to demote or fire managers). Simplifying a bit, venture capital deals involve more control rights for the financier and fewer covenants than private debt agreements.

2.4.1.2 Alliance with a Large Customer

For R&D firms, contracting with a large customer offers an alternative to venture capital financing. Indeed, research alliances surpassed public offerings in the 1990s as the dominant source of financing for biotechnology firms (Lerner and Merges 1998). A biotechnology company often enters into a research agreement with a pharmaceutical (or larger biotechnology) firm. The latter's primary role at the research stage is to provide financing; its role in production expands gradually as the project moves to the development and the marketing and sales stages. The biotechnology company is rewarded through royalties from licensing, including from the license to the partner, if the project is completed successfully.

The principal–agent relationship between the pharmaceutical company and the biotechnology unit (the R&D firm) is fraught with moral hazard. First, some dimensions are related to multitasking, as the R&D firm may juggle several research projects, including ones with other partners or on its own. Second, biotechnology companies' researchers often have academic objectives (publications requiring disclosure, reputation for a research orientation that enables the employment of postdocs, etc.) that may clash with a given project's profitability concerns. Third, reputational concerns (vis-à-vis academia or future partners) may prevent a researcher from admitting that the project is unlikely to succeed and therefore from suggesting termination.

Lerner and Malmendier (2004) study biotechnology research collaborations. Almost all such contracts in their sample specify termination rights. These may be conditional on specific events (50% of the contracts in their sample of 584 biotechnology research agreements) or at the complete discretion of the financier (39%). The financing firm may in the case of termination acquire broader licensing rights than it would have in the case of continuation. These broad licensing rights can be viewed as costly collateral pledging that both increase the income of the financier and boost the R&D firm's incentive to reach a good performance on the project.[50] Lerner and Malmendier's empirical finding is that such an assignment of termination and broad licensing rights is more likely when it is hard to specify a lead product candidate in the contract (and so entrepreneurial moral hazard is particularly important) and when the R&D firm is highly constrained financially.

2.4.2 Initial and Seasoned Public Offerings

It is customary to identify *four stages* of equity financing. In the first stage, equity is held by one or several entrepreneurs. These entrepreneurs may in a second stage raise equity capital from a small number of investors through a private placement; alternatively, they may have a privileged relationship with a bank. In a third stage (which most firms do not get to) the firm goes public in an initial public offering (IPO). Lastly, it may then conduct secondary or seasoned public offerings (SPOs). IPOs and SPOs have a strong business cycle component and are much more frequent during upswings.

2.4.2.1 The Going-Public Decision

Going public is *costly*. First, firms must supply detailed information on a regular basis to regulators and investors. This involves transaction costs as well as possibly disclosure of strategic information to product market rivals.[51] Second, the firm must pay

50. See Section 4.3.4 for the theoretical foundations of this assertion. See also Review Problem 10 for a modeling of some of the arguments.

51. Yosha (1995) argues that firms with sensitive R&D information should remain private.

substantial underwriting and legal fees. In the United States, the commissions paid to investment bankers have converged in the late 1990s to 7% of the transaction for 90% of the IPOs (Chen and Ritter 2000); they are lower in other countries.[52] A company that goes public usually issues a fixed number of shares at some prespecified price. Shares are rationed if there is excess demand at the offer price. It is well documented (Ibbotson 1975; Ritter 1987) that IPOs with a preset price are underpriced in that the shares are traded on the secondary market shortly after the IPO at a premium of 15–20% on average relative to their offer price. During 1990–1998, companies going public in the United States left $27 billion on the table, a sum twice as large as the $13 billion fees paid to investment bankers (Loughran and Ritter 2002). A standard explanation for this underpricing phenomenon is the existence of a "winner's curse" in such offerings (Rock 1986).[53] Third, the insiders (entrepreneur, venture capitalist if any) have superior information about the prospects of the firm,[54] especially if the firm has low visibility and no track record. The insiders may therefore be reluctant to sell shares at a discount when they are unable to demonstrate to investors that the firm indeed has excellent prospects. Fourth, new investors often demand control rights, especially in countries with a poor enforcement of minority rights; entrepreneurs, however, may want to retain control for themselves or within the family. As a matter of fact, family firms still dominate the corporate landscape around the world (see Section 1.4).

Firms derive several *benefits* from going public. First, going public enables firms to tap new sources of finance and to enable the firm's growth. Relatedly, it enables the firm to be less reliant on financing by a single bank or a venture capitalist; by diversifying its sources of finance, it is better protected against a "holdup" by the key financier. Second, going public facilitates exit; it allows the entrepreneurs and large shareholders to diversify their portfolios (see Pagano 1993); relatedly, it enhances the liquidity of their claims (see Chapter 9). Third, going public creates a relatively objective measure of the value of assets in place, which can be used for managerial compensation purposes (see Chapter 8). Fourth, going public may help discipline managers through the channel of takeovers.[55] On the other hand, it may reduce the intensity of monitoring by creating a more dispersed ownership structure, which has costs as well as benefits (such as the promotion of officers' initiative (Burkart et al. 1997)). Lastly, the firm's listing on a stock exchange enhances name recognition; this may help the firm not only to find new investors, but also to improve its relationship with other potential stakeholders such as trading partners or creditors.

There are few empirical investigations of the decision to go public. Pagano et al. (1998), on Italian data, show that firms in industries in which other firms have a high market-to-book ratio are more likely to go public. This may be due either to the possibility that the increased availability of funds associated with public listing is more attractive to firms with high growth prospects (this reason does not seem plausible for the Italian sample, as investment and

52. Chen and Ritter analyze several factors that may be conducive to high commissions: importance of buying underwriter prestige, possibility of tacit or explicit collusion, incentive provided to the underwriter to credibly certify the issue, nonprice competition.

"Legal fees" include registration fees, taxes, fees for legal and accounting services, and so forth. See Eckbo and Masulis (1995) for an earlier review of the empirical evidence on the magnitude of those fees.

53. Suppose that some investors have superior information about the prospects of the company than others, but that they may not buy the whole issue (because of regulatory constraints, risk aversion, etc.). The less informed investors should realize that they receive more shares when the informed investors are unwilling to buy, that is, when the company's prospects are low, and that they are rationed when prospects are high. Hence, the only way to attract less informed investors is to sell shares at the discount. (The IPO underpricing is only about 4% in France, where a mechanism resembling more a standard auction without rationing is used.) The winner's curse effect seems to be weaker when the existence of a bank loan signals that prospects are high.

Interestingly, underpricing is also smaller when the offering's underwriter guarantees the proceeds from the entire issue to the company—the method of firm commitment—than when the underwriter only offers "best efforts" to place the issue. The underwriter may well "certify" the issue better in the former case than in the latter case, in which its stake is lower. On the other hand, it might be that the higher underpricing under a best-efforts contract is due to a sample selection bias—best-efforts contracts are used mainly for smaller, speculative issues (therefore prone to substantial winner's curses)—rather than to a weaker certification by the underwriter. (See, for example, Eckbo and Masulis (1992), Hanley and Ritter (1992), Loughran and Ritter (2002), Ritter (2003), and Ritter and Welch (2002) for more information on IPOs.)

54. See Chapter 6 as well as Chemmanur and Fulghieri (1999).

55. See Chapter 11. Zingales (1995) further argues that free riding by small shareholders may help extract more surplus from prospective acquirers.

profitability decrease after the IPO) or to the possibility that firms go public in hot (high-value) markets (see Section 2.5 for a discussion of market timing). A second finding is that larger companies are more likely to go public. A third finding is that, even controlling for firm characteristics and the reduction in leverage after the IPO, firms borrow from a larger number of banks and experience a reduction in the cost of bank credit after the IPO, perhaps due to the increase in transparency or to the availability of new sources of capital. Lastly, and unsurprisingly in view of the low level of investor protection in Italy,[56] the Italian stock market is much smaller relative to the size of the economy than the American one. Relatedly, the typical Italian firm going public is eight times as large and six times as old as the typical firm going public in the United States.

A few studies (e.g., Anderson and Reeb (2003) for the United States and Sraer and Thesmar (2004) for France) attempt to analyze the relative profitability of family firms. Family firms run by their founder(s) unsurprisingly tend to be very profitable. The question is more whether firms that are run by heirs or by a professional manager hired by the family who has retained control over the firm[57] do less well than widely held firms.[58] On the one hand, one might expect heirs not to be the most appropriate choice for management (indeed, the founder may want to sacrifice wealth in order for the family to keep the benefits of control). On the other hand, the founder may have superior information about prospects and may want to keep the firm private when these are excellent. Thus, even ignoring other effects, it is not clear what we should expect.

Sraer and Thesmar (2004) use a panel of 750 corporations listed on the French stock exchange from 1994 through 2000. On that stock market, two-thirds of the firms exhibit a significant family ownership; among these, almost 50% are still managed by their founder, 30% by a heir of the founder, and 20% by a professional CEO. Consistently with previous studies on U.S. data, Sraer and Thesmar find that family ownership is associated with both higher economic and market performance. Lower wages in family firms seem to explain an important part of these higher performances. Sraer and Thesmar provide evidence consistent with the fact that, because of their different time horizons, family firms have a comparative advantage in enforcing implicit insurance contracts with their labor force. A surprising fact is that heir-managed firms do as well (in terms of return on equity or return on assets) as firms run by founders or by professional managers, and better than widely held corporations. As Sraer and Thesmar note, though, there are potential biases stemming from both the impact (alluded to above) of private information on the decision to go public and from the fact that badly managed heir-controlled firms tend to disappear or else surrender control under financial hardship.[59]

2.4.2.2 The Equity Issue Process and the Role of Underwriters

There are several flotation methods.[60] The most common way of raising equity in the United States is to use an underwriter. The underwriter may guarantee the proceeds of the shares in case of undersubscription; the underwriter can then sell the unsold shares at a lower, but not at a higher, price than the price stated in the public offering. This is the "firm commitment" contract institution. The risk borne by the underwriter is limited, though, if, as is often the case, the price is fixed shortly before the offering. By contrast, under a "best efforts" contract, the underwriter does not bear the risk of offer failure; and the offer is withdrawn if a minimum sales level is not

56. An indicator of the poor investor protection in Italy is the very high premium attached to shares with voting rights relative to shares with the same cash-flow rights but no voting rights (see Zingales 1994).

57. For example, among automobile manufacturers, Peugeot has been managed by heirs, and Fiat and BMW by professional managers.

58. In Burkart et al.'s (2003) theoretical model, a founder chooses between selling the firm, in which case it becomes widely held and is run by a professional manager, and keeping control over it, which gives the founder the option between a professional manager and a heir to run the firm. They assume that heirs are less competent than professional managers and argue that transforming the firm into a widely held company is optimal when the legal protection is high. With lower investor protection, ownership concentration is called for. Heir-managed firms, which avoid a separation of ownership and control, arise in their model when investor protection is very poor.

59. Looking for such biases, they nonetheless argue that their approach may actually underestimate the performance of heir-controlled firms relative to widely held firms, as heir-controlled firms are performing better than all other firms one year before returning private.

60. See, for example, Eckbo and Masulis (1995) and Hanley and Ritter (1992) for more extensive discussion of flotation methods.

reached within a specified amount of time. In the 1980s, firm commitment issues accounted for the bulk of SPOs of common stock in the United States, and for about 60% of IPOs. The remaining 40% of IPOs, corresponding mainly to smaller, more speculative issuers, were conducted under best-efforts contracts (Ritter 1987).

Underwriters often play the dual role of stock analysts. They subsequently issue recommendations to investors regarding the value of the securities that they have helped float.[61] Indeed, the underwriter most often implicitly commits to provide analyst coverage in the aftermarket. Conversely, even "independent" or "nonaffiliated" analysts, who have not underwritten the specific security that they are assessing (or other securities issued by the firm), may later on assist with other public offerings.[62] There is a widespread feeling that this dual role creates a conflict of interest, so that analysts have incentives to issue positive recommendations so as to please issuers and obtain future underwriting contracts.[63] In the United States, a settlement between regulators and major brokerage firms made the latter pay a fine of $1.4 billion for biased and misleading recommendations. This incentive to please issuers must be traded off against that to maintain a reputation for reliable assessments. Research has been investigating the differentials in conflict of interest.[64]

There are other ways of issuing equity, such as private placements and direct issues. A potentially important alternative to tapping new investors is to issue shares to existing shareholders through the institution of rights offers. Indeed, in North America and in Europe, existing shareholders have by law the first right of refusal to purchase a new issue of common stock. A rights offer consists in offering shares first to existing shareholders, often at a 15–20% discount under the current market price. Rights offers have become rare in the United States, but they are more common in Europe and in Japan.

Still another way of issuing equity is to transform other securities (as in the case of an equity for debt swap) or cash into equity, or to issue securities that can later be converted into equity (convertible debt, warrants, stock options). Employee stock ownership and direct reinvestment plans automatically transform employee compensation and shareholder dividends, respectively, into shares. As noted by Eckbo and Masulis (1995) in the United States, such schemes may have substituted for rights offers.

2.5 Financing Patterns

This section documents firms' financing patterns. Firms finance operating expenditures and investments in roughly two ways: (a) *retentions*, which we define as the difference between post-tax income and total payments to investors. Total payments to investors include payouts to shareholders (dividends, share repurchases), and payments to creditors (principal and interest) and to other securityholders; and (b) *return to the capital market*, that is, the issuing of new shares and bonds and the securing of new loans or trade credit.

Chapters 5 and 6 will stress the risk inherent to capital market refinancing. Unless the firm draws on a previously-contracted-for credit line or more generally is able to use some already secured source of financing, the refinancing process is confronted with investors' reluctance to lend funds whose proceeds they will imperfectly appropriate. Refinancing thus exposes the firm to the risk of being unable to

61. In the United States, they must wait 25 days to issue such recommendations.

62. While underwriters have an incumbency advantage for future offerings, a nonnegligible fraction of issuers do switch underwriters. Krigman et al. (2001), on a U.S. sample in the mid 1990s, find that 30% of the firms completing a secondary equity offering within three years after their IPO switched lead underwriter. Noting that most of the switchers do not report a dissatisfaction with their IPO underwriter, they suggest two possible explanations for this phenomenon. First, firms that started with less-well-known underwriters may "graduate" to higher-reputation ones. Second, they may "buy" additional analyst coverage from the new lead underwriter.

63. Much of the research builds upon information supplied by the company's management. The brokerage firms' revenue from providing advice to institutional investors and others is indirect. First, they receive money from future investment banking contracts with companies that are covered. Second, brokerage firms receive trading commissions from institutional investors, who if they own such shares in a company do not want the brokerage firm to publicly issue a "sell" recommendation.

64. Michaely and Womack (1999), on a sample of 1990–1991 U.S. IPOs, find that lead underwriters issue more optimistic recommendations and that the market reacts less to their recommendations. Bradley et al. (2004), on a "bubble period" sample of 1997–1998 U.S. IPOs, do not find any difference in market reaction between affiliated and nonaffiliated analysts, which they interpret as evidence that affiliated analysts have superior information or that nonaffiliated analysts are also very eager to please the company.

Table 2.2 Average financing of nonfinancial enterprises, as a percentage of total financing sources, 1970–1985. *Source:* Mayer (1990).

	Canada	Finland	France	Germany	Italy	Japan	U.K.	U.S.
Retentions	54.2	42.1	44.1	55.2	38.5	33.7	72.0	66.9
Capital transfers	0.0	0.1	1.4	6.7	5.7	0.0	2.9	0.0
Short-term securities	1.4	2.5	0.0	0.0	0.1	n.a.	2.3	1.4
Loans	12.8	27.2	41.5	21.1	38.6	40.7	21.4	23.1
Trade credit	8.6	17.2	4.7	2.2	0.0	18.3	2.8	8.4
Bonds	6.1	1.8	2.3	0.7	2.4	3.1	0.8	9.7
Shares	11.9	5.6	10.6	2.1	10.8	3.5	4.9	0.8
Other	4.1	6.9	0.0	11.9	1.6	0.7	2.2	−6.1
Statistical adjustment	0.8	−3.5	−4.7	0.0	2.3	n.a.	−9.4	−4.1

finance positive net present value (NPV) continuation projects or growth prospects.[65]

The section is organized as follows. Section 2.5.1 documents sources of finance. Section 2.5.2 discusses some key theoretical principles and empirical findings relative to payout policies, or equivalently retentions. Finally, Section 2.5.3 studies seasoned equity and debt offerings.

2.5.1 Sources of Corporate Finance

Several studies (see, in particular, Borio 1990; Corbett and Jenkinson 1994; Eckbo and Masulis 1995; Kojima 1994; Kotaro 1995; Mayer 1988; Rajan and Zingales 1995, 2003) have documented the sources of finance in different countries. Figure 2.4 and Table 2.2 illustrate some typical findings for the 1980s, due to Mayer (1988, 1990).

In all countries, internal financing (retained earnings) constitutes the dominant source of finance. Bank loans usually provide the bulk of external financing, well ahead of new equity issues, which account for a small fraction of new financing in all major OECD countries.[66] One difference among countries is the role of bond financing. Bond markets play a minor role except in North America.[67]

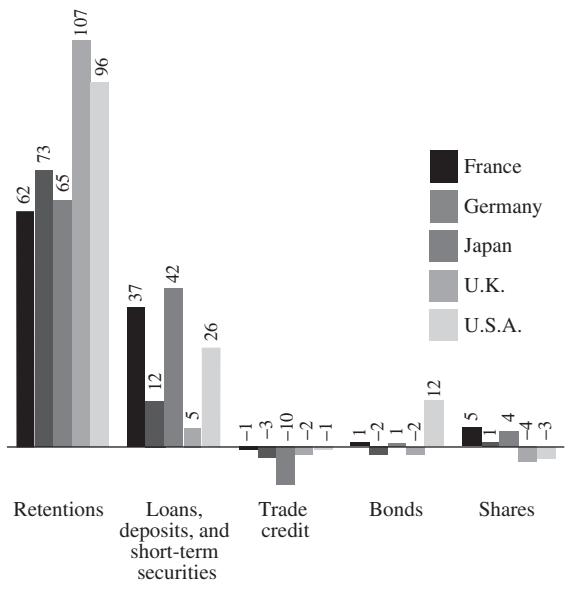

Figure 2.4 Reprinted from *European Economic Review*, Volume 32, C. Mayer, New issues in corporate finance, pp. 1167–1189, Copyright (1988), with permission from Elsevier.

The 1980s have even witnessed net retirements of equity in the United States. This does not mean that the volume of equity issues was negligible relative to that of debt issues. Indeed, Rajan and Zingales (1995) report that, in their sample of U.S. firms and for the 1984–1986 period, equity issuance amounted to 65% of external financing; equity reduction, though, accounted for 68% of external financing, and so the net equity issuance was negative and basically all external financing was debt

65. As will be discussed in Chapter 5, this agency-based feature is absent in the classic Arrow–Debreu competitive equilibrium model, which assumes that firms' income is fully pledgeable to investors and so firms incur no cost when relying solely on refinancing in the capital market when needed.

66. These numbers are, of course, net, aggregate numbers. They hide substantial differences among firms; for example, equity financing may be important for start-up firms.

67. Although large European firms now have access to Eurobonds and syndicated bank loans. See also Table 2.5 below, in which bonds represent the bulk of the "Securities other than stocks" category.

Figure 2.5

financing (primarily long-term debt issuance minus long-term debt reduction, as net short-term debt issuances were negligible).[68] The U.S. picture for the period differs a little from that for other countries over the same period. There was no equity reduction in Japan and almost none in the United Kingdom; furthermore, net equity issuance accounted for 23% and 68% of external financing in these two countries (in which external financing formed 33% and 16% of total financing, respectively). More recent data confirm the relatively minor role of equity issues in capital formation. Rajan and Zingales (2003) report that the fraction of gross fixed-capital formation raised via equity in 1999 was 12% in the United States, 9% in the United Kingdom and France, 8% in Japan, and 6% in Germany.[69]

These data should not, of course, lead us to naively overemphasize the role of "internal" financing. After all, "retentions" are cash that shareholders consent to leave in the firm for the latter to reinvest, while "equity issuances" are cash that shareholders also give to the firm for reinvestment purposes. Either way, and in a first analysis, this is cash handed over by shareholders to the firm. The difference between the two sources of finance will therefore need to be investigated in the book (see, in particular, the various discussions of the sensitivities of investment to cash flow).

2.5.2 Payout Policy and Leverage

As discussed above, there are two broad sources of financing: retentions and new securities' issues (or new loans). Because new securities' issues are hard or costly to arrange, retentions play an important role (Section 2.5.1). Yet, investors expect dividends (or share repurchases), principal, and interest, and so there is a tradeoff between retaining earnings within the firm so as to achieve continuation and growth and the need to attract investors by promising payouts to shareholders and debt repayment to creditors.[70]

Table 2.3

	Firm should retain more of its earnings if	Firm should pay out more of its earnings if
growth opportunities are	high	low
correlation of date-1 and date-2 profitabilities is	high	low
financial constraint at date 0 is	weak	tight
earnings are	small	large

To study the two key issues related to total payments to investors (payouts and debt repayments), namely, their *level* (how much?) and *structure* (what kind?), it is convenient to envision the simplified timeline in Figure 2.5 for the firm's life cycle.

The tradeoff we just alluded to refers to the tradeoff at the initial stage, "stage 0," at which the firm aims at attracting funds in sufficient quantity without jeopardizing its liquidity position midstream, at "stage 1" (more generally, the tradeoff would arise at each refinancing stage).

(a) *Payment level.* How much of the midstream earnings should be returned to investors? Intuition (to be confirmed in subsequent chapters) suggests some determinants of the payout level: see Table 2.3.

The evidence seems largely consistent with the predictions of Table 2.3. A caveat, though: the evidence presented below is incomplete. In particular, while the predictions refer to the total payment (dividend/share repurchases + principal and interest + other payments to investors), some of the evidence refers only to the dividend or the debt component of the payment. Because the determinant in question may also affect the structure of payments (e.g., the

68. External financing over the period was typically small: computed as the ratio of the net external financing to the sum of cash flow from operations and net external financing, it amounted to 14% over 1984–1986.

69. These refer to funds raised through both initial equity offerings and seasoned equity issues.

70. See Allen and Michaely (2004) for an exhaustive survey of corporate payout policies.

debt/equity ratio), it might be that the other component(s) move in the other direction.

Growth opportunities. Given the difficulties associated with returning to the capital market, the firm should pay out less when midstream reinvestment needs are high.

There is indeed much evidence that growth opportunities[71] are correlated with a lower dividend distribution (Fama and French 2001) and a lower leverage (Myers 1984).

Serial correlation of profits. The serial correlation of profits is related to growth opportunities, since, if high profits midstream are a signal of persistently high demand or low product-market competition and therefore of high future profitability, it may make sense not to distribute them and to reinvest in the firm (Poterba 1988).

Financial constraints. Recall the tradeoff between pleasing investors through high payments and promoting the firm's long-term growth through retentions. Financially constrained firms must try harder to attract funds and therefore must increase their payment ratio. There is indeed evidence that financially unconstrained firms take on low debt burdens (Hubbard 1998).

Earnings size. Intuitively, firms with low earnings midstream, controlling for growth opportunities, should distribute less than those with high earnings since a lower payment-to-earnings ratio is required in order to achieve a given level of retentions. This theoretical prediction may be less compelling than the others, though, since firms with low profits may also be financially constrained, which as we indicated above would suggest high payouts, an effect that would be further amplified by a serial correlation of profits.

The list in Table 2.3 is, of course, incomplete. For example, the derived payment policy may depend on the extent of date-0 moral hazard, as, for example, when the midstream earnings are sensitive to date-0 managerial choices. A policy of reinvesting a sizeable fraction of the profits provides management with an incentive to boost these earnings. That is, a lower payment ratio in the case of high earnings reduces moral hazard. Thus, the sensitivity of retentions to earning should increase when date-0 moral hazard increases (see Section 5.5). In the same vein, large payouts may not be advisable when management can easily reinvest earnings as they accrue and thereby hide them temporarily from investors. Lower payment ratios then incentivize management to recognize the earnings. Relatedly, firms may have an easier time secretly reinvesting money when cash flows are high (see Dow et al. 2003; Philippon 2003).

71. Empirically, growth opportunities are often proxied by the ratio of market value of assets to book value of assets.

Table 2.4 Leverage in different industries. Measures of corporate net worth by industry in the United States, 1985.

Industry	Ratio of net worth to total assets	Ratio of debt to equity
All industries	0.32	2.11
Agriculture, forestry, and fishing	0.32	2.12
Mining	0.45	1.21
Construction	0.28	2.52
Manufacturing	0.45	1.20
Transportation and public utilities	0.40	1.50
Wholesale and retail trade	0.29	2.49
Services	0.31	2.25
Finance, insurance, and real estate	0.26	2.90
Commercial banks	0.08	11.00
Savings banks[1]	0.04	28.00

Source: U.S. Internal Revenue Service, White (1991).
1. Mutual savings banks plus savings and loan associations.

(b) *Payment structure: the determinants of financial structure.* So far, we have discussed only total payment to investors. Should this payment take the form of a fixed, predetermined payment to debtholders or a more flexible payout to shareholders? This raises the question of the firm's desired financial structure, to which we now turn our attention.

We have seen that some firms (financed by venture capital) do not contract debt liabilities. In contrast, others, following an LBO, may have debt–equity ratios of 10 or 20. Some publicly traded companies have similarly high debt–equity ratios because of the

Table 2.5 International comparison of financial structures.

	France	Germany	U.K.	Italy	U.S.	Japan
Securities other than stocks	7.3	2.3	10.6	2.3	15.6	8.0
Credit	24.3	43.2	30.7	32.1	10.0	39.5
short term	6.7	12.2	—	—	—	—
long term	17.5	31.0	—	—	—	—
Stocks	52.9	40.7	53.0	49.4	45.6	28.0
listed	17.1	—	—	—	—	—
nonlisted	30.8	—	—	—	—	—
Trade credit	15.5	8.2	5.7	12.5	8.0	17.9

Source: David Thesmar, personal communication. Table built from Eurostat, Federal Reserve Board, Bank of Japan; year 2002; fraction of total liabilities of nonfinancial corporations; fractions may not add to 100 since some lines have been omitted, to ease readability. "Securities other than stocks" are basically bonds. Also "Trade credit" is not netted out with trade credit on the other side of the balance sheet.

low cash-flow risk: for instance, banks[72] and, before the deregulation of the 1980s and especially the 1990s, public utilities (such as telephone, electricity, gas companies).[73] Bradley et al. (1984) find that U.S. telecommunications and gas and electricity companies had ratios of book value of long-term debt to book value of long-term debt plus market value of equity of 51.5% and 53%, respectively (as opposed to 29.1% for an average contemporary U.S. firm).

Measures of leverage vary substantially across studies for several reasons. For example, comprehensive samples include large numbers of small firms, which presumably are more levered than larger ones; and so leverage ratios are higher than in studies focusing on smaller samples (for example, that of listed firms). For the same reason, studies that report nonweighted means are likely to report higher leverage than those that compute weighted averages. Another reason why statistics vary widely is that studies differ in the period they cover and that leverage is time-dependent (for instance, it depends on the business cycle). Table 2.4 (due to White, who reports on a very large, nonweighted 1985 sample of U.S. firms) depicts the ratio of equity over debt plus equity in the left column and the ratio of debt to equity in the right column; a typical debt–equity ratio in this sample lies around 2.

The aggregate market-based average ratio has been remarkably stable in the United States at around 0.32 over the past half-century in the United States (Frank and Goyal 2004).

Table 2.5 (based on national accounts, and therefore weighting firms by their size, leading to lower measures of leverage) provides more recent data for France, Germany, and the United Kingdom.

Key findings about the empirical determinants of leverage are:[74]

(i) Firms that are safe (e.g., utilities before the deregulation), produce steady cash flows, and have easily redeployable assets that they can pledge as collateral (e.g., aircraft for airline companies or real estate) can afford high debt–equity ratios.

(ii) In contrast, risky firms, firms with little current cash flows, and firms with intangible assets (e.g., with substantial R&D and advertising) tend to

72. Banks are fairly riskless both because of tight prudential regulation (which, incidentally, offers a number of analogies with the analysis of covenants in Section 2.3.3) and because of deposit insurance and of the expectation that formally uninsured deposits will benefit from an implicit governmental guarantee in the case of distress. Currently, international standards impose, among other requirements, a minimum ratio of equity over (risk-weighted) assets of 8% for banks.

73. Anglo-Saxon utilities used to be regulated under the so-called cost-of-service or rate-of-return regulation, which by and large guaranteed them a safe return. The introduction of higher-powered schemes (price caps, sliding scale plans, etc.) in the 1990s made them riskier, and leverage accordingly decreased.

Regulated utilities traditionally faced little upside and especially downside risk, as regulators allowed rate increases when the utility performed poorly and strove to capture the rent through rate cuts or other means if the firm became very profitable. One substantial difference with LBOs, however, is that managerial incentives were weak. In the United States, top managers of utilities received definitely fewer bonuses and stock options than their nonregulated counterparts (see, in particular, Joskow et al. 1993), who, in turn and as we saw in Chapter 1, have much weaker incentives than managers in LBOs.

74. See Allen et al. (2005), Frank and Goyal (2004), Harris and Raviv (1992), Masulis (1988), and Titman and Wessels (1988).

have low leverage. Companies whose value consists largely of intangible growth options (high market-to-book ratios and heavy R&D spending) have significantly lower leverage ratios than companies whose value is represented primarily by tangible assets.

Remark (share repurchases and dividends). Equity payouts come in two forms: dividends and share repurchases. Share repurchases have grown substantially over the years. In particular, distributions associated with open market repurchase programs in the United States grew from $15.4 billion to $113 billion between 1985 and 1996 while dividends grew from $67.6 billion to $141.7 billion (Jagannathan et al. 2000).

In a frictionless world, the choice between the two would be neutral. It is therefore not immediately clear why firms pay so much attention to the split. Lintner (1956) postulated that dividends distribute "permanent cash flows" while repurchases distribute "temporary ones." This postulate seems more driven by the desire to account for the observed smoothness of dividends and the related observation that repurchases are very volatile (large during booms and low during recessions) than by theoretical considerations.

The world, however, is not frictionless. Taxes may differentiate the two.[75] Also, employee stock options (which, recall from Chapter 1, grew substantially in the last two decades) do not perfectly adjust for the distribution of dividends; that is, the value of options decreases when the stock goes ex dividend, which creates an incentive for management to push for share purchases (Jolls 1998).

(c) *Sensitivity of investment to cash flow.* A number of papers relate cash flow and investment. A standard finding is that firms with more cash on hand and less debt invest more, controlling for investment opportunities.[76] There are questions about what this relationship means. Were the firms at the initial financing stage ("stage 0" in our simplified timeline), more cash would ease financial constraints and therefore would indeed boost investment, as we will see in the next chapter. However, sensitivity of investment to cash flow is demonstrated in samples of ongoing concerns ("stage 1" in the timeline). One must then ask, why isn't any extra cash simply returned to investors? It may be, as we noted above, that the retention of some of the extra cash rewards management for good performance.

An alternative hypothesis is that corporate governance is far from perfect. A few papers indeed point in this direction. Blanchard et al. (1994) study large cash windfalls from legal settlements unrelated to the firm's ongoing line of business. They show that firms' acquisitions increase with these cash windfalls. Lamont (1997) shows that shocks to the price of crude oil has a substantial impact on nonoil investments of companies with an oil stake. Clearly, managers are not responsible for the oil price increase and therefore are not being rewarded for the extra cash flow.[77] Lastly, Philippon (2003) finds that investments of firms with bad governance are more cyclical than those of firms with good governance.

A more controversial finding, due to Fazzari et al. (1988), is that firms that are more financially constrained exhibit a higher sensitivity of investment to cash flow. The theory is actually rather ambiguous as to whether this should be the case.[78] Using a different approach to measuring financial constraints, Kaplan and Zingales (1997) in contrast find that *less* financially constrained firms exhibit a greater sensitivity of investment to cash flow.

2.5.3 Seasoned Financing

Let us now turn to the second broad source of refinancing: firms can conduct seasoned equity offerings (SEOs), issue new bonds, or borrow from banks.

(a) *Informational impact of SPOs and borrowing.* A well-established fact is the average permanent

75. See, for example, Jagannathan et al. (2000) for the United States. Dividends and share repurchases are treated the same at the corporate level, but repurchases had a tax advantage at the individual tax level (which was reduced by the tax reform in 1986).

See Grullon and Ikenberry (2000) for an overview of what is known about stock repurchases.

76. See the surveys by Hubbard (1998) and Stein (2003), and the many references therein.

77. Unless they are being rewarded for accurately forecasting the oil price increase. But this possibility would apply only to those managers who invested more than average in oil production. In any case, the hypothesis of a poor governance in the oil industry is to be entertained in view of the independent evidence collected by Bertrand and Mullainathan (see Section 1.4).

78. See Kaplan and Zingales (1997, 2000) and Chapter 3 for the case of initial financing and Chapter 5 for the case of an ongoing concern.

Table 2.6 Impact of financing on stock price.
Source: Eckbo and Masulis (1995).

Type of security offered	Flotation method	Type of issuer: Industrial	Type of issuer: Utility
Common stock	Firm commitment	−3.1 (216)	−0.8 (424)
	Standby rights	−1.5 (32)	−1.4 (84)
	Rights	−1.4 (26)	−0.2 (27)
Preferred stock	Firm commitment	−0.78* (14)	0.1* (249)
Convertible preferred stock	Firm commitment	−1.4 (53)	−1.4 (8)
Convertible bonds	Firm commitment	−2.0 (104)	n.a.
	Rights	−1.1 (26)	n.a.
Straight bonds	Firm commitment	−0.3* (210)	−0.13* (140)
	Rights	0.4* (11)	n.a.

Reprinted from *Handbook in Operations Research and Management Science: Finance*, Volume 9, E. Eckbo and R. Masulis, Seasoned equity offerings: a survey, Copyright (1995), with permission from Elsevier. Average two-day abnormal common stock returns and average sample size (in parenthesis) from studies of announcements of SPOs by NYSE/AMEX listed U.S. companies. Returns are weighted average by sample size of the returns reported by the respective studies (all returns *not* marked with a "*" are significantly different from 0 at the 5% level).

fall in stock price of about 3% in the wake of an announcement of a seasoned equity issue (Asquith and Mullins 1986). (The price decrease is much less pronounced for public utilities: −0.68% as opposed to −3.25% for the 1963–1980 period in the United States, according to Masulis and Korwar (1986). It is also interesting to note that there were more common stock offerings by utilities than by industrial firms during that period, even though utilities are only a small fraction of stock market capitalization. The price decrease is also smaller in Japan (see Kang and Stulz 1994).)

In contrast, the firm's stock price rises when a bank loan agreement is announced (James 1987) although the effect seems to be driven mainly by the successful renegotiation of existing bank loans (Lummer and McConnell 1989).

There is little impact of straight debt offerings on stock prices (Eckbo 1986). Table 2.6 reports Eckbo and Masulis's (1995) summary of existing evidence for industrial firms and public utilities in the United States.

Other and related stylized facts are that the stock price increases with an announcement of higher dividends, decreases with an equity for debt swap, and increases with a debt for equity swap.

(b) *Market timing.* The link between financing and the business cycle is one of the best-documented facts in corporate finance:

(i) Bank finance is countercyclical (see Bernanke et al. 1994); firms which can afford to issue public debt in economic booms often turn to banks to meet their financing requirements during recessions. The percentage of long-term bank loans that are unsecured varies inversely with business conditions.
(ii) Firms with strong balance sheets may extend more trade credit to weaker firms and issue more commercial paper in a recession.[79] Commercial paper and bank loans move in opposite directions (Kashyap et al. 1993). Loanable funds are smaller in recessions, while there is a countercyclical demand for short-term credit.[80]
(iii) Smaller and medium-sized firms, who rely more on banks, are more affected than larger firms by business cycle-related fluctuations (Gertler and Gilchrist 1994).
(iv) Equity issues are more frequent in upswings of business cycles, both in absolute terms and relative to debt issues.[81]
(v) The negative stock price reaction to common stock issues is smaller during expansions.
(vi) Equity issues are also more frequent after an increase in the firm's own stock value.

Particularly striking is equity market timing: firms issue shares at high prices and repurchase them at low prices. Conversely, firms tend to repurchase

79. See Calomiris et al.'s (1995) study of the U.S. slowdown of 1989–1992.

80. For more on the transmission mechanism, see, for example, Bernanke and Blinder (1992), Kashyap and Stein (2000), and Kashyap et al. (1993).

81. See Eckbo and Masulis (1995) for a review of the evidence. Relatedly, stock repurchases tend to follow a decline in stock prices.

shares when values are low. This is supported by both empirical evidence (see Baker and Wurgler (2002) for a survey and Baker et al. (2003)) and survey evidence (Graham and Harvey 2001). Relatedly, corporate investment and stock market values are positively correlated both in time-series and cross-section analyses; and high stock market values such as those of the late 1990s are conducive to mergers and acquisitions in which deals are for stocks rather than cash.[82]

An interesting question is why firms time the market so carefully. There are several hypotheses in this respect.[83]

Marginal productivity. Standard neoclassical economies can partly account for a correlation between high market values and high investment. Good news about the marginal productivity of capital or low interest rates (triggered, say, by large savings rates) raises the value of firms and at the same time the profitability of new investments. If, furthermore, new investments are financed through new equity issues, then there is a close relationship between market values and equity issues (see, for example, Pastor and Veronesi 2005). The relationship is likely to be weaker, though, if to finance the new investments, debt issues or retentions—perhaps associated with high current cash flows which signal high future ones—are used instead. Note that the Modigliani–Miller Theorem unfortunately does not provide much help in predicting which source of finance is tapped.

Lower adverse selection during booms. It may be the case that adverse selection is smaller during booms, as refinancing is then more likely to be driven by new investment opportunities rather than by the desire to issue overvalued shares. Choe et al. (1993) indeed show that the negative price response to seasoned common stock offerings is significantly lower during booms. So, to the extent that firms cannot issue only debt if they want to avoid the hazards associated with higher leverage ratios, issuing equity in good times may be a wise strategy.

82. See Shleifer and Vishny (2003), who argue that managers attempt to arbitrage incorrect stock market valuations.

83. This is not meant to be exhaustive. For example, the existence of abundant liquidity in good times (see Chapter 15) may encourage more investment.

Bubbles. A couple of theoretical papers show that investment through share issues is particularly profitable in high-bubble times (Olivier 2000; Ventura 2005). Such rational-bubble models thus predict a strong correlation between equity issues and high market valuations.

Irrational markets. Several authors have lately argued that managers wait for market exuberance to issue shares. Managers who know the value of their firms better than investors and are incentivized by stock options to raise the firm's shareholder value should indeed recommend equity issues during booms and equity purchases during recessions to their board and shareholders. Note that in this argument the irrationality of investors may not stem per se from their lack of knowledge of the firm's true value (unless they fail to recognize the macroeconomic pattern of correlation), but rather in their failing to understand the adverse selection they face.

Whatever the reason, market timing is likely to have permanent effects on firms' capital structure, as documented by Baker and Wurgler (2002). And it is likely to have a differentiated impact on firms (Baker et al. (2003) find empirical support for the idea that firms that are most dependent on equity—young, highly leveraged, high cash-flow volatility, low cash-flow firms—exhibit a stronger correlation between stock prices and subsequent investment).

2.6 Conclusion

The purpose of this chapter has been to give a concise overview of corporate financing. The theoretical analysis will build on a number of themes that have become evident in this chapter, namely, the key role played by information and incentives in general, and by capital, liquidity, value of collateral, and external monitoring more specifically.

Appendixes

The following two texts are rather representative of the business world's approach to loan agreements. The first describes the five Cs of credit analysis

mentioned in Section 2.3.2. The second provides a detailed description of loan covenants.

2.7 The Five Cs of Credit Analysis

The text in this section is from a Harvard Business School note on acquiring bank credit.

When asked how a banker evaluates a borrower's creditworthiness, one is likely to hear about the "five Cs of credit analysis": the character, capacity, capital, collateral, and coverage of potential borrowers. Below, we discuss what these five Cs refer to and how they are analyzed.

Character. For many bankers, character determines if a small business loan will be approved at all. The potential trouble involved in dealing with questionable characters—noncooperation with the bank, fraud, litigation, and write-offs—are a significant deterrent. The time, legal expense, and opportunity costs incurred due to a problem loan far outweigh the potential interest income derived. (This factor, however, is less important with larger companies managed by a team of individuals.)

Capacity. Capacity refers to the borrower's ability to operate the business and successfully repay the loan. An assessment of capacity is based on management experience, historical financial statements, products, market operations, and competitive position.

Capital structure. A bank draws comfort from a capital structure with sufficient equity. Equity serves as a layer of capital to draw upon in the course of operations so as to protect the bank's exposure. Bankers also view equity as an indication of the borrower's commitment to his business. They derive greater comfort from knowing that the borrower has much to lose if his business loses.

Collateral. Collateral is the bank's claim on the borrower's assets in case the business defaults on the loan or files for bankruptcy. The bank's secured interest generally gives it a priority over other creditors in claiming proceeds from liquidated assets. The bank may also require that the borrower pledge as collateral personal assets outside of the business. For bankers, collateral is security and an alternative source of repayment beyond cash flow.

Coverage. Coverage refers simply to business insurance or "key-man" insurance which is often required when management ability is concentrated in a few individuals. In the event of the death or disability of a key manager, such coverage ensures that the bank will be repaid if the business cannot meet its obligations.

2.8 Loan Covenants

The text in this section is from Zimmerman (1975).

Loan agreements are a source of confusion and misunderstanding to many bankers. Frequently, the reader of loan agreements is not aware of their objectives and limitations, and, furthermore, is bewildered by the legal jargon of the numerous qualifying clauses.

Essential to the creation of effective loan agreements are the affirmative and negative covenants, which specify what the borrower must and must not do to comply with the agreement. The thrust of this paper is to facilitate the understanding and use of covenants in loan agreements. The use of covenants will be discussed in detail following an overview of the purpose, characteristics, and basic composition of loan agreements.

Purpose of Loan Agreements

Large amounts of time, effort, and money are spent in the development and implementation of loan agreements. They provide protection and communication for the parties involved and a general stability for the loan relationship through greater understanding among the parties. Further, should the borrower have other long-term debt, the loan agreement coordinates any legal or procedural interface with the debt and its associated creditors.

Where several banks are participating in a large credit, the loan agreement specifies the rules which govern the loan administration, and the responsibilities and liabilities of each bank.

As a major objective, the lender is interested in protecting its loan and assuring timely repayment. Through the loan agreement, the bank creates a clear understanding with the borrower as to what is expected of it. In doing so, the bank establishes its control of the relationship and provides for several basic functions to effect that control.

The lender attempts to ensure regular and frequent communication with the borrower by using certain covenants in the loan agreement. The communication results in an up-to-date assessment of the borrower's financial situation and its general management philosophy.

When the bank requires that the borrower maintain certain financial ratios, it is accomplishing several objectives. On the surface these covenants provide triggers or early-warning signals of trouble, which will allow the bank to take rapid remedial action. The borrower is made aware of where the minimum performance cutoffs are. However, the banker is also helping the borrower set reasonable goals in terms of financial conditions and growth. In some cases a "growth formula" is created which states that until a specified set of financial conditions is met, the borrower may not be eligible for further debt.

All these controls—required ratios, ratio goals, required actions, and forbidden actions—may seem arbitrary or restrictive; but applied wisely, they are not. The process lets

all parties know where they stand, thus reducing the number of unknowns or uncertainties in the loan relationship.

Characteristics of Loan Agreements

When asked to describe the salient characteristics of loan agreements, most bankers will use adjectives such as "long" or "dull" or "confusing." While many agreements may be thus described, other definitions are certainly more informative.

The loan agreement is one of the most important loan documents in that it provides the basis for the entire banking relationship, establishing intents and stating expectations. It relates all the basic loan documents to one another and creates the means of control and lines of communication which are important in protecting all parties involved.

It follows that only three main courses of action are open to the bank in the event of default by the borrower. The account officer may waive, either temporarily or permanently, the condition which has been violated. This is frequently done in the case of financial ratios, although too lax an attitude in this respect can lead to a loss of control and an ineffective covenant and/or loan agreement. An alternative is for the banker to have the agreement rewritten to make it more viable. The rewrite is also a tactic used to obtain a much tighter hold over the borrower, if needed, by using as a bargaining tool the bank's legal right to call the loan. The third, and most drastic, approach for the bank is, of course, to declare the borrower in default, call the loan, and, if necessary, file suit against the borrower.

The implications of the nature of a loan agreement are extremely important. As an example, assume that a loan has been made on an unsecured basis and one covenant forbids the pledging of assets to anyone. This is obviously an attempt to maintain the strength of the bank's unsecured position in the event of liquidation. However, let us further assume that in violation of the agreement, the borrower pledges its assets to another lender. The bank certainly retains its option to call the loan, but the other lender holds the security. If the bank does call the loan, forcing liquidation, it remains an unsecured creditor vying for those assets which remain after satisfaction of the first lienholder.

The loan agreement, then, is not a substitute for security. If a loan should be secured in the absence of an agreement, then security should be taken with one. In fact, a loan agreement is not a substitute for anything. If the situation does not satisfy the five Cs of a loan decision—character, capacity, capital, conditions, and collateral—then the loan should not be made.

Composition of a Loan Agreement

There are seven basic sections of standard loan agreements, any of which may be modified, depending upon the purpose of the loan.

• *The loan.* This section describes the loan by type, size of commitment, interest rate, repayment schedule, and security taken, if any. Also specified are all participants and their roles plus terms of participation if more than one lender is involved. Any definitions of financial accounting or legal terminology to be used in the agreement are stated here.

• *Representations and warranties of borrower.* Basically, this section is an attestation to the lender that certain statements are true. For instance, the borrower may warrant that it is a corporation, that is entering into the agreement legally, that financial statements supplied to the bank are true, and that no material change has occurred since their preparation. The company may attest to the nature of its business, that it does own its assets as represented, and that it currently is not under litigation. In other words, the company reaffirms in writing all those things about its current state of existence which have been known or assumed throughout the negotiations.

• *Affirmative covenants.* In contrast to the warranties, which attest to existing fact, affirmative covenants state what action or event the borrower must cause to occur or exist in the future.

• *Negative covenants.* Negative covenants state what action or event the borrower must prevent from occurring or existing in the future.

• *Conditions of lending.* This section states that, prior to the lending of any money, all documents and notes must be in proper form, that both the borrower's and the bank's counsel must approve the entire arrangement, and that the borrower's auditor, or at least its chief financial officer, must certify current compliance with all conditions of the loan agreement.

• *Events of default.* Conditions which will be considered events of default are specifically stated. Such conditions might be delinquent payment, misrepresentation, insolvency proceedings, change in ownership, or other occurrences which could jeopardize the company's viability and/or the bank's position. All covenant violations are considered events of default, although many are designed to be used in correcting a situation rather than in calling the loan. In any event of default, timing is crucial. For instance, it may be that default does not occur until a covenant has been violated for thirty consecutive days.

• *Remedies.* The remedies section spells out what the bank may do in the event of default. The bank's rights may include several potential actions, but always include the right to accelerate payments, a term which means to call the loan. Timing is important. The borrower may have a certain amount of time to correct the default prior to the enforcement of a remedy. In a credit with several participating banks, the remedies section also defines procedures

for calling the loan. For example, the agreement may require banks representing 70% of the commitment to call the loan.

Approach to the Covenant Package

Prior to writing a set of covenants for a loan agreement it is necessary to have a systematic approach to developing them. One must ask questions ranging from an assessment of basic objectives and risks to types of protection and remedy which must be provided to ensure the successful attainment of the objectives.

Since covenants are the heart of a loan agreement, setting the objectives is a process very similar to that of defining those for the total agreement. The bank is obviously hoping to be repaid on a timely basis, but, as a secondary set of objectives, would like to maintain or improve upon the financial position, cash flow, growth progression, and general financial condition of the borrower. Once goals have been set for the mutual benefit and protection of all parties, the lender must reassess the risks involved from a point of view different from that in the initial loan decision.

Determination of Risk

No longer is the lender looking for a yes/no decision. The aim at this point is to define the risks involved and to determine their magnitude. The account officer needs to ask, What conditions or events could block the accomplishment of my objectives? In other words, Where is the loan vulnerable? Weaknesses may lie in poor cash flow, thin net worth, or other financial statements items. It may be that the industry is volatile and highly subject to strikes or public fancy. Perhaps the company is small or it has a short track record, so that much of the loan decision is based upon projections.

Whatever the risks, it is now the task of the loan agreement writer to prevent or minimize the consequences of those risks as well as possible, in a form which remains as flexible as possible.

Scope of Covenants

The lender's effort to safeguard the loan against known and unknown risks will take the form of loan covenants. In asking what triggers exist and what actions may reasonably be taken and enforced once a risk materializes, the scope of potential covenants is almost limitless. Triggers may range from financial ratios and limits on financial statement accounts to restrictions on corporate, or even management, activities.

Furthermore, methods of treating a specific item are quite flexible in order to obtain the appropriate coverage. For example, it is possible to restrict a financial statement item to a minimum or maximum of

- a fixed dollar amount;
- a dollar amount increase or decrease per time period;
- a percentage of total assets, tangible net worth, or some independent indicator;
- a percentage change per time period.

As a special case, businesses subject to seasonal variances may have the above modifications fluctuate with the peaks and troughs of the cycle to more closely approximate actual conditions.

With so many potential requirements and restrictions, however, it becomes evident that the key to an effective loan agreement is not to see how many activities or conditions can be covered: it is to obtain the most protection in the simplest, most efficient manner.

Simplicity and Efficiency

To devise a simple and efficient network of covenants, it is imperative that the writer have a thorough understanding of the company, its management, and loan-associated risk in conjunction with a realistic attitude. This combination will result in covenants which allow the borrower maximum flexibility within the constraints necessary to provide the bank maximum protection.

(1) The borrower will maintain an adequate cash flow.

(2) The borrower will maintain a ratio of cash flow to current maturities of long-term debt of 1.5 to 1 on a fiscal-year basis.

The necessity for a realistic attitude dictates that a covenant also be such that the borrower is able to comply with it and the lender is willing to enforce it. Should either of these conditions not be met, a covenant may be frequently waived, thereby losing its psychological and, perhaps, legal control.

The essence of a loan agreement covenant is that it is simple, well-defined, measurable, risk-reducing, efficient, and reasonable. In short, it is the creative development of protection in the loan situation. As an aid to the direct application of these principles, a working guide to the construction of loan agreement covenants follows.

Working Guide for Loan Agreement Covenants[84]

Functional Objectives

The key objectives are described as follows:

• *Full disclosure of information.* To make competent, ongoing lending decisions, the account office must have an intimate understanding of the borrower. Full disclosure also aids the lender in maintaining regular contact with the borrower and close control over the loan relationship.

• *Preservation of net worth.* The borrower's basic financial strength and ability to support debt and absorb downturns

84. Only the first section of the working guide is reproduced here.

lie in its net worth. The purpose of related covenants is to assure the growth and continued strength of that net worth.

• *Maintenance of asset quality.* Asset value represents two major factors of importance to the lender: earning power and liquidation value. In either case, it is to the bank's advantage to require high standards of asset quality.

• *Maintenance of adequate cash flow.* In the case of normal repayment of a loan, the lender is repaid from the borrower's cash flow. In such cases, it is imperative that the lender closely monitor the cash flow and attempt to maintain its quality.

• *Control of growth.* As a definite drain upon cash flow, working capital, fixed assets, management energies, and capital funds, excessive growth has been recognized as the cause of numerous charge-offs and bad loans in the past few years. It is obviously in the interest of both banker and borrower to maintain growth in an orderly fashion although the two parties rarely see eye to eye on this matter. The bank's objective is to reach a clear understanding with the borrower on the limits of its growth.

• *Control of management.* In any loan situation, but particularly if the loan is unsecured, the success of the total relationship depends heavily upon the borrower's management. The bank then hopes to ensure the continuing quality of management.

• *Assurance of legal existence and concept of going concern.* The purpose of devising covenants such as these is to ensure the banks of a viable entity which may produce the conditions necessary to repay its loan.

• *Provision for bank profit.* Banks lend money in return for an expected profit, and are therefore interested, not only in protecting the principal amount of the loan, but also the profit, whether it be interest, servicing income, or other.

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