

Choosing the Form of Payment and Financing

INTRODUCTION

Form of payment and *financing mix* are two of the major deal design dimensions outlined in Chapter 18. In comparison to setting price or value boundaries, research and practice have much less to say about form and financing. This chapter illuminates the complexities and offers frameworks for thinking through the choices. Lessons include these:

- *Form of payment and financing practices vary with the economic cycle.* Changes in interest rates and stock prices are strongly associated with changes in M&A deal design over time.
- *Form of payment matters.* Research shows large differences in outcomes for shareholders according to whether a deal is based on cash or stock.
- *Choice of form of payment is heavily influenced by factors outside the firm.* The chapter discusses how differing perspectives, information, costs, tax exposure, and so on affect the choice. The key implication of this is that the deal designer needs to think well outside the firm to gain a proper perspective on the problem.
- *Form of payment, financing, and price are tightly linked.* Decisions about how to pay the seller are implicitly decisions about financing. The deal designer is well advised to consider the financing side effects of the choice of form of payment.
- *Financing choice also benefits from thinking from several perspectives.* The chapter discusses the view of the investor, creditor, competitor, and CEO—these capture very different views about the implications of financing alternatives. Six criteria help to parse out the advantages and disadvantages of financing alternatives: flexibility, risk, income, timing, control, and other (FRICTO).

PATTERNS AND TRENDS IN FORM OF PAYMENT

Exhibit 20.1 gives information on the number and dollar value of deals by form of payment over time. Several important insights may be gleaned from this table.

EXHIBIT 20.1 Volume of M&A Transactions Broken Down by Form of Payment

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Panel A: Number of all deals classified as cash, stock, or a blend													
Cash only	4,174	4,704	4,725	5,429	6,587	7,351	8,157	9,115	9,756	10,281	10,116	7,942	6,968
Stock only	383	529	666	818	959	1,098	1,220	1,453	1,438	1,554	2,063	1,243	842
Hybrid	234	311	398	498	691	645	940	1,228	1,183	1,153	1,433	953	663
Total	4,791	5,544	5,789	6,745	8,237	9,094	10,317	11,796	12,377	12,988	13,612	10,138	8,473
Panel B: Percentage distribution of number of all deals classified as cash, stock, or a blend													
Cash only	8%	85%	82%	80%	80%	81%	79%	77%	79%	79%	74%	78%	82%
Stock only	8%	10%	12%	12%	12%	12%	12%	12%	12%	12%	15%	12%	10%
Hybrid	5%	6%	7%	7%	8%	7%	9%	10%	10%	9%	11%	9%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Panel C: Dollar value of all deals classified as cash, stock, or a blend (\$MM)													
Cash only	\$267,740	\$208,772	\$187,901	\$208,803	\$321,717	\$413,630	\$478,013	\$726,714	\$801,416	\$1,048,193	\$1,052,959	\$673,732	\$597,306
Stock only	\$47,330	\$29,855	\$32,735	\$58,364	\$59,618	\$193,256	\$225,407	\$360,575	\$1,000,643	\$1,067,675	\$1,067,275	\$277,799	\$164,055
Hybrid	\$15,570	\$30,729	\$24,824	\$59,924	\$50,080	\$74,422	\$146,872	\$240,821	\$236,156	\$594,203	\$450,151	\$362,144	\$108,224
Total	\$330,640	\$269,356	\$245,460	\$327,091	\$431,414	\$681,309	\$850,292	\$1,328,110	\$2,038,215	\$2,710,071	\$2,570,385	\$1,313,675	\$869,585
Panel D: Percentage distribution of dollar value of all deals classified as cash, stock, or a blend													
Cash only	81%	78%	77%	64%	75%	61%	56%	55%	39%	39%	41%	51%	69%
Stock only	14%	11%	13%	18%	14%	28%	27%	27%	49%	39%	42%	21%	19%
Hybrid	5%	11%	10%	18%	12%	11%	17%	18%	12%	22%	18%	28%	12%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Panel E: Number of jumbo deals classified as cash, stock, or a blend													
Cash only						1	1		10	9	1	1	1
Stock only								1		3	3	1	
Hybrid									10	12	10	2	1
Total	0	0	0	0	0	1	1	1	1	12	10	2	1

(Continued)

EXHIBIT 20.1 (Continued)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Panel F: Percentage distribution of number of <i>jumbo deals</i> classified as cash, stock, or a blend													
Cash only	—	—	—	—	—	—	—	—	—	—	10.0%	—	—
Stock only	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	75.0%	60.0%	50.0%	100.0%
Hybrid	—	—	—	—	—	—	—	100.0%	—	25.0%	30.0%	50.0%	—
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Panel G: Dollar value of <i>jumbo deals</i> classified as cash, stock, or a blend													
Cash only	—	—	—	—	—	—	—	—	—	—	25,065	—	—
Stock only	33,788	30,090	33,788	30,090	33,788	30,090	30,090	41,907	516,391	551,518	353,703	25,263	59,515
Hybrid	—	—	—	—	—	—	—	—	—	165,873	112,814	72,041	—
Total	33,788	30,090	33,788	30,090	33,788	30,090	30,090	41,907	516,391	717,390	491,581	97,305	59,515
Panel H: Percentage distribution of dollar value of <i>jumbo deals</i> classified as cash, stock, or a blend													
Cash only	—	—	—	—	—	—	—	—	—	—	5.1%	—	—
Stock only	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	76.9%	72.0%	26.0%	100.0%
Hybrid	—	—	—	—	—	—	—	100.0%	—	23.1%	22.9%	74.0%	—
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: This table excludes all deals for which financing was classified as "other" by SDC. "Jumbo" deals are in excess of \$25 billion. Percentage totals may reflect rounding.

Source of data: Thomson Financial Corporation, SDC Platinum database.

First, as shown in Panels A through D, cash is king: Cash deals account for 75 to 85 percent of all deals on a numbers-of-deals basis and about 40 to 80 percent on a dollar-value basis.

Second, form of payment is related to size of the deal. The prevalence of cash payment probably reflects the fact that cash is the predominant form of payment in smaller acquisitions and that small acquisitions account for the bulk of deal volume. As shown in Panels E through H, stock payment is far more prevalent in very large deals ("jumbo" deals defined here as greater than \$25 billion).

Third, the use of stock varies with the economic cycle: Stock is used in greater volume when the stock market is buoyant (as it was in 1998–2000). The high stock market and the surge in jumbo deals at that time are associated with higher dollar value of stock deals to dominate cash in buoyant times. This relationship of stock payment to buoyant market conditions is a fact cited in support of overvaluation theories that companies use stock as payment when they believe their shares are richly valued in the market. This is discussed at more length later in the chapter and in Chapter 4.

The time patterns of form of payment challenge the practitioner: Is this simply a random variation or are there serious explanations for these changes? More importantly, is the form of payment choice associated with significant outcomes?

DOES FORM OF PAYMENT MATTER?

Research finds that the decision about financing and form of payment is associated with large differences in outcomes. Several varieties of research offer insights here.

EVENT STUDIES OF NEAR-TERM INVESTOR REACTIONS TO ANNOUNCEMENTS Chapter 3 discusses the event study methodology and argues that it can lend insights into the expected profitability of transactions for the buyer and target. Exhibit 20.2 summarizes 12 studies of announcement returns segmented by form of payment. The consistent result across these studies can be summarized in the following points:

- **Returns to target shareholders.** Consistent with the results summarized in Chapter 3, target shareholders earn generally large positive announcement returns. But these returns differ materially by form of payment:
 - **Payment in cash:** Target shareholder returns are materially higher.
 - **Payment in stock:** Target shareholder returns are significantly positive but materially lower than those for the cash deals.
- **Returns to buyer shareholders.** As shown in the general results of Chapter 3, buyer shareholders basically break even at announcement. But form of payment produces an important difference in returns:
 - **Payment in cash:** Buyer shareholder returns are zero to positive, in some cases significantly positive.
 - **Payment in stock:** Buyer returns are significantly negative.
- **Tender offers amplify the cash versus stock effect:** with tender offers paid in cash, the returns to buyers are even higher and the returns from offers paid in stock are even lower.

EXHIBIT 20.2 Summary of Shareholder Return Studies for M&A: Returns to Acquiring Firm Shareholders

Study	Cumulative Abnormal Returns to Targets	Cumulative Abnormal Returns to Buyers	Sample Size	Sample Period	Notes
Wansley, Lane, Yang (1983)	Securities: 17.47%* (-40,0) Cash: 33.54% [†] Combination: 11.77% [†]	N/A	102	1970–1978	
Asquith, Bruner, Mullins (1987)	<i>All Observations</i> (-1,0) Stock: +13.85% [†] Cash: +27.47% Stock & cash: +32.18% [†] <i>Tender Offers Only</i> (-1,0) Stock: N/A Cash: +24.58% Stock & cash: +37.57% [†] <i>Merger Offers Only</i> Stock: +13.85% [†] Cash: +28.77% [†] Stock & cash: +27.69% [†]	<i>All Observations</i> (-1,0) Stock: -2.40% [†] Cash: +0.20% Stock & cash: -1.47% [†] <i>Tender Offers Only</i> Stock: N/A Cash: +1.21% Stock & cash: -2.35% [†] <i>Merger Offers Only</i> Stock: -2.58% [†] Cash: +0.91% Stock & cash: -0.20% Stock: -1.47% [†] Cash: +0.24% Stock: +2.72%* Cash: +1.43% Stock & cash: +5.68% [†]	343	1973–1983	U.S. targets and buyers. Mergers and tender offers.
Travlos (1987)	N/A		60	1972–1981	
Eckbo, Giammarino, Heinkel (1990)	N/A		182	1964–1982	Canadian companies.

Masse et al. (1990)	Over -1,0 Stock: +7.38% [†] Cash: +11.37% [†] Over -10, +10 Stock: +2.94% Cash: +23.45% N/A	Over -1,0 Stock: +2.39% [†] Cash: +1.59%* Over -10, +10 Stock: +3.83% [†] Cash: +5.89% [†] Stock: +0.42% Cash: +1.08%* Other: +1.21%* Stock: -5.86% [†] Cash: +3.84% [†] Mix: -3.74% [†]	80	1984-1987	Canadian companies.
Franks, Harris, Titman (1991)	N/A	Stock: +20.47% [†] Cash: +26.67% [†] Mix: +21.05% [†] (from announcement date to effective date)	399	1975-1984	Returns difference between cash and equity is significant.
Servaes (1991)	Stock: +20.47% [†] Cash: +26.67% [†] Mix: +21.05% [†] (from announcement date to effective date)	Stock: -5.86% [†] Cash: +3.84% [†] Mix: -3.74% [†]	704	1972-1987	Mergers and tender offers; segment data by payment method.
Sullivan et al. (1994)	Stock: +12.94%* Cash: +21.56%*	Stock: -0.62% Cash: +0.24%	84	1980-1988	Sample of merger offers that were eventually terminated.
Han, Suk, Son (1998)	N/A	All stock: -2.2%* All cash: -0.5% Mergers stock: -2.3% [†] Mergers cash: -1.0% Tender offers stock: +0.3% Tender offers cash: -0.3%	126	1974-1980	

(Continued)

EXHIBIT 20.2 (Continued)

Study	Cumulative Abnormal Returns to Targets	Cumulative Abnormal Returns to Buyers	Sample Size	Sample Period	Notes
Emery, Switzer (1999)	N/A	Stock: -2.02% [†] Cash: -0.18%	347	1967-1987	Sample of successful mergers and tender offers.
Yook (2000)	N/A	Stock (whole sample): -1.51%* Stock, debt upgrade: +2.32%* Stock, debt downgrade: -4.61% [†] Stock, no rating change: -1.62%* Cash (whole sample): -0.71% Cash, debt downgrade: -0.09% Cash, no rating change: -1.21% Stock: -1.9% Cash: +0.6% Mix: +0.3%	311	1985-1996	Considers interaction of form of payment and debt rating changes.
Heron, Lie (2002)	Stock: +17.1% [†] Cash: +25.4% [†] Mix: +19.3% [†]		859	1985-1997	

Note: Unless otherwise noted, event date is announcement date of merger/bid.

*Significant at the 0.05 level or better.

[†]Significant at the 0.01 level or better.

[‡]Significant at the 0.10 level or better.

CROSS-SECTIONAL STUDIES OF THE DRIVERS OF EVENT RETURNS The arresting disparity in event returns between cash and stock deals has stimulated further research into its origins. Han et al. (1998) and Asquith et al. (1987) find that relative size significantly interacts with the cash versus stock choice: Large cash deals have more positive returns, and large equity deals have more negative returns. Emery and Switzer (1999) found that tax, size, "Q,"¹ and the amount of cash or unused debt capacity were significant drivers. Hayn (1989) compared the returns to bidders and targets in taxable and nontaxable deals—taxable deals are often for cash; nontaxable deals are almost always for stock. Hayn found a pattern of returns to bidders that mirrors well the pattern associated with form of payment—this implies that taxes are a factor in the choice. Yook (2000) found that changes in the firm's bond ratings were significantly associated with these returns—this emphasizes the financing dimension of the choice of medium of exchange.

STUDIES OF LONG-TERM PERFORMANCE AFTER THE DEAL IS DONE Focusing on reported financial results, two studies found no evidence that operating performance varied by form of payment. But focusing on investor returns, Loughran and Vijh (1997) found a sizable difference over the five years following the deal: Share-for-share deals yielded average excess returns of +14.5 percent to investors, while cash deals yielded +90.1 percent. The disparity between the two sets of studies is a clue that the use of stock could be opportunistic—that is, to exploit overvaluation of the buyer's shares in the market.

FACTOR ANALYSES REVEALING CHARACTERISTICS OF THOSE WHO PAY WITH CASH OR STOCK Several studies lend insights here. The studies reveal that *stock* tends to be used when:

- **A deal is friendly.** Zhang (2001) finds that cash payment is strongly associated with tender offers, which tend to be hostile.
- **Buyer's stock price is buoyant.** The better performing the buyer's stock is, the greater the likelihood of a share-for-share deal. The typical measure here is the firm's "Q" ratio (market value divided by book value). Several studies identify this effect: Zhang (2001), Heron and Lie (2002), Chang and Mais (2000), and Martin (1996). Carleton et al. (1983) and Martin (1996) find that the acquiring firm's investment opportunities are an important determinant of the form of payment: Acquirers with high "Q" are significantly more likely to issue stock than cash or a blend.
- **Ownership is not concentrated.** Two studies, Chang and Mais (2000) and Yook et al. (1999), find that if the ownership of the target and/or the buyer is concentrated, the deal tends to be settled in cash. By not paying with stock, the buyer possibly avoids bringing a new significant shareholder into the equity ownership of the buyer, with the potential to destabilize the internal politics of the equity ownership group. When Time-Warner acquired Turner Enterprises for stock, it made Ted Turner the largest single shareholder of the firm. Turner, known for his temper and outspoken views, must have contributed to lively board meetings until he resigned in disagreement.
- **Deals are larger in size.** The larger the size of the target relative to the buyer, the greater the likelihood that the buyer will pay with stock. This may be re-

lated to the next point, the ability to simply “write a check.” See Hansen (1987) and Zhang (2001).

- **Buyer has less cash.** Zhang (2001), Heron and Lie (2002), and Chang and Mais (2000) find that the ability of the buyer to pay with cash (measured as the buyer’s cash balance relative to the size of the target deal) was a significant determinant of whether the form of payment was cash or stock.

This research leads to three general explanations for why form of payment has such a big effect on returns to shareholders. These are not mutually exclusive, though in the research papers they compete for primacy. The first is an explanation based on *minimization of costs*. In general, the theory of capital structure choice from Modigliani and Miller (1963) to the present is a study in how firms can minimize their cost of capital. This entails the classic trade-off between bankruptcy costs and the benefits of debt tax shields. But taxes have an effect in M&A that extends well beyond the cost of capital. For instance, some deal structures may be more tax-efficient than others: All else equal, deals that allow the buyer to reduce tax expense create value for shareholders.² Tax-efficient deals from the buyer’s standpoint will most likely be cash deals.

Second, *agency costs* and monitoring may explain the impact of form of financing. If the firm must borrow to finance a cash deal, then the intervention of creditors binds managers to delivering targeted levels of performance; they cannot divert the free cash flow of the firm for private benefits, and instead must discipline the firm to meet its future obligations. This discipline presumably yields higher performance and better share prices. Bharadwaj and Shivdasani (2003) report that bidders’ announcement returns in tender offers are positively related to the fraction of the acquisition value financed by bank debt. Creditors appear to play an important certification and monitoring role.

The third explanation is based on *information asymmetry*, the possibility that managers have a clearer view of the true value of the firm than do public shareholders. This asymmetry means that market prices may deviate from intrinsic value of the firm and present interesting arbitrage opportunities. Myers and Majluf (1984), for instance, have used this to argue that firms will follow a *pecking order* in their financing, preferring to use inside funds before raising funds in the capital market, and then preferring to raise debt before equity. Thus, Myers and Majluf hypothesize that managers will issue new equity only when the firm is overvalued and that therefore equity issues will be a negative signal to public investors about the private beliefs of the insiders. Consistent with this, event studies have documented that the announcement of equity issues by firms is associated with significant negative event returns.³ Shleifer and Vishny (2001) and Rhodes-Kropf and Viswanathan (2003) use this logic to explain the appearance of merger waves. Market booms will be times of overvaluations; these overvaluations trigger a rise in M&A activity and the use of stock as a medium of payment. Ang and Cheng (2003) find empirical evidence that overvaluation is an important motive for the use of stock as a medium of payment. Buyers are more overvalued than targets and nonbuyers; successful acquirers (those who actually consummate announced deals) are more overvalued than unsuccessful acquirers.

CONSIDERATIONS IN SELECTING THE FORM OF PAYMENT

The systemic nature of M&A deal design is one of the important themes of this book. Chapter 18 emphasizes this message and illustrates the linkages among the various dimensions of a deal. Nowhere does the linkage among the elements emerge so clearly as in the question of which form of payment to choose for an offer. Theoretical research on this question highlights a number of considerations that are significant for the practitioner. The challenges here arise from several sources.

Different Perspectives

To the selling shareholder, form of payment is an *investment* issue; to the buyer, form of payment is a *financing* issue. As a result of a transaction, the seller's portfolio of investments will change. This raises the four classic considerations of portfolio allocation decisions: risk, return, liquidity, and taxes. Also, the seller may have derived benefits from a control position, which may change with the transaction. How the buyer finances the acquisition only indirectly affects the seller's thinking, through risk and return. The form of payment one chooses has an impact on the buyer's post-merger capital structure and may trigger the issuance of securities. From a managerial perspective, form and financing are identical to the buyer. Thus, the first implication is that the deal designer should think strategically: Consider the perspective of the counterparty as well as your own. The viable deal will satisfy both perspectives.

Possibility of Competing Bidders

This amplifies the need to think strategically, taking into account the likely reactions of the counterparty, but also of competitors (actual and potential). Chapters 31, 32, and 33 discuss the deal-design implications of competitors. But much of the theoretical work emphasizes that choosing the right form of payment can strongly influence the target and thus preempt competing bidders. Hostile tender offers are predominantly cash deals, reflecting the investment appetites of arbitrageurs and removing any contingency about the assessment of the value of the bid. Thus, the practical implication here is to choose a form of payment consistent with the probability of entry by competitors.

Taxes

Cash and stock deals differ significantly in their tax exposures for the target shareholders and buyer firm. Chapter 19 describes the various forms of reorganization and their tax implications. In a cash-for-stock deal, the target's shareholders must pay taxes immediately on their capital gains, and recognize any losses. The buyer firm may step up the tax basis of the assets to reflect the acquisition premium provided it executes the appropriate election to do so (see Chapter 19 for details on elections). This increases the depreciation tax shield of the target postacquisition, and creates value for the buyer. In a stock deal, neither of these effects happens: the target's shareholders' taxes are deferred until the shares of Newco are sold, and the buyer firm does not get to step up its tax basis.⁴ Hayn (1989) shows that abnormal returns to target shareholders are higher for taxable than tax-deferred deals, which is consistent with the

findings summarized in Exhibit 20.2. In cash deals the target shareholders may receive greater payment because of their immediate tax exposure and perhaps because buyers can pay more thanks to the larger tax shield they enjoy. Tax effects must be traded off against other costs and benefits.

Control

Cash and stock may differ materially in their impact on the voting control of Newco after the transaction. A cash transaction will not affect the composition of the buyer's equity ownership. But a stock transaction could impose a large change, depending on the size of the target relative to the buyer. Control is valuable, as Chapter 15 discusses. Control effects must be traded off against other costs and benefits.

Reported Financial Results

The choice of stock or cash payment will affect Newco's balance sheet, EPS, returns, and measures of leverage. Chapters 16 and 17 detail some of the effects of a merger on reported financial results. EPS dilution occurs where the buyer's shares outstanding increase faster than net income—this means that using equity as a form of payment will generally⁵ be more dilutive than cash. However, the decision maker should give more weight to economic dilution than accounting dilution.

Financing

In general, paying with stock will create financial flexibility, and paying with cash will consume it. Exhibit 20.3 illustrates the linkage between form of payment and financing. A deal might create or consume excess cash or unused debt capacity (commonly called "*financial slack*") depending on whether it is able to draw on internal resources or must turn to external financing, and on whether the financing is in the form of debt or equity. The pecking order theory of corporate financing suggests that managers will have a preference to use internal resources before seeking external financing. Shares of stock held in treasury are a form of internal finance because these shares have already been approved and do not require a shareholder vote, as is typically the case with an issue of new shares. Various practical considerations in weighing the financial implications of different deal designs are discussed in this chapter.

Transaction Costs

Different forms of payment may entail a wide variety of frictional costs. They may be nil in the case of a cash payment made directly from the buyer's cash account or a stock payment made directly from the buyer's shares held in treasury. A cash payment financed by a bank loan or an issue of bonds might entail underwriting or closing costs of 1 to 3 percent of the face amount of the funds. A stock payment financed by shares repurchased in the market would incur brokerage fees. And a stock payment financed by the issue of new equity might incur fees for preparation of a proxy statement, an extraordinary shareholder meeting to approve the share

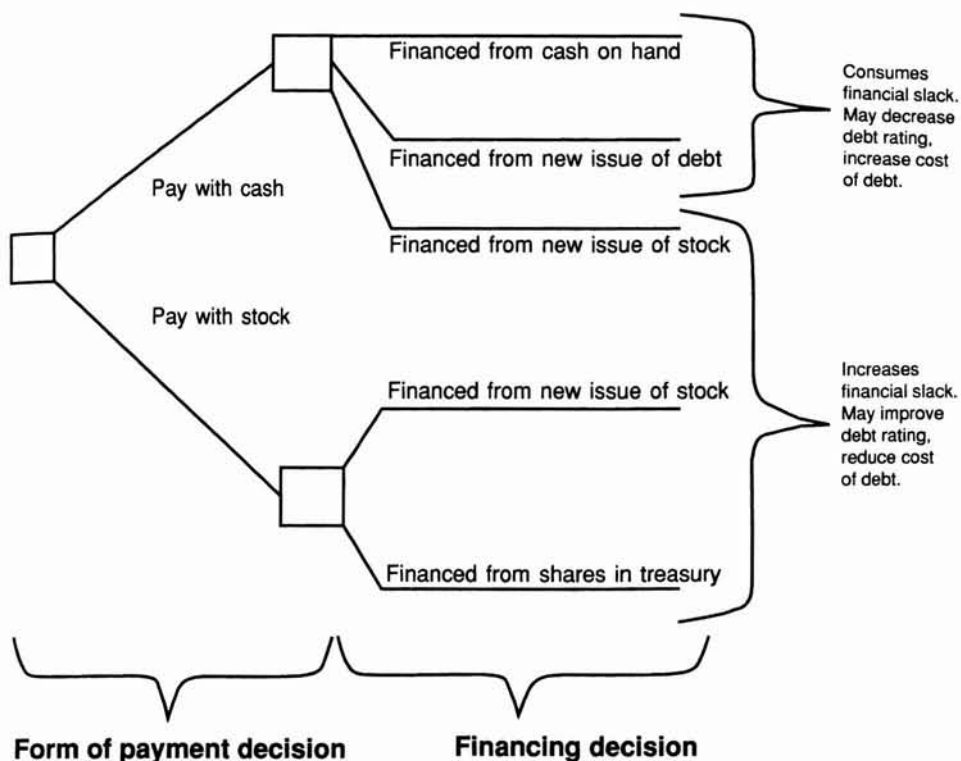


EXHIBIT 20.3 Illustration of Linkage between Form of Payment and Financing: Decision Tree and Outcomes

issue, and registration—for a large issue, these can run into the millions of dollars. Though transaction costs are not usually a primary consideration in the choice of form of payment, they can be decisive when the choice hangs in the balance.

Size, Both Absolute and Relative

Size matters for reasons of financing, control, and strategic positioning. Larger buyers have deeper pockets than smaller buyers—in practice, many large buyers prefer to “write a check” or issue shares from treasury for smaller deals; this is the influence of transaction costs. But when the target is large *relative to the buyer*, the effects of transaction costs, financing, control, and expected synergy value are amplified. More importantly, larger relative size may give greater bargaining power to extract more of the synergy value for the benefit of target shareholders.

Asymmetric Information

The target managers usually have a clearer idea of the target’s intrinsic value than the buyer’s management has. And this asymmetry doubles where the buyer’s managers have a clearer idea of the buyer’s intrinsic value compared to what the target’s management knows. The buyer and target managers may have their own

private views about the value of any synergies—possibly the buyer has a clearer idea than the target. The asymmetry of information creates what Akerlof (1970) called a “lemons” problem: Good firms and bad firms (“lemons”) could have similar asking prices; the buyer attempts to discover the true nature of the target by starting with a low opening bid. In a world of this kind of uncertainty, offers and responses send *signals* about what each side thinks the true values are. The choice about form of payment is one means of signaling value. The implication here is that the deal designer should have a view about values of the target, the buyer, and synergies (one of the key themes of this book) and choose a form of payment consistent with that view.

Four studies⁶ made significant contributions to our understanding of the effects of asymmetric information on the choice of form of payment. A detailed presentation of their models is beyond the scope of this book. However, many of their findings have intuitive and practical appeal:

- ***“Stock can effect a trade even when cash cannot.”*** Hansen (1987, page 79) argues that stock is “contingent,” while cash is fixed. The risk of overpayment is significant with a cash bid, and less significant with a stock bid. With a cash payment the target shareholder does not participate in the realization of merger synergies or the future prosperity of Newco; with stock payment, the target shareholder has a stake, and must have a view about the future attractiveness of Newco. Stock will dominate cash in the target shareholder’s mind, where the upside or optionality of stock is sizable—accepting a stock deal would be a signal of the target shareholder’s optimism. Similarly, rejecting a stock deal would be a signal of pessimism. From the buyer’s standpoint, a stock offer is part of a process of price discovery. “When a target firm knows its value better than a potential acquirer, the acquirer will prefer to offer stock, which has desirable contingent-pricing characteristics, rather than cash.” (Hansen 1987, page 75)
- ***Buyers tend to offer stock when they believe their shares are overvalued and cash when undervalued.*** This reflects the asymmetric knowledge held by the buyer, and is generally consistent with theories and empirical findings about equity issuance and merger waves. In all of the studies bidders who believe they are undervalued and/or are optimistic about the value of merger synergies will tend to offer cash. This signal of optimism with the cash offer is used to argue why the stock prices of bidders react positively at the announcement of cash deals, and negatively at the announcement of stock deals. Berkovich and Narayanan (1989) explore the situation of the target and argue that we should observe the same pattern in target returns. Chapter 4 also discusses the impact of overvaluation on M&A activity.
- ***Stock is used less often where the target is small relative to the buyer.*** Hansen argues that the attractiveness of stock depends on its contingent pricing feature, the ability of Newco’s share price to reflect future synergies arising from the acquisition of the target. “Contingent pricing” means the target shareholders who receive Newco stock will receive total payments that are higher or lower in proportion to the merger benefits realized. These benefits are uncertain. Thus, the use of stock is a hedge against the buyer’s uncertainty. When the target is small the effect of this uncertainty on Newco

shares may be negligible and the risk-management benefit of paying with stock not important.

- **The probability of a stock offer increases with the buyer's indebtedness and decreases with the target's indebtedness.** This grows out of Hansen's size argument: The bigger the target's equity is relative to the buyer's stock, the more attractive it will be because of its contingent nature. One could add that the relation with the buyer's indebtedness would also be consistent with a process of capital structure optimization.
- **A cash offer preempts competitors better than securities.** Fishman (1989) explores the presence of competitors and finds that form of payment is as important a signal as price. When the buyer offers securities, the expected value of the target must be lower than if cash were offered, and the likelihood of rejection by the target will be higher. Competitors will have a greater likelihood of entering after an initial offer of securities than after an initial offer of cash. And the more costly the buyer's acquisition of information about the target, the more likely the buyer will offer cash and the less likely that competitors will enter. Fishman (1989, page 53) writes, "This is an interesting rationale for firms to continually release information. It can make preemptive bids more costly and thus raise a firm's expected payoff in the event it becomes a candidate for acquisition." Berkovich and Narayanan (1989) find that the fraction of synergy captured by target shareholders will increase with a cash deal and with increasing competition and that the cash portion of an offer will increase with competition.

The thrust of this research is that the practitioner should view form of payment, price, and financing as *jointly determined* in settling on terms of a deal. Exhibit 20.4 combines the choices about price, form of payment, and financing to demonstrate how they might be bundled to present very different propositions to target shareholders. Consider two alternative strategies:

1. **Preemption strategy.** In 1995, IBM mounted a hostile tender offer of \$3.5 billion in cash for all shares of Lotus Corporation. This was the biggest takeover attempt seen in the software industry up to that time, and the price represented one of the largest acquisition premiums, 100 percent, in the computer technology field. The payment was practically funded from IBM's cash on hand.⁷ Lotus capitulated within one week. This was a *preemptive strategy*. Industry observers noted that IBM needed Lotus for strategic positioning versus Microsoft and may have feared a competitive bid from that firm. By offering a very full price, cash, and payment from internal funds, IBM made a convincing offer to Lotus shareholders that held *no contingencies*: no doubts about financing, no doubts about the value of securities, and no efforts to establish the credibility of future synergies. IBM effectively thwarted the entry of other bidders.
2. **Contingency strategy.** On January 27, 1997, Hilton offered to pay \$55 a share in cash for 50.1 percent of ITT shares and \$55 a share in stock for the rest. The bid was a 29 percent premium to ITT's share price before, and amounted to a \$6.5 billion equity bid, large in comparison to Hilton's market capitalization of about \$5 billion. The cash portion of the bid would be financed by loans from banks. The issue of common shares would require approval from Hilton's

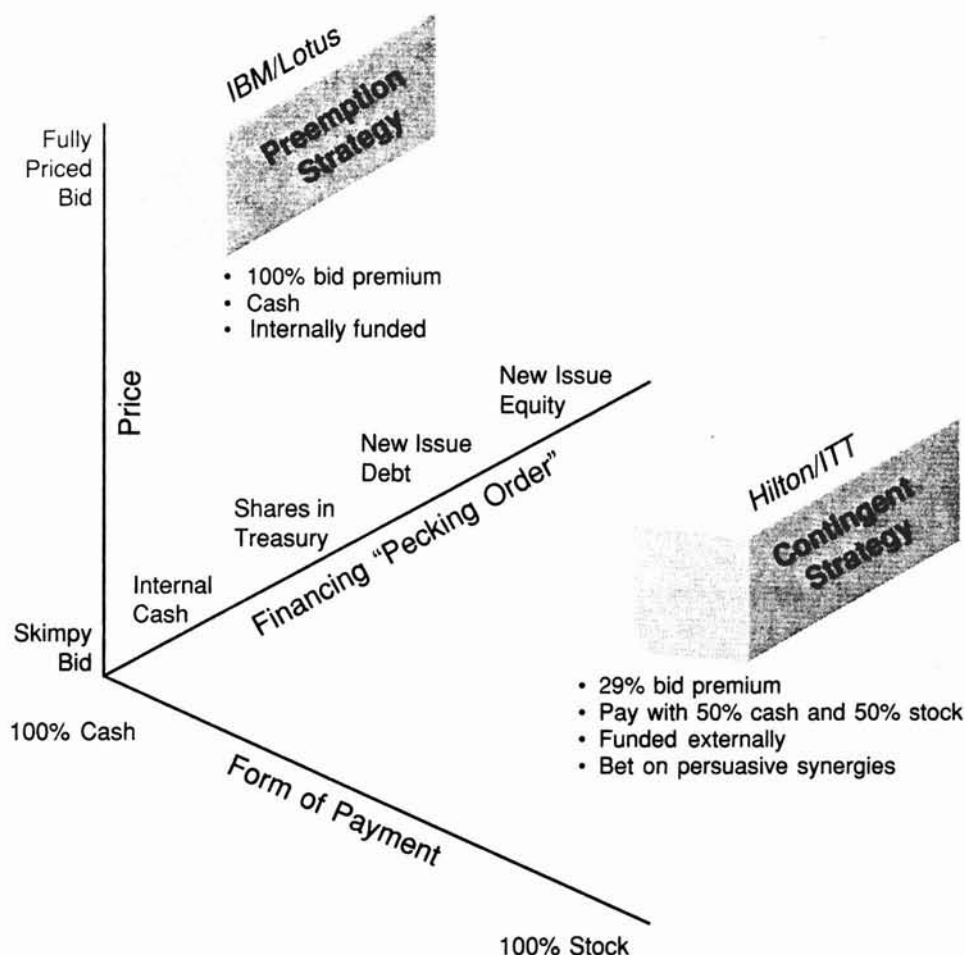


EXHIBIT 20.4 Classification of Deal Structures in Terms of Price, Form of Payment, and Financing

shareholders and registration with the SEC. Whereas Hilton was regarded as an efficient firm with rising financial performance, ITT had performed poorly in recent years. Hilton's view was that value would be created by restructuring operations to make them more efficient, and by exploiting synergy opportunities worth perhaps another \$1 billion in present value terms; see Bruner and Vakharia (1998).

Both Hilton and ITT operated prominent chains of hotels and gambling casinos. Hilton was appealing to institutional shareholders of ITT to accept the shares and participate in the value creation. Hilton was probably also cognizant of the share holdings by arbitrageurs who prefer payment in cash rather than securities. It was not apparent to Hilton's CEO that other bidders could come forward with the industry expertise and credibility of Hilton. By mounting a low-premium bid, a blend of cash and shares, and financing from external borrowings, Hilton was pursuing a *contingent strategy*, appealing to investors'

view of the future, and generally starting low so as not to suffer from overpayment. In response to the hostile bid, ITT mounted a recapitalization program and then persuaded Starwood Corporation, a real estate investment trust (REIT), to enter the bidding. Owing to its tax-advantaged status, Starwood was able to bid more (a 98 percent premium over ITT's pretakeover price) and thereby acquired ITT.

ASSESSING THE FINANCING ASPECTS OF A DEAL

Thus far, this chapter has focused mainly on the choice of form of payment. Here, the focus turns to an assessment of the financing of the deal.

Seven Dimensions of M&A Transaction Financing

Occasionally, a chief financial officer will say, "All I do is get the best deal I can whenever we need funds." In all probability, CFOs are more determinate than that. The range of choice is captured in the following seven levers that executives can manipulate to find an appropriate transaction financing structure: mix, maturity, basis, currency, exotica, control, and distribution.

MIX OF TYPES OF FINANCING The mix of classes of capital (such as debt versus equity) is perhaps the most prominent choice in acquisition financing. Mix may be analyzed through capitalization ratios, debt-service coverage ratios, and the firm's sources and uses of funds statement (where the analyst should look for the origins of the new additions to capital in the recent past). Many firms exhibit a pecking order of financing: They seek to fill their funds needs through retentions of profits, then through debt, and, finally, through the issuance of new shares. As outlined in Chapter 13, the effect of leverage on the value of the firm is curvilinear: there is likely to be an optimal mix at which the present value of debt tax shields and the present value of expected distress and bankruptcy costs just trade off to produce a maximum value. In addition to this value optimization approach, CFOs display preferences for kinds of financing. The theory of the pecking order, originated by Stewart Myers, supposes that managers have a preference for using internal sources of capital first before going to the capital markets—and when they have to do so, they prefer issuing debt before equity. The mix may also be influenced by opportunistic response to hot, cold, or segmented markets. There may be good moments to issue debt or equity. Finally, the asset base of the firm may influence its decision about the mix of debt and equity. Lenders are prone to lend money against assets in place, but not against assets they can't see.

MATURITY *Maturity structure of financing* refers to the life of securities issued. This is measured in years and ranges significantly across commercial paper (short-term), notes (intermediate-term), and bonds (long-term). Maturity structures can be summarized by statistics such as average maturity and duration.⁸ But the key idea is that different financing proposals often have rather different implications for the maturity structure of liabilities; they can expose the firm to different kinds of risks. A *risk-neutral maturity structure* would equate the life of the firm's assets to the life

of the firm's liabilities. Most firms accept an inequality in one direction or the other. A structure in which the maturity of liabilities is greater than the maturity of the firm's assets creates *reinvestment risk*, the risk that management will not be able to deploy the cash released by the firm's assets to achieve returns sufficient to service the liabilities. In the opposite case, where the maturity of assets is greater than the maturity of liabilities, the firm is exposed to *refinancing risk*, the risk that the firm will not be able to roll over its maturing liabilities on favorable terms. Most firms do not have risk-neutral maturity structures. The absence of a perfect maturity hedge might reflect managers' better-informed bets about the future of the firm and markets.

BASIS FOR THE YIELDS: FIXED OR FLOATING In simplest terms, *yield basis* addresses the choice between *fixed or floating rates* of payment and is a useful tool in fathoming management's judgment regarding the future course of interest rates. Whether to lock in a fixed rate of interest now rather than agree to a floating rate of interest will depend in part on one's outlook for interest rates. There is also a second consideration: whether the issuer's returns vary with fluctuations in interest rates. Much like the matching of maturities, one can try to match the type of interest rate to the type of asset returns. This is relatively easy to do for financial institutions, and considerably more difficult for commercial and industrial firms. For those firms, basis will be a less important consideration.

CURRENCY *Currency* addresses the global aspect of a firm's acquisition financing opportunities. These opportunities are expressed in two ways: (1) management of the firm's exposure to foreign exchange rate fluctuations, and (2) exploitation of unusual financing possibilities in global capital markets. Exchange rate exposure arises when a firm earns income (or pays expenses) in currencies other than its operating income. Whether and how a firm hedges this exposure can reveal bets that management is making about the future movement of exchange rates and the future currency mix of the firm's cash flows. Chapter 12 discusses the effect of foreign currency exposure on valuation.

EXOTIC TERMS Every firm faces a spectrum of financing alternatives, ranging from plain vanilla bonds and stocks to hybrids and one-of-a-kind, highly tailored securities.⁹ Where a firm positions itself on this spectrum of *exotic terms* can shed light on management's openness to new ideas, intellectual originality, and, possibly, opportunistic tendencies. As a general matter, option-linked securities often appear in corporate finance where there is some disagreement between issuers and investors about a firm's prospects. For instance, managers of high-growth firms will foresee rapid expansion and vaulting stock prices; bond investors, not having the benefit of inside information, might only see high risk—issuing a convertible bond might be a way to allow the bond investors to capitalize the risk¹⁰ and enjoy the creation of value through growth in return for accepting a lower current yield. Also, the circumstances under which exotic securities were issued are often fascinating episodes in a company's history. Exotic securities can serve the firm and M&A deal in a second important way: They can tap pools of capital and thus perhaps lower the firm's cost of capital.

EXHIBIT 20.5 Using the Seven Elements to Assess M&A Financing Choices

	Issues in M&A Finance	Tests of Effects and Design Solutions
Mix	Form of payment: stock, debt, cash (negative debt).	The effect of different mix choices can be tested through valuation analysis and sensitivity analysis. The most advanced test of the appropriateness of a mix uses Monte Carlo simulation to estimate the probability of default. Here one would consider how well the mix exploits the benefits of debt tax shields and avoids effects of default risk.
Maturity	How rapidly to repay acquisition debt.	Comparing the duration of debt with hypothetical duration of firm's assets can test the effect of different maturity choices. Determined by strength of target cash flows and buyer's alternative uses for cash.
Basis	Is the exposure to debt and equity market volatility acceptable? How will the value of the deal vary with capital market volatility?	Can be tested by examining the duration of the debt, or with Monte Carlo simulation. Exposure hedged with caps, floors, and collars on stock-for-stock exchange ratios; interest rate hedges can minimize exposure to rate volatility.
Currency	Is the exposure to foreign currency exchange rate volatility acceptable?	Can be tested with sensitivity analysis or more advanced value at risk (VAR) analysis. Currency hedges (options, futures, foreign currency loans) can be used to minimize this exposure.
Exotica	Will tailoring pay? Do special capital market segments exist that have an appetite for tailored securities from this deal?	The potential advantage from tailoring cannot be measured rigorously without being able to compare the exotic and plain-vanilla alternatives. Financial advisers who are actively engaged in the distribution of securities can offer general insights in the opportunities here: mezzanine debt and equity, hybrid securities, options, warrants, earnouts.
Control	What degree of control do the different players in the deal have? How is it represented? How can it be exercised? What incentives for cooperation in financial distress does the financial design create?	Test for the tightness of loan covenants, the distribution of shareholder votes, and seats on the board of directors. Tailor control through design of securities.
Distribution	To whom will the target's cash flows go? Through what channels will the securities in this deal be distributed?	One can test for potential wealth transfers among participants in the deal through valuation analysis. The appropriateness of financial advisers can be considered with the help of league tables, reputations, core competencies, and fee scales.

THINK LIKE A CREDITOR Lenders and investors in firms are quite conscious of this risk of default, and set their required returns in reference to that risk. Beyond some reasonable level of indebtedness, lenders and investors will sense that the firm is assuming more and more default risk, and will raise the required returns (the interest rate) on their loans and on their equity investments. The required rate of return is set through a process of credit analysis. Credit analysis could be as complicated as using an advanced credit scoring model¹¹ or simulating the risk of default (see the mini-case on Revco Drug Stores in Chapter 13), or as simple as making qualitative judgments on a set of standard criteria such as the “*Six C’s of Credit*.”

1. **Cash flow:** Is the firm’s expected cash flow large enough to meet the principal and interest payments?
2. **Collateral:** If we have to foreclose on the loan, are there sufficient assets in the firm that we could sell to repay the loan?
3. **Capital:** Is there enough other capital ranking in priority below this loan to withstand a reasonable cyclical downturn in this firm’s business?
4. **Conditions:** Do the current economic conditions favor timely debt payments?
5. **Course:** Is the use to which these funds will be put appropriate? Is the general strategy of this firm on course?
6. **Character:** Are the managers involved not only sufficiently intelligent and skilled, but also inclined to honor the repayment commitment?

For many long-term bonds, creditworthiness is summarized in a bond rating. As the firm borrows more, the rating will decline. As the rating declines, the return that investors require will rise.

A special concern of *unsecured* creditors is whether the surviving firm is to be adequately capitalized in the face of ordinary business adversities. Failure to do so exposes secured lenders, directors, selling shareholders, and professional advisers to a variety of penalties¹² under *fraudulent conveyance*¹³ litigation. The incidence of fraudulent conveyance lawsuits has risen over time, along with the volume of highly leveraged transactions. It should remain a concern for the deal designer, however, in virtually all transactions.

To mitigate exposure to possible fraudulent conveyance litigation, deal designers will seek to obtain an *opinion of solvency* from a qualified independent consultant. Typically the opinion will be based on independent due diligence, valuation analysis, and analysis of forecasts. This may entail field investigations of the company and the industry, discussions with industry experts, and the use of advanced analytical techniques. The opinion may consist of a one-page letter that summarizes the analytic work of the consultant, the conclusions, and finally the opinion itself. Frequently, the opinion will be accompanied by a bound report describing the detailed analysis; the purpose of this is to document the consultant’s work for possible use in future litigation.

THINK LIKE A COMPETITOR The competitive perspective matters to transaction designers and senior executives for two important reasons. First, it tests a proposed financial structure against standard practice in the industry and the strategic position of the firm relative to the competition. Second, it explores the competitive implications of a financial structure, giving particular attention to the reaction of

competitors in the future and the resources with which a firm might respond. This perspective takes for granted the firm's financial strategy, and explores how it is likely to play in the competitive arena.¹⁴ Chapter 6 discusses the competitive and strategic perspective.

THINK LIKE THE CEO Senior managements' vision for the firm is the final major benchmark for assessing a firm's financial structure. This screen accounts for the consistency of the firm's financial structure with the profitability, growth, and dividend goals of the firm. The classic tools of internal analysis are the forecast cash flow and financial statements. The essence of this perspective is a concern for (1) the preservation of the firm's *financial flexibility*, (2) the *sustainability* of the firm's financial policies, and (3) the *internal consistency* of the firm's strategic goals. For instance, the long-term goals may call for a doubling of sales in five years. The business plan for achieving this goal may call for the construction of a greenfield plant in year 1, then regional-distribution systems in years 2 and 3. Substantial working-capital investments will be necessary in years 2 through 5. How this growth is to be financed has huge implications for your firm's financial structure *today*. Typically, an analyst addresses this problem by forecasting the financial performance of the firm, experimenting with different financing sequences and choosing the best one, then determining the structure that makes the best foundation for that financing sequence. This analysis implies the need to maintain future financial flexibility. Financial flexibility is easily measured as the excess cash and unused debt capacity on which the firm might call. In addition, there may be other reserves such as unused land or excess stocks of raw materials that could be liquidated. All reserves that could be mobilized should be reflected in an analysis of financial flexibility. A shorthand test for sustainability and internal consistency is the self-sustainable growth model. This model is discussed in Chapter 6.

TRIANGULATE ACROSS THESE PERSPECTIVES All four perspectives are not likely to offer a completely congruent assessment of financial structure. The investor's and creditor's views look at the *economic* consequences of a financial structure; the competitor's view considers *strategic* consequences; the internal view addresses the *mission and objectives* of the firm. The four views ask entirely different questions; an analyst should not be surprised when the answers diverge. The judgment about what constitutes an appropriate financial structure will depend on blending these various perspectives through a process of triangulation much as is discussed in Chapter 9 with regard to valuation.

A Summary Framework: FRICTO

A widely used approach to evaluating financing alternatives is the FRICTO framework. The framework can help to identify trade-offs along six dimensions:

1. **Flexibility:** the ability to meet unforeseen financing requirements as they arise. Flexibility may involve liquidating assets or tapping the capital markets in adverse market environments or both. Flexibility can be measured by bond ratings, coverage ratios, capitalization ratios, liquidity ratios, and the identification of salable assets.

2. **Risk:** This is the predictable variability in the firm's operating cash flow. Such variability may be due to both macroeconomic factors (e.g., consumer demand) and industry- or firm-specific factors (e.g., product life cycles, biannual strikes in advance of wage negotiations). To some extent, past experience may indicate the future range of variability in earnings before interest and taxes (EBIT) and cash flow. High leverage tends to amplify the impact of these predictable business swings—this amplification is what is commonly called leverage. In theory, beta should vary directly with leverage. The firm's debt rating will provide a second external measure of risk of the firm.
3. **Income:** This compares financial structures on the basis of value creation. Measures such as DCF value, projected ROE, EPS, resulting price/earnings ratio, and cost of capital indicate the comparative value effects of alternative financial structures. Finance theory tells us that (all else equal) the value-maximizing capital structure is also that which minimizes the weighted average cost of capital. Thus, the analyst can devote attention to the capital cost resulting from the different financial structures. Finally, economic profit, or EVA, summarizes the joint impact of capital structure, investment, and operating profit effects.
4. **Control:** Alternative financial structures may imply changes in control or different control constraints on the firm as indicated by the percentage distribution of share ownership and by the structure of debt covenants. Significant investors will be sensitive to the dilution in their voting position in the firm, implied by different acquisition financing alternatives.
5. **Timing:** This asks the question of whether the current capital market environment is the right moment to implement any alternative financial structure, and what the implications for future financings will be if the proposed structure is adopted. The current market environment can be assessed by examining the Treasury yield curve, the trend in the movement of interest rates, the existence of any windows in the market for new issues of securities, P/E multiple trends, and so on. Chiefly, one wants to look for evidence of over- or undervaluation of securities in the capital market. Sequencing considerations are implicitly captured in the assumptions underlying alternative DCF value estimates and can be explicitly examined by looking at annual EPS and ROE streams under alternative financing sequences.
6. **Other:** Since no framework can anticipate all possible effects, the "O" reminds the analyst to consider potential idiosyncratic influences on the decision. Two such items are investment liquidity of the owners and estate planning considerations. As these examples suggest, such considerations tend to be more influential in smaller and privately held firms. However, a major "other" consideration for large publicly traded firms is the signaling content of their financial choices. The issuance of equity is typically accompanied by decreases in share prices; issuance of debt is accompanied by increases. One interpretation of this result is that the type of financing signals optimism or pessimism about the future by insiders in the firm.

This framework can be used to indicate the relative strengths and weaknesses of alternative financing plans. To use a simple example, suppose that your firm is considering two alternatives for financing an acquisition: a new issue of debt to fund a cash payment or a new issue of equity in exchange for the target's shares.

Your financial analyst offers a comparison of the two structures, as shown in Exhibit 20.6. Looking across each row, the decision maker can determine which alternative dominates on each criterion. The debt structure is favored on the grounds of income (perhaps reflecting debt tax shields and no share dilution), the absence of voting dilution, and today's interest rate conditions. The equity structure is favored on the grounds of flexibility, risk, absence of covenants, today's equity market conditions, and the long-term financial sequencing benefits. This example boils down to a choice between "eat well" and "sleep well." One should always think like an investor in making this choice. The other perspectives mentioned in this chapter (creditor, competitor, CEO) may add further richness to the analysis.

SUMMARY AND CONCLUSIONS

This chapter explores the complexities of choosing form of payment and financing in the design of a deal. Each has implications for the other. Therefore, it is appropriate to consider the choices simultaneously. When price is added into consideration, one has the core building blocks of a bidding strategy. The chapter sketches how price, form of payment, and financing combine to form two classic bidding strategies: preemption and contingency.

Research suggests that the choice of form of payment is heavily influenced by

EXHIBIT 20.6 Comparison of Two Hypothetical Acquisition Financing Alternatives Using the FRICTO Framework

M&A Transaction	New Issue \$250 Million in Bonds; Acquire Target Equity with Cash	New Issue \$250 Million in Shares for Target Equity
Flexibility	Low flexibility. BBB debt rating. \$50 million unused debt capacity remains.	High flexibility remains. AA debt rating. \$300 million unused debt capacity remains.
Risk	Book debt/assets = 0.60. Exposure is high. EBIT/interest coverage = 3.0.	Book debt/assets = 0.30. Exposure is medium. EBIT/interest coverage = 6.0.
Income	Reported EPS = \$1.50. WACC = 10%. DCF value = \$20/share.	Reported EPS = \$0.90. WACC = 11.9%. DCF value = \$17/share.
Control	Covenants become tighter, but no voting dilution.	Covenants not as tight. Voting dilution occurs.
Timing	Interest rates low today. Risky sequence for future financing: must issue equity for next major financing, which makes Newco dependent on future equity market conditions.	Equity multiples high today. Low risk sequence for future: more flexibility for form of financing in the future; less dependent on future equity market conditions.
Other	Signal of optimism and that shares may be underpriced.	Signal that shares may be overpriced or that management prefers a conservative financing strategy.

the role of information. As is usually the case in merger negotiations, each side has information that the other side does not. Because of this information asymmetry, the choice of form of payment carries important signals about what each side thinks the values of the two firms really are, and how valuable the synergies might be. Thus, a key practical implication of this chapter is to think carefully about the messages that form of payment sends to the counterparty and the public shareholders.

The chapter also surveys the buyer's financing decision that is embedded in a deal. There are at least seven levers of design of financings: mix, maturity, basis, currency, exotica, control, and distribution. These should prompt thoughtful comparisons among financing alternatives. The chapter also summarizes the FRICTO framework that enables one to summarize and weigh trade-offs among financing alternatives.

Research suggests that the form of payment choice is associated with large differences in returns to shareholders—for this reason alone it merits careful analysis. Given the wide variations over time in the selection of methods of payment, the thoughtful practitioner should focus less on what the standard methods of payment have been in recent years, and more on trying to understand the fundamental drivers of this choice. This chapter outlines a number of these drivers as have been revealed by research. Future research will continue to refine our understanding.

NOTES

1. Tobin's Q is typically measured as the ratio of market value to book value of equity.
2. See Hayn (1989), Sullivan et al. (1994), and Auerbach and Reishius (1988).
3. See Asquith and Mullins (1986) and Masulis and Korwar (1986).
4. There is an exception to this mentioned in Chapter 19: The acquirer with stock may make a Section 338 election that permits a share-for-share acquisition to be treated like a cash purchase with step-up to the buyer and immediate taxability to the seller.
5. If a cash payment is financed with costly debt, the interest burden could prove to be more dilutive than payment with shares. The dilution effect of alternative forms of payment should be modeled under assumptions appropriate to each case.
6. See Hansen (1987), Fishman (1989), Berkovitch and Narayanan (1990), and Eckbo, Giammarino, and Heinkel (1990).
7. IBM held \$10.5 billion in cash, cash equivalents, and marketable securities at the end of 1994. Also, the firm's net cash flow in 1994 was \$2 billion.
8. "Average maturity" is the mean number of years of the life of liabilities, weighted by the outstandings in each year. "Duration" is mean number of years weighted by the *present value* of outstandings in each year.
9. Examples of highly tailored securities include exchangeable and convertible bonds (such as those issued by Chubb Company), hybrid classes of common stock (such as General Motors' class E and H shares), and contingent securities (such as Eli Lilly's contingent payment unit, a dividend-paying equity issued in connection with an acquisition).

10. In general, the call options embedded in a convertible bond will be more valuable the greater the volatility of the underlying asset.
11. This technique employs discriminant analysis to build a predictive model of financial failure. Altman (1968) first estimated this model:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.99X_5$$

where X_1 = Working capital/total assets ratio, a measure of the net liquid assets of the firm.

X_2 = Retained earnings/total assets, a measure of cumulative profitability over time.

X_3 = Earnings before interest and taxes/total assets, a measure of asset productivity.

X_4 = Market value of equity/total liabilities, a measure of equity cushion beneath liabilities.

X_5 = Sales/total assets, measuring the sales-generating ability of the firm's assets.

Altman finds that any firm with a Z score below 1.8 is a strong candidate for bankruptcy; generally, the lower the score, the higher the probability of failure. The model was over 90 percent accurate in classifying bankrupt firms correctly prior to failure, and over 80 percent accurate in *ex post* tests. Altman has modified the model and reestimated the coefficients over time. The revised model is proprietary to Zeta Services Incorporated. In general, credit scoring is useful where the analyst needs to survey the default risk of a number of firms quickly.

12. Secured lenders might be forced to take credit losses *pari passu* with unsecured lenders (i.e., they might forfeit their absolute priority in the event of liquidation of the bankrupt debtor). Directors might be assessed damages and punitive penalties. Selling shareholders may be compelled to return the payment they received for the firm. Advisers may be assessed damages and punitive penalties, and be required to disgorge fees received.
13. In fraudulent conveyance, unsecured creditors have been defrauded by secured creditors, shareholders, and advisers. The fraud can be either *deliberate* or *constructive*. The law defines constructive fraud to have occurred where the debtor received less value than the obligation assumed, and either was insolvent on the date of transfer, was inadequately capitalized from that time forward, or assumed debts beyond its ability to repay. Almost all highly leveraged transactions would fail the "reasonably equivalent value" test because the proceeds of the loan do not remain with the company (i.e., the borrowings are used to purchase assets or repurchase shares). Thus, it is crucial for deal designers to determine in advance whether the debtor can be judged to be insolvent or inadequately capitalized after the transaction. The solvency letter is obtained for this purpose.
14. For a discussion of finance as a competitive instrument, see William E. Fruhan Jr., *Financial Strategy: Studies in the Creation, Transfer, and Destruction of Shareholder Value*, Homewood, IL: Irwin, 1979.