

The Free Cash Flow Theory of Takeovers: A Financial Perspective on Mergers and Acquisitions and the Economy

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Economic analysis and evidence indicate the market for corporate control is benefiting shareholders, society, and the corporate form of organization. The value of transactions in this market ran at a record rate of about \$180 billion per year in 1985 and 1986—47 percent above the 1984 record of \$122 billion. The number of transactions with purchase prices exceeding one billion dollars was 27 of 3300 deals in 1986 and 36 of 3000 deals in 1985 (Grimm 1986). There were only seven billion-dollar-plus deals in total, prior to 1980. In addition to these takeovers, mergers, and leveraged buyouts, there were numerous corporate restructurings involving divestitures, spinoffs, and large stock repurchases for cash and debt.

The gains to shareholders from these transactions have been huge. The gains to selling-firm shareholders from mergers and acquisition activity in the period 1977–86 total \$346 billion (in 1986 dollars).¹ The gains to buying-firm shareholders are harder to estimate, and to my knowledge no one has done so yet, but I estimate that they would add at least another \$50 billion to the total. These gains, to put them in perspective, equal 51 percent of the total cash dividends (valued in 1986 dollars) paid to investors by the entire corporate sector in the past decade.²

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Corporate control transactions and the restructurings that often accompany them can be wrenching events in the lives of those linked to the involved organizations: the managers, employees, suppliers, customers and residents of surrounding communities. Restructurings usually involve major organizational change (such as shifts in corporate strategy) to meet new competition or market conditions, increased use of debt, and a flurry of recontracting with managers, employees, suppliers and customers. This activity sometimes results in expansion of resources devoted to certain areas and at other times in contractions involving plant closings, layoffs of top-level and middle managers and of staff and production workers, and reduced compensation.

Change due to corporate restructuring requires people and communities associated with the organization to adjust the ways they live, work and do business. It is not surprising, therefore, that this change creates controversy and that those who stand to lose are demanding that something be done to stop the process. At the same time, shareholders in restructured corporations are clear-cut winners; in recent years restructurings have generated average increases in total market value of approximately 50 percent.

Those threatened by the changes argue that corporate restructuring is damaging the U.S. economy, that this activity damages the morale and productivity of organizations and pressures executives to manage for the short term. Further, they hold that the value that restructuring creates does not come from increased efficiency and productivity; rather, the gains come from lower tax payments, broken contracts with managers, employees and others, and mistakes in valuation by inefficient capital markets. Since the benefits are illusory and the costs are real, they argue, takeover activity should be restricted.

The controversy has been accompanied by strong pressure on regulators and legislatures to enact restrictions to curb activity in the market for corporate control. Dozens of congressional bills in the past several years have proposed new restrictions on takeovers, but as of August 1987, none had passed. The Business Roundtable, composed of the chief executive officers of the 200 largest corporations in the country, has pushed hard for restrictive legislation. Within the past several years the legislatures of New York, New Jersey, Maryland, Pennsylvania, Connecticut, Illinois, Kentucky, Michigan, Ohio, Indiana, Minnesota and

¹ Estimated from data in Grimm (1986). Grimm provides total dollar values for all merger and acquisition deals for which there are publicly announced prices amounting to at least \$500,000 or 10 percent of the firm and in which at least one of the firms was a U.S. company. Grimm also counts in its numerical totals deals with no publicly announced prices that it believes satisfy these criteria. I have assumed that the deals with no announced prices were on average equal to 20 percent of the size of the announced transactions and carried the same average premium.

² Total dividend payments by the corporate sector, unadjusted for inflation, are given in Weston and Copeland (1986, p. 649). I extended these estimates to 1986.

Massachusetts have passed antitakeover laws. The Federal Reserve Board implemented new restrictions in early 1986 on the use of debt in certain takeovers.

In all the controversy over takeover activity, it is often forgotten that only 40 (an all-time record) of the 3,300 takeover transactions in 1986 were hostile tender offers. There were 110 voluntary or negotiated tender offers (unopposed by management) and the remaining 3,100-plus deals were also voluntary transactions agreed to by management. This simple classification, however, is misleading since many of the voluntary transactions would not have occurred absent the threat of hostile takeover. A major reason for the current outcry is that in recent years mere size alone has disappeared as an effective takeover deterrent, and the managers of many of our largest and least efficient corporations now find their jobs threatened by disciplinary forces in the capital markets.

Through dozens of studies, economists have accumulated considerable evidence and knowledge on the effects of the takeover market. Most of the earlier work is well summarized elsewhere (Jensen and Ruback 1983; Jensen 1984; Jarrell, Brickley and Netter 1988). Here, I focus on current aspects of the controversy. In brief, the previous work tells us the following:

- Takeovers benefit shareholders of target companies. Premiums in hostile offers historically exceed 30 percent on average, and in recent times have averaged about 50 percent.
- Acquiring-firm shareholders on average earn about 4 percent in hostile takeovers and roughly zero in mergers, although these returns seem to have declined from past levels.
- Takeovers do not waste credit or resources. Instead, they generate substantial gains: historically, 8 percent of the total value of both companies.
- Actions by managers that eliminate or prevent offers or mergers are most suspect as harmful to shareholders.
- Golden parachutes for top-level managers do not, on average, harm shareholders.
- The activities of takeover specialists (such as Icahn, Posner, Steinberg, and Pickens) benefit shareholders on average.
- Merger and acquisition activity has not increased industrial concentration. Over 1200 divestitures valued at \$59.9 billion occurred in 1986, also a record level (Grimm 1986).
- Takeover gains do not come from the creation of monopoly power.

Although measurement problems make it difficult to estimate the returns to bidders as precisely as the returns to targets,³ it appears the

³ See Jensen and Ruback (1983, pp. 18ff).

bargaining power of target managers, coupled with competition among potential acquirers, grants a large share of the acquisition benefits to selling shareholders. In addition, federal and state regulation of tender offers appears to have strengthened the hand of target firms; premiums received by target-firm shareholders increased substantially after introduction of such regulation.⁴

Some have argued that the gains to shareholders come from wealth reallocations from other parties and not from real increases in efficiency. Roll (1986) argues the gains to target firm shareholders come from acquiring firm shareholders, but the data are not consistent with this hypothesis. While the evidence on the returns to bidding firms is mixed, it does not indicate they systematically suffer losses; prior to 1980 shareholders of bidding firms earned on average about zero in mergers, which tend to be voluntary, and about 4 percent of their equity value in tender offers, which more often are hostile (Jensen and Ruback 1983). These differences in returns are associated with the form of payment rather than the form of the offer: tender offers tend to be for cash and mergers tend to be for stock (Huang and Walkling 1987).

Some argue that bondholders in acquired firms systematically suffer losses as substantial amounts of debt are added to the capital structure. Asquith and Kim (1982) do not find this, nor do Dennis and McConnell (1986). The Dennis and McConnell study of 90 matched acquiring and acquired firms in mergers in the period 1962–80 shows that the values of bonds, preferred stock and other senior securities, as well as the common stock prices of both firms, increase around the merger announcement. Changes in the value of senior securities are not captured in measures of changes in the value of common stock prices summarized previously. Taking the changes in the value of senior securities into account, Dennis and McConnell find the average change in total dollar value is positive for both bidders and target firms.

Shleffer and Summers (1987) argue that some of the benefits earned by target and bidding firm shareholders come from the abrogation of explicit and implicit long-term contracts with employees. They point to highly visible recent examples in the airline industry, where mergers have been frequent and wages have been cut in the wake of deregulation. But given deregulation and free entry by low-cost competitors, the cuts in airline industry wages were inevitable and would have been accomplished in bankruptcy proceedings if not in negotiations and takeover-related crises. Medoff and Brown (1988) study this issue using data from Michigan. They find that both employment and wages are higher, not lower, after acquisition than would otherwise be expected; however, their sample consists largely of combinations of small firms.

⁴ See Jarrell and Bradley (1980). Nathan and O'Keefe (1986), however, provide evidence that this effect occurred in 1974, several years after the major legislation.

The Market for Corporate Control

The market for corporate control is best viewed as a major component of the managerial labor market. It is the arena in which alternative management teams compete for the rights to manage corporate resources (Jensen and Ruback 1983). Understanding this point is crucial to understanding much of the rhetoric about the effects of hostile takeovers.

Takeovers generally occur because changing technology or market conditions require a major restructuring of corporate assets (although in some cases, takeovers occur because incumbent managers are incompetent). Such changes can require abandonment of major projects, relocation of facilities, changes in managerial assignments, and closure or sale of facilities or divisions. Managers often have trouble abandoning strategies they have spent years devising and implementing, even when those strategies no longer contribute to the organization's survival, and it is easier for new top-level managers with no ties to current employees or communities to make changes. Moreover, normal organizational resistance to change commonly is lower early in the reign of new top-level managers. When the internal processes for change in large corporations are too slow, costly, and clumsy to bring about the required restructuring or change in managers efficiently, the capital markets do so through the market for corporate control. Thus, the capital markets have been responsible for substantial changes in corporate strategy.

Causes of Current Takeover Activity

A variety of political and economic conditions in the 1980s have created a climate where economic efficiency requires a major restructuring of corporate assets. These factors include:

- The relaxation of restrictions on mergers imposed by the antitrust laws.
- The withdrawal of resources from industries that are growing more slowly or that must shrink.
- Deregulation in the markets for financial services, oil and gas, transportation, and broadcasting, bringing about a major restructuring of those industries.
- Improvements in takeover technology, including more and increasingly sophisticated legal and financial advisers, and innovations in financing technology (for example, the strip financing commonly used in leveraged buyouts and the original issuance of high-yield non-investment-grade bonds).

Each of these factors has contributed to the increase in total takeover and reorganization activity. Moreover, the first three factors (anti-

Table 1
Intensity of Takeover Activity, by Industry, 1981–84.

Industry Classification of Seller	Percent of Total Takeover Activity ^a	Percent of Total Corporate Market Value ^b
Oil and Gas	26.3	13.5
Banking and Finance	8.8	6.4
Insurance	5.9	2.9
Food Processing	4.6	4.4
Mining and Minerals	4.4	1.5
Conglomerate	4.4	3.2
Retail Trade	3.6	5.2
Transportation	2.4	2.7
Leisure and Entertainment	2.3	.9
Broadcasting	2.3	.7
Other	39.4	58.5

^a Value of merger and acquisition transactions in the industry as a percentage of total takeover transactions for which valuation data are publicly reported. Source: W. T. Grimm, *Mergerstat Review* 1984, p. 41.

^b Industry value as a percentage of the value of all firms, as of 12/31/84. Total value is measured as the sum of the market value of common equity for 4,305 companies, including 1,501 companies on the New York Stock Exchange, 724 companies on the American Stock Exchange, plus 2,080 companies in the over-the-counter market.

Source: *The Media General Financial Weekly*, December 31, 1984, p. 17.

trust relaxation, exit, and deregulation) are generally consistent with data showing the intensity of takeover activity by industry. Table 1 indicates that acquisition activity in the period 1981–84 was highest in the oil and gas industry, followed by banking and finance, insurance, food processing, and mining and minerals. For comparison purposes, the table also presents data on industry value measured as a percentage of the total value of all firms. All but two of the industries, retail trade and transportation, represent a larger fraction of total takeover activity than their representation in the economy as a whole, indicating that the takeover market is concentrated in particular industries, not spread evenly throughout the corporate sector.

Many sectors of the U.S. economy have been experiencing slower growth and, in some cases, even retrenchment. This phenomenon has many causes, including substantially increased foreign competition. The slow growth has meant increased takeover activity because takeovers play an important role in facilitating exit from an industry or activity. Changes in energy markets, for example, have required radical restructuring and retrenchment in that industry, and takeovers have played an important role in accomplishing these changes; oil and gas rank first in takeover activity, with twice their proportionate share of total activity.

Managers who are slow to adjust to the new energy environment and slow to recognize that many old practices and strategies are no longer viable find that takeovers are doing the job for them. In an industry saddled with overcapacity, exit is cheaper to accomplish through merger and the orderly liquidation of marginal assets of the combined firms than by disorderly, expensive bankruptcy. The end of the competitive struggle in such an industry often comes in the bankruptcy courts, with the unnecessary destruction of valuable parts of organizations that could be used productively by others.

Similarly, deregulation of the financial services market is consistent with the number 2 rank of banking and finance and the number 3 rank of insurance in table 1. Deregulation has also been important in the transportation and broadcasting industries. Mining and minerals has been subject to many of the same forces impinging on the energy industry, including the changes in the value of the dollar.

The development of innovative financing vehicles, such as high-yield non-investment-grade bonds (junk bonds), has removed size as a significant impediment to competition in the market for corporate control. Investment grade and high-yield debt issues combined were associated with 9.8 percent of all tender offer financing from January 1981 through September 1986 (Drexel Burnham Lambert, undated). Even though not yet widely used in takeovers, these new financing techniques have had important effects because they permit small firms to obtain resources for acquisition of much larger firms by issuing claims on the value of the venture (that is, the target firm's assets) just as in any other corporate investment activity.

Divestitures

If assets are to move to their most highly valued use, acquirers must be able to sell off assets to those who can use them more productively. Therefore, divestitures are a critical element in the functioning of the corporate control market and it is important to avoid inhibiting them. Indeed, over 1200 divestitures occurred in 1986, a record level (*Mergerstat Review* 1986). This is one reason merger and acquisition activity has not increased industrial concentration.

Divested plants and assets do not disappear; they are reallocated. Sometimes they continue to be used in similar ways in the same industry, and in other cases they are used in very different ways and in different industries. But in both cases they are moving to uses that their new owners believe are more productive.

Finally, the takeover and divestiture market provides a private market constraint against bigness for its own sake. The potential gains available to those who correctly perceive that a firm can be purchased for less

than the value realizable from the sale of its components provide incentives for entrepreneurs to search out these opportunities and to capitalize on them by reorganizing such firms into smaller entities.

The mere possibility of such takeovers also motivates managers to avoid putting together uneconomic conglomerates and to break up existing ones. This is now happening. Recently many firms' defenses against takeovers appear to have led to actions similar to those proposed by the potential acquirers. Examples are the reorganizations occurring in the oil and forest products industries, the sale of "crown jewels," and divestitures brought on by the desire to liquidate large debts incurred to buy back stock or make other payments to stockholders. The basic economic sense of these transactions is often lost in a blur of emotional rhetoric and controversy.

Managerial Myopia versus Market Myopia

It has been argued that, far from pushing managers to undertake needed structural changes, growing institutional equity holdings and the fear of takeover cause managers to behave myopically and therefore to sacrifice long-term benefits to increase short-term profits. The arguments tend to confuse two separate issues: 1) whether managers are shortsighted and make decisions that undervalue future cash flows while overvaluing current cash flows (myopic managers); and 2) whether security markets are shortsighted and undervalue future cash flows while overvaluing near-term cash flows (myopic markets).

There is little formal evidence on the myopic managers issue, but I believe this phenomenon does occur. Sometimes it occurs when managers hold little stock in their companies and are compensated in ways that motivate them to take actions to increase accounting earnings rather than the value of the firm. It also occurs when managers make mistakes because they do not understand the forces that determine stock values.

There is much evidence inconsistent with the myopic markets view and no evidence that indicates it is true:

(1) The mere fact that price-earnings ratios differ widely among securities indicates the market is valuing something other than current earnings. For example, it values growth as well. Indeed, the essence of a growth stock is that it has large investment projects yielding few short-term cash flows but high future earnings and cash flows. The continuing marketability of new issues for start-up companies with little record of current earnings, the Genentechs of the world, is also inconsistent with the notion that the market does not value future earnings.

(2) McConnell and Muscarella (1985) provide evidence that (except in the oil industry) stock prices respond positively to announcements of increased investment expenditures and negatively to reduced expendi-

tures. Their evidence is also inconsistent with the notion that the equity market is myopic, since it indicates that the market values spending current resources on projects that promise returns in the future.

(3) The vast evidence on efficient markets, indicating that current stock prices appropriately incorporate all currently available public information, is also inconsistent with the myopic markets hypothesis. Although the evidence is not literally 100 percent in support of the efficient market hypothesis, no proposition in any of the social sciences is better documented.⁵

(4) Recent versions of the myopic markets hypothesis emphasize increases in the amount of institutional holdings and the pressure funds managers face to generate high quarterly returns. It is argued that these pressures on institutions are a major cause of pressures on corporations to generate high current quarterly earnings. The institutional pressures are said to lead to increased takeovers of firms, because institutions are not loyal shareholders, and to decreased research and development (R&D) expenditures. It is hypothesized that because R&D expenditures reduce current earnings, firms making them are more likely to be taken over, and that reductions in R&D are leading to a fundamental weakening of the corporate sector of the economy.

A study of 324 firms by the Office of the Chief Economist of the SEC (1985a) finds substantial evidence that is inconsistent with this version of the myopic markets argument. The evidence indicates the following:

- Increased institutional stock holdings are not associated with increased takeovers of firms.
- Increased institutional holdings are not associated with decreases in R&D expenditures.
- Firms with high R&D expenditures are not more vulnerable to takeovers.
- Stock prices respond positively to announcements of increases in R&D expenditures.

Moreover, total spending on R&D is increasing concurrent with the wave of merger and acquisition activity. Total spending on R&D in 1984, a year of record acquisition activity, increased by 14 percent according to *Business Week's* annual survey. This represented "the biggest gain since

⁵ For an introduction to the literature and empirical evidence on the theory of efficient markets, see Elton and Gruber (1984), Chapter 15, p. 375ff. and the 167 studies referenced in the bibliography. For some anomalous evidence on market efficiency, see Jensen (1978). For recent criticisms of the efficient market hypothesis see Shiller (1981a, b). Marsh and Merton (1983, 1986) demonstrate that the Shiller tests depend critically on whether, contrary to generally accepted financial theory and evidence, the future levels of dividends follow a stationary stochastic process. Merton (1985) provides a discussion of the current state of the efficient market hypothesis and concludes (p. 40), "In light of the empirical evidence on the nonstationarity issue, a pronouncement at this moment that the rational market theory should be discarded from the economic paradigm can, at best, be described as 'premature'."

R&D spending began a steady climb in the late 1970's." All industries in the survey increased R&D spending with the exception of steel. In addition, R&D spending increased from 2 percent of sales, where it had been for five years, to 2.9 percent. In 1985 and 1986, two more record years for acquisition activity, R&D also set new records. R&D spending increased by 10 percent (to 3.1 percent of sales) in 1985, and in 1986, R&D spending again increased by 10 percent to \$51 billion (3.5 percent of sales), in a year when total sales decreased by 1 percent.⁶

Bronwyn Hall (1987), in a detailed study of all U.S. manufacturing firms in the years 1976–85, finds in approximately 600 acquisitions that firms that are acquired do not have higher R&D expenditures (measured by the ratio of R&D to sales) than firms in the same industry that are not acquired. Also, she finds that "firms involved in mergers showed no difference in their pre- and post-merger R&D performance over those not so involved."

I know of no evidence that supports the argument that takeovers reduce R&D expenditures, even though this is a prominent argument among many of those who favor restrictions on takeovers.

Free Cash Flow Theory

More than a dozen separate forces drive takeover activity, including such factors as deregulation, synergies, economies of scale and scope, taxes, managerial incompetence, and increasing globalization of U.S. markets.⁷ One major cause of takeover activity, the agency costs associated with conflicts between managers and shareholders over the payout of free cash flow,⁸ has received relatively little attention. Yet it has played an important role in acquisitions over the last decade.

Managers are the agents of shareholders, and because both parties are self-interested, there are serious conflicts between them over the choice of the best corporate strategy. Agency costs are the total costs that arise in such cooperative arrangements. They consist of the costs of monitoring managerial behavior (such as the costs of producing audited financial statements and devising and implementing compensation

⁶ The "R&D Scoreboard" is an annual survey, covering companies that account for 95 percent of total private-sector R&D expenditures. The three years referenced here can be found in "R&D Scoreboard: Reagan & Foreign Rivalry Light a Fire Under Spending," *Business Week*, July 8, 1985, p. 86 ff.; "R&D Scoreboard: Now, R&D is Corporate America's Answer to Japan Inc.," *Business Week*, June 23, 1986, p. 134 ff.; and "R&D Scoreboard: Research Spending is Building Up to a Letdown," *Business Week*, June 22, 1987, p. 139 ff. In 1984 the survey covered 820 companies; in 1985, it covered 844 companies; in 1986, it covered 859 companies.

⁷ Roll (1988) discusses a number of these forces.

⁸ This discussion is based on Jensen (1986).

plans that reward managers for actions that increase investors' wealth) and the inevitable costs that are incurred because the conflicts of interest can never be resolved perfectly. Sometimes these costs can be large, and when they are, takeovers can reduce them.

Free Cash Flow and the Conflict Between Managers and Shareholders

Free cash flow is cash flow in excess of that required to fund all of a firm's projects that have positive net present values when discounted at the relevant cost of capital. Such free cash flow must be paid out to shareholders if the firm is to be efficient and to maximize value for shareholders.

Payment of cash to shareholders reduces the resources under managers' control, thereby reducing managers' power and potentially subjecting them to the monitoring by the capital markets that occurs when a firm must obtain new capital. Financing projects internally avoids this monitoring and the possibility that funds will be unavailable or available only at high explicit prices.

Managers have incentives to expand their firms beyond the size that maximizes shareholder wealth.⁹ Growth increases managers' power by increasing the resources under their control. In addition, changes in management compensation are positively related to growth.¹⁰ The tendency of firms to reward middle managers through promotion rather than year-to-year bonuses also creates an organizational bias toward growth to supply the new positions that such promotion-based reward systems require (Baker 1986).

The tendency for managers to overinvest resources is limited by competition in the product and factor markets that tends to drive prices toward minimum average cost in an activity. Managers must therefore motivate their organizations to be more efficient in order to improve the probability of survival. Product and factor market disciplinary forces are often weaker in new activities, however, and in activities that involve

⁹ Gordon Donaldson (1984), in a detailed study of 12 large Fortune 500 firms, concludes that managers of these firms were not driven by maximization of the value of the firm, but rather by the maximization of "corporate wealth." He defines corporate wealth as "the aggregate purchasing power available to management for strategic purposes during any given planning period. . . . this wealth consists of the stocks and flows of cash and cash equivalents (primarily credit) that management can use at its discretion to implement decisions involving the control of goods and services" (p. 3, emphasis in original). "In practical terms it is cash, credit, and other corporate purchasing power by which management commands goods and services" (p. 22).

¹⁰ Where growth is measured by increases in sales. See Murphy (1985). This positive relationship between compensation and sales growth does not imply, although it is consistent with, causality.

substantial economic rents or quasi-rents.¹¹ Activities yielding substantial economic rents or quasi-rents are the types of activities that generate large amounts of free cash flow. In these situations, monitoring by the firm's internal control system and the market for corporate control are more important. Conflicts of interest between shareholders and managers over payout policies are especially severe when the organization generates substantial free cash flow. The problem is how to motivate managers to disgorge the cash rather than invest it below the cost of capital or waste it through organizational inefficiencies.

Myers and Majluf (1984) argue that financial flexibility (unused debt capacity and internally generated funds) is desirable when a firm's managers have better information about the firm than outside investors. Their arguments assume that managers act in the best interest of shareholders. The arguments offered here imply that such flexibility has costs; financial flexibility in the form of free cash flow (including both current free cash in the form of large cash balances, and future free cash flow reflected in unused borrowing power) provides managers with greater discretion over resources that is often not used in the shareholders' interests. Therefore, contrary to Myers and Majluf, the argument here implies that eventually the agency costs of free cash flow cause the value of the firm to decline with increases in financial flexibility.

The theory developed here explains (1) how debt-for-stock exchanges reduce the organizational inefficiencies fostered by substantial free cash flow; (2) how debt can substitute for dividends; (3) why "diversification" programs are more likely to be associated with losses than are expansion programs in the same line of business; (4) why mergers within an industry and liquidation-motivated takeovers will generally create larger gains than cross-industry mergers; (5) why the factors stimulating takeovers in such diverse businesses as broadcasting, tobacco, cable systems and oil are essentially identical; and (6) why bidders and some targets tend to show abnormally good performance prior to takeover.

The Role of Debt in Motivating Organizational Efficiency

The agency costs of debt have been widely discussed (Jensen and Meckling 1976; Smith and Warner 1979), but, with the exception of the work of Grossman and Hart (1980), the benefits of debt in motivating managers and their organizations to be efficient have largely been ignored. Debt creation, *without retention of the proceeds of the issue*, enables

¹¹ Rents are returns in excess of the opportunity cost of the permanent resources in the activity. Quasi-rents are returns in excess of the opportunity cost of the short-lived resources in the activity.

managers effectively to bond their promise to pay out future cash flows. Thus, debt can be an effective substitute for dividends, something not generally recognized in the corporate finance literature.¹² By issuing debt in exchange for stock, managers bond their promise to pay out future cash flows in a way that simple dividend increases do not. In doing so, they give shareholder-recipients of the debt the right to take the firm into bankruptcy court if they do not keep their promise to make the interest and principal payments.¹³ Thus, debt reduces the agency costs of free cash flow by reducing the cash flow available for spending at the discretion of managers. These control effects of debt are a potential determinant of capital structure.

Managers with substantial free cash flow can increase dividends or repurchase stock and thereby pay out current cash that would otherwise be invested in low-return projects or wasted. This payout leaves managers with control over the use of future free cash flows, but they can also promise to pay out future cash flows by announcing a "permanent" increase in the dividend.¹⁴ Because there is no contractual obligation to make the promised dividend payments, such promises are weak. Dividends can be reduced by managers in the future with little effective recourse available to shareholders. The fact that capital markets punish dividend cuts with large stock price reductions (Charest 1978; Aharony and Swary 1980) can be interpreted as an equilibrium market response to the agency costs of free cash flow. Brickley, Coles and Soo Nam (1987) find that firms that regularly pay extra dividends appear to have positive free cash flow. In comparison with a control group they have significantly higher cash plus short-term investments, and earnings plus depreci-

¹² Literally, principal and interest payments are substitutes for dividends. Dividends and debt are not perfect substitutes, however, because interest is tax-deductible at the corporate level and dividends are not.

¹³ Rozeff (1982) and Easterbrook (1984a) argue that regular dividend payments can be effective in reducing agency costs with managers by assuring that managers are forced more frequently to subject themselves and their policies to the discipline of the capital markets when they acquire capital.

¹⁴ Interestingly, Graham and Dodd (1951, Chapters 32, 34 and 36) in their treatise, *Security Analysis*, place great importance on the dividend payout in their famous valuation formula: $V = M(D + .33E)$. (See p. 454.) V is value, M is the earnings multiplier when the dividend payout rate is a "normal two-thirds of earnings," D is the expected dividend, and E is expected earnings. In their formula, dividends are valued at three times the rate of retained earnings, a proposition that has puzzled many students of modern finance (at least of my vintage). The agency cost of free cash flow that leads to overretention and waste of shareholder resources is consistent with the deep suspicion with which Graham and Dodd viewed the lack of payout. Their discussion (chapter 34) reflects a belief in the tenuous nature of the future benefits of such retention. Although they do not couch the issues in terms of the conflict between managers and shareholders, the free cash flow theory explicated here implies that their beliefs, sometimes characterized as a preference for "a bird in the hand is worth two in the bush," were perhaps well-founded.

ation, relative to their total assets. They also have significantly lower debt-to-equity ratios.

The issuance of large amounts of debt to buy back stock sets up organizational incentives to motivate managers to pay out free cash flow. In addition, the exchange of debt for stock helps managers overcome the normal organizational resistance to retrenchment that the payout of free cash flow often requires. The threat of failure to make debt-service payments serves as a strong motivating force to make such organizations more efficient. Stock repurchase for debt or cash also has tax advantages. Interest payments are tax-deductible to the corporation, that part of the repurchase proceeds equal to the seller's tax basis in the stock is not taxed at all, and prior to 1987 tax rates on capital gains were favorable.

Increased leverage also has costs. As leverage increases, the usual agency costs of debt, including bankruptcy costs, rise. One source of these costs is the incentive to take on projects that reduce total firm value but benefit shareholders through a transfer of wealth from bondholders. These costs put a limit on the desirable level of debt. The optimal debt/equity ratio is the point at which firm value is maximized, the point where the marginal costs of debt just offset the marginal benefits.

The debt created in a hostile takeover (or takeover defense) of a firm suffering severe agency costs of free cash flow need not be permanent. Indeed, sometimes "over-leveraging" such a firm is desirable. In these situations, leveraging the firm so highly that it cannot continue to exist in its old form yields benefits by providing motivation for cuts in expansion programs and the sale of divisions that are more valuable outside the firm. The proceeds are used to reduce debt to a more normal or permanent level. This process results in a complete rethinking of the organization's strategy and structure. When it is successful, a much leaner, more efficient, and competitive organization results.

The control hypothesis does not imply that debt issues will always have positive control effects. For example, these effects will not be as important for rapidly growing organizations with large and highly profitable investment projects but no free cash flow. Such organizations will have to go regularly to the financial markets to obtain capital. At these times the markets have an opportunity to evaluate the company, its management, and its proposed projects. Investment bankers and analysts play an important role in this monitoring, and the market's assessment is made evident by the price investors pay for the financial claims.

The control function of debt is more important in organizations that generate large cash flows but have low growth prospects, and it is even more important in organizations that must shrink. In these organizations the pressure to waste cash flows by investing them in uneconomic projects is most serious.

Evidence from Financial Transactions

Free cash flow theory helps explain previously puzzling results on the effects of various financial transactions. Smith (1986, tables 1 to 3) summarizes more than 20 studies of stock price changes at announcements of transactions that change capital structure as well as various other dividend transactions. These results and those of others are presented in table 2.

For firms with positive free cash flow, the theory predicts that stock prices will increase with unexpected increases in payouts to shareholders and decrease with unexpected decreases in payouts. It also predicts that unexpected increases in demand for funds from shareholders via new issues will cause stock prices to fall. The theory also predicts stock prices will increase with increasing tightness of the constraints binding the payout of future cash flow to shareholders and decrease with reductions in the tightness of these constraints. These predictions do not apply to those firms with more profitable projects than cash flow to fund them.

The predictions of free cash flow theory are consistent with all but three of the 32 estimated abnormal stock price changes summarized in table 2, and one of the inconsistencies is explained by another phenomenon. Panel A of table 2 shows that stock prices rise by a statistically significant amount with announcements of the initiation of cash dividend payments, increases in dividends and specially designated dividends, and fall by a statistically significant amount with decreases in dividend payments. (All coefficients in table 2 are significantly different from zero unless noted with an asterisk.)

Panel B shows that security sales and retirements that raise cash or pay out cash and simultaneously provide offsetting changes in the constraints bonding the payout of future cash flow are all associated with returns that are insignificantly different from zero. The insignificant return on retirement of debt fits the theory because the payout of cash is offset by an equal reduction in the present value of promised future cash payouts. If debt sales are not associated with changes in the expected investment program, the insignificant return on announcement of the sale of debt and preferred also fits the theory. The acquisition of new funds with debt or preferred stock is offset exactly by a commitment bonding the future payout of cash flows of equal present value. If the funds acquired through new debt or preferred issues are invested in projects with negative net present values, the abnormal stock price change will be negative. If they are invested in projects with positive net present values, the abnormal stock price change will be positive.

Sales of convertible debt and preferred securities are associated with significantly negative stock price changes (panel C). These security sales

raise cash and provide little effective bonding of future cash flow payments; when the stock into which the debt is convertible is worth more than the face value of the debt, management has incentives to call the convertible securities and force conversion to common.

Panel D shows that, with one exception, security retirements that pay out cash to shareholders increase stock prices. The price decline associated with targeted large block repurchases (often called greenmail) is highly likely to be due to the reduced probability that a takeover premium will be realized. These transactions are often associated with standstill agreements in which the seller of the stock agrees to refrain from acquiring more stock and from making a takeover offer for some period into the future (Mikkelson and Ruback 1985, 1986; Dann and DeAngelo 1983; and Bradley and Wakeman 1983).

Panel E summarizes the effects of security sales and retirements that raise cash and do not bond future cash flow payments. Consistent with the theory, negative abnormal returns are associated with all such changes, although the negative returns associated with the sale of common through a conversion-forcing call are statistically insignificant.

Panel F shows that all exchange offers or designated use security sales that increase the bonding of payout of future cash flows result in significantly positive increases in common stock prices. These include stock repurchases and exchange of debt or preferred for common, debt for preferred, and income bonds for preferred. The two-day gains range from 21.9 percent (debt for common) to 1.6 percent for income bonds and 3.5 percent for preferred.¹⁵

The theory predicts that transactions with no cash flow and no change in the bonding of payout of future cash flows will be associated with returns that are insignificantly different from zero. Panel G of table 2 shows that the evidence is mixed; the returns associated with exchange offers of debt for debt are significantly positive and those for designated-use security sales are insignificantly different from zero.

All exchanges and designated-use security sales that have no cash effects but reduce the bonding of payout of future cash flows result, on average, in significant decreases in stock prices. These transactions include the exchange of common for debt or preferred or preferred for debt, or the replacement of debt with convertible debt and are summa-

¹⁵ The two-day returns of exchange offers and self tenders can be affected by the offer. However, if there are no real effects or tax effects, and if all shares are tendered to a premium offer, then the stock price will be unaffected by the offer and its price effects are equivalent to those of a cash dividend. Thus, when tax effects are zero and all shares are tendered, the two-day returns are appropriate measures of the real effects of the exchange. In other cases the correct returns to be used in these transactions are those covering the period from the day prior to the offer announcement to the day after the close of the offer (taking account of the cash payout). See, for example, Rosenfeld (1982), whose results for the entire period are also consistent with the theory.

Table 2
Summary of Two-Day Average Abnormal Stock Returns Associated with the Announcement
of Various Dividend and Capital Structure Transactions^a

Type of Transaction	Security Issued	Security Retired	Average Sample Size	Average Abnormal Return (Percent)	Free Cash Flow Theory		Agreement with Tax Theory
					Predicted Sign	Agreement with Theory?	
A. Dividend changes that change the cash paid to shareholders							
Dividend initiation ¹			160	3.7%	+	yes	no
Dividend increase ²			281	1.0	+	yes	no
Specially designated dividend ³			164	2.1	+	yes	no
Dividend decrease ²			48	-3.6	-	yes	no
B. Security sales (that raise cash) and retirements (that pay out cash) that simultaneously provide offsetting changes in the constraints bonding future payment of cash flows							
Security sale (industrial) ⁴	debt	none	248	-0.2*	0	yes	no
Security sale (utility) ⁵	debt	none	140	-0.1*	0	yes	no
Security sale (industrial) ⁶	preferred	none	28	-0.1*	0	yes	yes
Security sale (utility) ⁷	preferred	none	251	-0.1*	0	yes	yes
Call ⁸	none	debt	133	-0.1*	0	yes	no
C. Security sales that raise cash and bond future cash flow payments only minimally							
Security sale (industrial) ⁴	conv. debt	none	74	-2.1	-	yes	no
Security sale (industrial) ⁷	conv. preferred	none	54	-1.4	-	yes	no
Security sale (utility) ⁷	conv. preferred	none	9	-1.6	-	yes	no
D. Security retirements that pay out cash to shareholders							
Self tender offer ⁹	none	common	147	15.2	+	yes	yes
Open market purchase ¹⁰	none	common	182	3.3	+	yes	yes
Targeted small holdings ¹¹	none	common	15	1.1	+	yes	yes
Targeted large block repurchase ¹²	none	common	68	-4.8	+	no ^b	no ^b

E. Security sales or calls that raise cash and do not bond future cash flow payments								
Security sale (industrial) ¹³	common	none	215	-3.0	-	yes	yes	
Security sale (utility) ¹⁴	common	none	405	-0.6	-	yes	yes	
Conversion-forcing call ¹⁵	common	conv. preferred	57	-0.4*	-	no	yes	
Conversion-forcing call ¹⁵	common	conv. debt	113	-2.1	-	yes	yes	
F. Exchange offers, or designated use security sales that increase the bonding of payout of future cash flows								
Designated use security sale ¹⁶	debt	common	45	21.9	+	yes	yes	
Exchange offer ¹⁷	debt	common	52	14.0	+	yes	yes	
Exchange offer ¹⁷	preferred	common	10	8.3	+	yes	no	
Exchange offer ¹⁷	debt	preferred	24	3.5	+	yes	yes	
Exchange offer ¹⁸	income bonds	preferred	18	1.6	+	yes	yes	
G. Transaction with no change in bonding of payout of future cash flows								
Exchange offer ¹⁹	debt	debt	36	0.6	0	no	no	
Designated use security sale ²⁰	debt	debt	96	0.2*	0	yes	yes	
H. Exchange offers, or designated use security sales that decrease the bonding of payout of future cash flows								
Security sale ²⁰	conv. debt	debt	15	-2.4	-	yes	yes	
Exchange offer ¹⁷	common	preferred	23	-2.6	-	yes	no	
Exchange offer ¹⁷	preferred	debt	9	-7.7	-	yes	yes	
Security sale ²⁰	common	debt	12	-4.2	-	yes	yes	
Exchange offer ²¹	common	debt	81	-1.1	-	yes	yes	

^aReturns are weighted averages, by sample size, of the returns reported by the respective studies. All returns are significantly different from zero unless noted otherwise by *

^bExplained by the fact that these transactions are frequently associated with the termination of an actual or expected control bid. The price decline appears to reflect the loss of an expected control premium.

Source: ¹Asquith and Mullins 1983. ²Charest 1978; Aharony and Swary 1980. ³From Brickley 1983. ⁴Dann and Mikkelsen 1984; Eckbo 1986; Mikkelsen and Partch 1986. ⁵Eckbo 1986. ⁶Linn and Pinegar 1985; Mikkelsen and Partch 1986. ⁷Linn and Pinegar 1985. ⁸Vu 1986. ⁹Dann 1981; Masulis 1980; Vermaelen 1981; Rosenfeld 1982. ¹⁰Dann 1980; Vermaelen 1981. ¹¹Bradley and Wakeman 1983. ¹²Calculated by Smith 1986, table 4, from Dann and DeAngelo 1983; Bradley and Wakeman 1983. ¹³Asquith and Mullins 1986; Kolodny and Suhler 1985; Masulis and Korwar 1986; Mikkelsen and Partch 1986. ¹⁴Asquith and Mullins 1986; Masulis and Korwar 1986; Pettway and Radcliffe 1985. ¹⁵Mikkelsen 1981. ¹⁶Offers with more than 50% debt. Masulis 1980. ¹⁷Masulis 1983. These returns include announcement days of both the original offer and, for about 40 percent of the sample, a second announcement of specific terms of the exchange. ¹⁸McConnell and Schlarbaum 1981. ¹⁹Dietrich 1984. ²⁰Eckbo 1986; Mikkelsen and Partch 1986. ²¹Rogers and Owers 1985; Peavy and Scott 1985; Finnerty 1985.

rized in Panel H. The two-day losses range from 7.7 percent (preferred for debt) to 1.1 percent (common for debt).

In summary, the results in table 2 are remarkably consistent with free cash flow theory which predicts that, except for firms with profitable unfunded investment projects, stock prices will rise with unexpected increases in payouts to shareholders (or promises to do so) and will fall with reductions in payments or new requests for funds from shareholders (or reductions in promises to make future payments). Moreover, the size of the value changes seems to be positively related to the change in the tightness of the commitment bonding the payment of future cash flows. For example, the effects of debt-for-preferred exchanges are smaller than the effects of debt-for-common exchanges.

Tax effects can explain some of the results summarized in table 2, but not all. For example, the exchange of preferred for common, or replacement of debt with convertible debt, has no tax effects and yet is associated with price increases. The last column of table 2 denotes whether the individual coefficients are explainable by pure corporate tax effects. The tax theory hypothesizes that all unexpected changes in capital structure that decrease corporate taxes increase stock prices and vice versa.¹⁶ Therefore, increases in dividends and reductions of debt interest should cause stock prices to fall, and vice versa.¹⁷ Fourteen of the 32 coefficients are inconsistent with the corporate tax hypothesis. Simple signaling effects, where the payout of cash signals the lack of present and future investments promising returns in excess of the cost of capital, are also inconsistent with the results—for example, the positive stock price changes associated with dividend increases and stock repurchases.

If anything, the results in table 2 seem too good, for two reasons. The returns summarized in the table do not distinguish firms that have free cash flow from those that do not have free cash flow, yet the theory says the returns to firms with no free cash flow will behave differently from those which do. In addition, only unexpected changes in cash payout or the tightness of the commitments bonding the payout of future free cash flow should affect stock prices. The studies summarized in table 2 do not, in general, control for the presence or absence of free cash flow or for the effects of expectations. If free cash flow effects are large and if firms on average are in a positive free cash flow position, the predictions of the theory will hold for the simple sample averages.

To see how the agency costs of free cash flow can be large enough to show up in the uncontrolled tests summarized in table 2, consider the

¹⁶ See, however, Miller (1977) who argues that allowing for personal tax effects and the equilibrium response of firms implies that no tax effects will be observed.

¹⁷ Ignoring potential tax effects due to the 85 percent exclusion of dividends received by corporations on holdings of preferred stock.

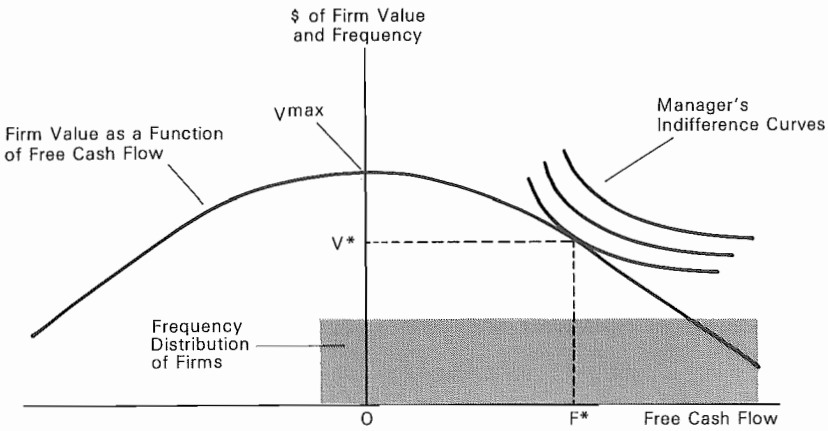


Figure 1

Relation between the level of free cash flow and value of the firm. (F^*, V^*) is the level of free cash flow and firm value that maximizes the manager's utility. When the frequency distribution of firms is as given here, the sample average change in firm value with respect to free cash flow (or the constraints bonding the payout of free cash flow) will be negative.

graph of equilibrium firm value and free cash flow in figure 1. Figure 1 portrays a firm whose manager values both firm value (perhaps because stock options are part of the compensation package) and free cash flow. The manager, however, is willing to trade them off according to the given indifference curves. By definition, firm value reaches a maximum at zero free cash flow. The point (V^*, F^*) represents the equilibrium level of firm value and free cash flow for the manager. It occurs at a positive level of free cash flow and at a point where firm value is lower than the maximum possible. The difference $V_{max} - V^*$ is the agency cost of free cash flow.

Because of random factors and adjustment costs, firms will deviate temporarily from the optimal F^* . The dashed line in figure 1 portrays a hypothetical rectangular distribution of free cash flow in a cross section of firms under the assumption that the typical firm is run by managers with preferences similar to those portrayed by the given indifference curves. Changes in free cash flow (or the tightness of constraints binding its payout) will be positively related to the value of the firm only for the minority of firms in the cross section with negative free cash flow. These are the firms lying to the left of the origin, 0. The relation is negative for all firms in the range with positive free cash flow. Given the hypothetical rectangular distribution of firms in figure 1, the majority of firms will display a negative relation between changes in free cash flow

and changes in firm value. As a result the average price change associated with movements toward (V^* , F^*) will be negatively related to changes in free cash flow.

If the effects are so pervasive that they show up strongly in the crude tests of table 2, the waste due to agency problems in the corporate sector is probably greater than most scholars have thought. This waste is one factor contributing to the high level of activity in the corporate control market over the past decade. More detailed tests of the propositions that control for growth prospects and expectations will be interesting.

Evidence from Going-Private and Leveraged Buyout Transactions

Many of the benefits in going-private and leveraged buyout transactions seem to be due to the control function of debt. These transactions are creating a new organizational form that competes successfully with the open corporate form because of advantages in controlling the agency costs of free cash flow. In 1985, going-private and leveraged buyout transactions totaled \$37.4 billion and represented 32 percent of the value of all public acquisitions.¹⁸ Most studies have shown that premiums paid for publicly held firms average over 50 percent,¹⁹ but in 1985 the premiums for publicly held firms were 31 percent (W. T. Grimm, *Mergerstat Review* 1985).

Leveraged buyouts are frequently financed with high debt; 10:1 ratios of debt to equity are not uncommon, and they average 5.25:1 (Schipper and Smith 1986; Kaplan 1987; and DeAngelo and DeAngelo 1986). Moreover, the use of "strip financing" and the allocation of equity in the deals reveal a sensitivity to incentives, conflicts of interest, and bankruptcy costs. Strip financing, the practice in which investors hold risky nonequity securities in approximately equal proportions, limits the conflict of interest among such securityholders and therefore limits bankruptcy costs. Top managers and the sponsoring venture capitalists hold disproportionate amounts of equity.

A somewhat oversimplified example illustrates the organizational effects of strip financing. Consider two firms identical in every respect except financing. Firm A is entirely financed with equity, and Firm B is highly leveraged with senior subordinated debt, convertible debt, and preferred as well as equity. Suppose Firm B securities are sold only in strips; that is, a buyer purchasing a certain percentage of any security must purchase the same percentage of all securities, and the securities

¹⁸ See W. T. Grimm, *Mergerstat Review* (1985), Figs. 29, 34 and 38.

¹⁹ See DeAngelo, DeAngelo and Rice (1984), Lowenstein (1985), and Schipper and Smith (1986). Lowenstein also mentions incentive effects of debt but argues tax effects play a major role in explaining the value increase.

are "stapled" together so they cannot be separated later. Securityholders of both firms have identical unlevered claims on the cash flow distribution, but organizationally the two firms are very different. If Firm A managers withhold dividends to invest in value-reducing projects or if they are incompetent, the shareholders must use the clumsy proxy process to change management or policies. In Firm B, stripholders have recourse to remedial powers not available to the equityholders of Firm A. Each Firm B security specifies the rights its holder has in the event of default on its dividend or coupon payment; for example, the right to take the firm into bankruptcy or to have board representation. As each security above equity goes into default, the stripholder receives new rights to intercede in the organization. As a result, it is quicker and less expensive to replace managers in Firm B.

Moreover, because every securityholder in the highly leveraged Firm B has the same claim on the firm, there are no conflicts between senior and junior claimants over reorganization of the claims in the event of default; to the stripholder it is a matter of moving funds from one pocket to another. Thus, Firm B will not go into bankruptcy; a required reorganization can be accomplished voluntarily, quickly, and with less expense and disruption than through bankruptcy proceedings.

The extreme form of strip financing in the example is not normal practice. Securities commonly subject to strip practices are often called "mezzanine" financing and include securities with priority superior to common stock yet subordinate to senior debt. This arrangement seems to be sensible, because several factors ignored in our simplified example imply that strictly proportional holdings of all securities is not desirable. For example, IRS restrictions deny tax deductibility of debt interest in such situations and bank holdings of equity are restricted by regulation. Riskless senior debt need not be in the strip because there are no conflicts with other claimants in the event of reorganization when there is no probability of default on its payments.

Furthermore, it is advantageous to have the top-level managers and venture capitalists who promote leveraged buyout and going-private transactions hold a larger share of the equity. Top-level managers on average receive over 30 percent of the equity, and venture capitalists and the funds they represent generally retain the major share of the remainder (Schipper and Smith 1986; Kaplan 1987). The venture capitalists control the board of directors and monitor the managers. Both managers and venture capitalists have a strong interest in making the venture successful because their equity interests are subordinate to other claims. Success requires (among other things) implementation of changes to avoid investment in low-return projects in order to generate the cash for debt service and to increase the value of equity. Finally, when the equity

is held by a small number of people, efficiencies in risk-bearing can be achieved by placing more of the risk in the hands of debtholders, assuming the debt is held in well-diversified institutional portfolios.

Some have asserted that managers engaging in a buyout of their firm are insulating themselves from monitoring. The opposite is true in the typical leveraged buyout, because the venture capitalist is generally the largest shareholder and controls the board of directors. The venture capitalist therefore has both greater ability and greater incentives to monitor managers than directors with little or no equity, who represent diffused shareholders in the typical public corporation.

Leveraged buyouts increased dramatically in the last decade, from \$1.2 billion in 1979, when W. T. Grimm began collecting the data, to \$44.3 billion in 1986. Less than a handful of these management buyouts have ended in bankruptcy, although more have gone through private reorganizations. A thorough test of this organizational form requires the passage of time and recessions.

Evidence from the Oil Industry

The oil industry is large and visible. It is also an industry in which the importance of takeovers in motivating change and efficiency is particularly clear. Therefore, detailed analysis of it provides an understanding of how the market for corporate control helps motivate more efficient use of resources in the corporate sector.

Reorganization of the industry. Radical changes in the energy market from 1973 to 1979 imply that a major restructuring of the petroleum industry had to occur. These changes include the following:

- A tenfold increase in the price of crude oil from 1973 to 1979.
- Reduced annual consumption of oil in the United States.
- Reduced expectations of future increases in the price of oil.
- Increased exploration and development costs.
- Increased real interest rates.

As a result of these changes, the optimal level of refining and distribution capacity and crude reserves fell over this period; as of the late 1970s, the industry was plagued with excess capacity. Reserves are reduced by reducing the level of exploration and development, and it pays to concentrate these reductions in high-cost areas such as the United States. Substantial reductions in exploration and development and in refining and distribution capacity meant that some firms had to leave the industry. Holding reserves is subject to economies of scale, while exploration and development are subject to diseconomies of scale.

Price increases created large cash flows in the industry. For example, 1984 cash flows of the 10 largest oil companies were \$48.5 billion or 28 percent of the total cash flows of the top 200 firms in *Dun's Business*

Month survey.²⁰ Consistent with the agency costs of free cash flow, management did not pay out the excess resources to shareholders. Instead, the oil industry continued to spend heavily on exploration and development even though average returns on these expenditures were below the cost of capital.

Paradoxically, the profitability of oil exploration and drilling activity can decrease even though the price of oil increases, if the value of reserves in the ground falls. This decrease can occur when the price increase is associated with reductions in consumption that make marketing newly discovered oil difficult. In the late 1970s, the increased holding costs associated with higher real interest rates, reductions in expected future oil price increases, increased exploration and development costs, and contrived reductions in current supply (and thus larger future potential flows) combined to make many exploration and development projects uneconomic. The industry, however, continued to spend heavily on such projects.

The hypothesis that exploration and development expenditures by the oil industry were too high during this period is consistent with the findings of McConnell and Muscarella (1985). Their evidence indicates that announcements of increases in exploration and development expenditures by oil companies in the period 1975–81 were associated with systematic *decreases* in the announcing firm's stock price. Moreover, announcements of decreases in exploration and development expenditures were associated with increases in stock prices. These results are striking in comparison with their evidence that exactly the opposite market reaction occurs with increases and decreases in investment expenditures by industrial firms, and SEC evidence that increases in research and development expenditures are associated with increased stock prices.

Additional evidence of the uneconomic nature of the oil industry's exploration and development expenditures is contained in a study by Bernard Picchi of Salomon Brothers (1985). His study of the rates of return on exploration and development expenditures for 30 large oil firms indicated that on average the industry did not earn "even a 10 percent return on its pretax outlays" in the period 1982–84. Estimates of the average ratio of the present value of future net cash flows of discoveries, extensions, and enhanced recovery to expenditures for exploration and development for the industry ranged from less than 0.6 to slightly more than 0.9, depending on the method used and the year. In other words, taking the cost of capital to be only 10 percent on a pretax basis, the industry was realizing on average only 60 cents to 90 cents on

²⁰ See "Cash Flow: The Top 200" (1985).

every dollar invested in these activities. Picchi (1985, emphasis in original) concludes:

For 23 of the companies in our survey, we would recommend *immediate* cuts of perhaps 25%–30% in exploration and production spending. It is clear that much of the money that these firms spent last year on petroleum exploration and development yielded subpar financial returns even at \$30 per barrel, let alone today's \$26–\$27 per barrel price structure.

The waste associated with excessive exploration and development expenditures explains why buying oil on Wall Street was considerably cheaper than obtaining it by drilling holes in the ground, even after adjustment for differential taxes and regulations on prices of old oil. Wall Street was not undervaluing the oil; it was valuing it correctly, but it was also correctly valuing the wasted expenditures on exploration and development that oil companies were making. When these managerially imposed "taxes" on the reserves were taken into account in stock prices, the net price of oil on Wall Street was low. This low price provided incentives for firms to obtain reserves by purchasing other oil companies and reducing expenditures on non-cost-effective exploration. In this way, the capital markets provided incentives for firms to make adjustments that were not effectively motivated by competition in the product markets.

High profits not usually associated with retrenchment. Adjustment by the energy industry to the new environment has been slow for several reasons. First, organizations cannot easily change operating rules and practices that have worked well for long periods in the past, even though they do not fit the new situation. Nevertheless, survival requires that organizations adapt to major changes in their environment.

Second, the past decade has been a particularly puzzling period in the oil business because at the same time that changes in the environment have required a reduction of capacity, cash flows and profits have been high. This condition is somewhat unusual in that the average productivity of resources in the industry increased while the marginal productivity decreased. The point is illustrated graphically in figure 2.

As the figure illustrates, profits plus payments to factors of production other than capital were larger in 1985 than in 1973. Moreover, because of the upward shift and simultaneous twist of the marginal productivity of capital schedule from 1973 to 1985, the optimal level of capital devoted to the industry fell from Q1 to Q2. Thus, the adjustment signals were confused because the period of necessary retrenchment coincided with substantial increases in value brought about by the tenfold increase in the price of the industry's major asset, its inventory of crude oil reserves.

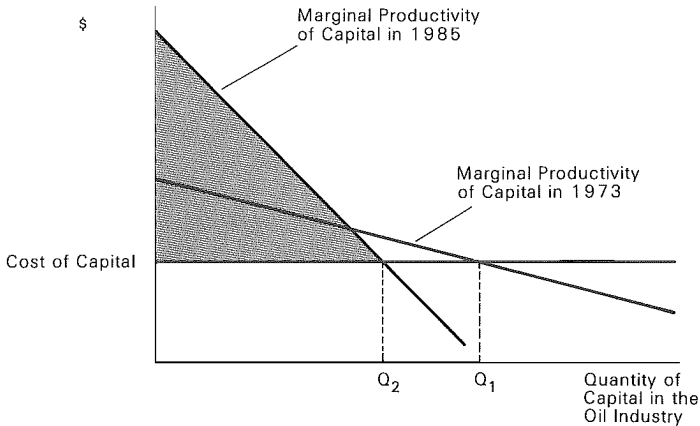


Figure 2

Optimal level of capital in the oil industry prior to 1973, Q_1 , and in 1985, Q_2 . The shaded area represents the profits plus payments to factors of production other than capital earned by the industry in 1985. The shift in the marginal productivity of capital schedule raised the average productivity of capital but reduced the marginal productivity to a level below the cost of capital. As a result profits and cash flow increased, but capital had to leave the industry.

The large cash flows and profits generated by the increases in oil prices both masked the losses imposed by the product markets on marginal facilities and enabled oil companies to finance major expenditures internally. Thus, the normal disciplinary forces of the product market have been weak and those of the capital markets have been inoperative during the entire decade.

Third, the oil companies' large and highly visible profits subjected them to strong political pressures to reinvest the cash flows in exploration and development to alleviate the incorrect, but popular, perception that reserves were too low. Furthermore, while reserves were on average too high, those firms that were substantially short of reserves were spending to replenish them to avoid the organizational consequences associated with reserve deficiencies. The resulting excessive exploration and development expenditures and the considerable delays in retrenchment of refining and distribution facilities wasted industry resources.

In sum, the stage was set for retrenchment in the oil industry in the early 1980s, yet the product and capital markets could not force managements to change their strategy because the industry's high internal cash flows insulated them from these pressures. The fact that oil industry managers tried to invest funds outside the industry is also evidence that they could not find enough profitable projects within the industry to use the huge inflow of resources efficiently. Unfortunately, these efforts

failed. The diversification programs involved purchases of companies in retailing (Marcor by Mobil), manufacturing (Reliance Electric by Exxon), office equipment (Vydec by Exxon), and mining (Kennecott by Sohio, Anaconda Minerals by ARCO, Cyprus Mines by Amoco). These acquisitions turned out to be among the least successful of the last decade, partly because of bad luck (for example, the collapse of the minerals industry) and partly because of a lack of managerial expertise outside the oil industry.

The effects of takeovers. Ultimately the capital markets, through the takeover market, have begun to force managers to respond to the new market conditions. Unfortunately, there is widespread confusion about the important role of takeovers in bringing about the difficult but necessary organizational changes required in the retrenchment.

Managers, quite naturally, want large amounts of resources under their control to insulate them from the uncertainties of markets (Donaldson 1984). Retrenchment requires cancellation or delay of ongoing and planned projects. This adjustment affects the careers of the people involved, and the resulting resistance means such changes frequently do not get made without the major pressures often associated with a crisis. A takeover attempt can create the crisis that brings about action where none would otherwise occur.

T. Boone Pickens of Mesa Petroleum perceived early that the oil industry must be restructured. Partly as a result of Mesa's efforts, firms in the industry were led to merge, and in the merging process they paid out large amounts of capital to shareholders, reduced excess expenditures on exploration and development, and reduced excess capacity in refining and distribution. The result has been large gains in efficiency. Total gains to the shareholders in the Gulf/Chevron, Getty/Texaco and DuPont/Conoco mergers, for example, were over \$17 billion. Much more is possible. Jacobs (1986) estimates total potential gains of approximately \$200 billion from eliminating the inefficiencies in 98 petroleum firms as of December 1984.

Recent events indicate that actual takeover is not necessary to induce the required adjustments:

- The Phillips restructuring plan, brought about by the threat of takeover, involved substantial retrenchment and return of resources to shareholders, and the result was a gain of \$1.2 billion (20 percent) in Phillips' market value. The company repurchased 53 percent of its stock for \$4.5 billion in debt, raised its dividend 25 percent, cut capital spending, and initiated a program to sell \$2 billion of assets.
- Unocal's defense in the Mesa tender offer battle resulted in a \$2.2 billion (35 percent) gain to shareholders from retrenchment and return of resources to shareholders. Unocal paid out 52 percent of

its equity by repurchasing stock with a \$4.2 billion debt issue and will reduce costs and capital expenditures.

- The voluntary restructuring announced by ARCO resulted in a \$3.2 billion (30 percent) gain in market value. ARCO's restructuring involved a 35 percent to 40 percent cut in exploration and development expenditures, repurchase of 25 percent of its stock for \$4 billion, a 33 percent increase in its dividend, withdrawal from gasoline marketing and refining east of the Mississippi, and a 13 percent reduction in its work force.
- The announcement of the Diamond-Shamrock reorganization in July 1985 provides an interesting contrast to the others and further support for the cash flow theory, because the company's market value fell 2 percent on the announcement day. Because the plan results in an effective increase in exploration and capital expenditures and a reduction in cash payouts to investors, the restructuring does not increase the value of the firm. The plan involved reducing cash dividends by 76 cents per share (a cut of 43 percent); creating a master limited partnership to hold properties accounting for 35 percent of its North American oil and gas production; paying an annual dividend of 90 cents per share in partnership shares; repurchasing 6 percent of its shares for \$200 million, selling 12 percent of its master limited partnership to the public; and *increasing* its expenditures on oil and gas exploration by \$100 million per year.

Free Cash Flow Theory of Takeovers

Free cash flow is only one of approximately a dozen theories to explain takeovers, all of which are of some relevance in explaining the numerous forces motivating merger and acquisition activity (Roll forthcoming 1988). The agency cost of free cash flow is consistent with a wide range of previously unexplained data for which there has been no consistent explanation. Here I sketch some empirical predictions of the free cash flow theory for takeovers and mergers and what I believe are the facts that lend it credence.

The positive market response to debt creation in oil and other takeovers (Bruner 1985; Asquith, Bruner and Mullins 1987) is consistent with the agency costs of free cash flow and the control hypothesis of debt. The data are consistent with the notion that additional debt increases efficiency by forcing organizations with large cash flows but few high-return investment projects to pay out cash to investors. The debt helps prevent such firms from wasting resources on low-return projects.

The major benefit of diversification-motivated mergers may be that they involve less waste of resources than if the funds had been invested

internally in unprofitable projects. Acquisitions made with cash or securities other than stock involve payout of resources to (target) shareholders, and this can create net benefits even if the merger creates operating inefficiencies. To illustrate, consider an acquiring firm, A, with substantial free cash flow that the market expects will be invested in low-return projects with a negative net present value of \$100 million. If Firm A makes an acquisition of firm B that generates zero synergies but uses up all of Firm A's free cash flow (and thereby prevents its waste) the combined market value of the two firms will rise by \$100 million. The market value increases because the acquisition eliminates the expenditures on internal investments with negative market value of \$100 million. Extending the argument, we see that acquisitions that have negative synergies of up to \$100 million in current value will still increase the combined market value of the two firms. Such negative-synergy mergers will also increase social welfare and aggregate productivity whenever the market value of the negative productivity effects on the two merging firms is less than the market value of the waste that would have occurred with the firms' investment programs in the absence of the merger.

The division of the gains between the target and bidding firms depends, of course, on the bargaining power of the two parties. Because the bidding firms are using funds that would otherwise have been spent on low- or negative-return projects, however, the opportunity cost of the funds is lower than their cost of capital. As a result, they will tend to overpay for the acquisition and thereby transfer some, if not all, of the gains to the target firm's shareholders. In extreme cases they may pay so much that the bidding firm's share price falls, in effect giving the target shareholders more than 100 percent of the gains. These predictions are consistent with the evidence that shareholders of target companies reap most of the gains from takeovers.

Acquisitions are one way managers spend cash instead of paying it out to shareholders. Free cash flow theory implies that managers of firms with unused borrowing power and large free cash flows are more likely to undertake low-benefit or even value-destroying mergers. Diversification programs generally fit this category, and the theory predicts that they will generate lower total gains. Thus, some acquisitions are a solution to the agency problems of free cash flow while others, such as diversification programs, are symptoms of those problems.

Low-return mergers are more likely to occur in industries with large cash flows whose economics dictate retrenchment. Horizontal mergers (where cash or debt is the form of payment) within declining industries will tend to create value because they facilitate exit: the cash or debt payments to shareholders of the target firm cause resources to leave the industry directly. Mergers outside the industry are more likely to have low or even negative returns because managers are likely to know less

about managing such firms. Oil fits this description, and so does tobacco. Tobacco firms face declining demand as a result of changing smoking habits but generate large free cash flow and have been involved in major diversifying acquisitions recently—for example, the \$5.6 billion purchase of General Foods by Philip Morris. The theory predicts that these acquisitions in nonrelated industries are more likely to reduce productivity, although the positive total gains to buyers and sellers indicate these negative productivity effects are outweighed by the reductions in waste from internal expansion.

Forest products is another industry with excess capacity where acquisition activity is to be found—for example the acquisition of St. Regis by Champion International and Crown Zellerbach by Sir James Goldsmith. Horizontal mergers for cash or debt in such an industry generate gains by encouraging exit of resources (through payout) and by substituting existing capacity for investment in new facilities by firms that are short of capacity. Food industry mergers also appear to reflect the expenditure of free cash flow. The industry apparently generates large cash flows with few growth opportunities. It is, therefore, a good candidate for leveraged buyouts, and these are now occurring; the \$6.3 billion Beatrice leveraged buyout is the largest ever.

The broadcasting industry generates rents in the form of large cash flows from its licenses. This industry also fits the free cash flow theory. Regulation limits the overall supply of licenses and the number owned by a single entity. Thus, profitable internal investments are limited, and the industry's free cash flow has been spent on organizational inefficiencies and diversification programs, making these firms takeover targets. The CBS debt-for-stock exchange and restructuring as a defense against the hostile bid by Turner fits the theory, and so does the \$3.5 billion purchase of American Broadcasting Company by Capital Cities Communications. Completed cable systems also create agency problems from free cash flows in the form of rents on their franchises and quasi-rents on their investment and are likely targets for acquisition and leveraged buyouts. Large cash flows earned by motion picture companies on their film libraries also represent quasi-rents and are likely to generate free cash flow problems. The attempted takeover of Disney and its subsequent reorganization fit the theory. Drug companies with large cash flows from previous successful discoveries and few potential future prospects are also candidates for large agency costs of free cash flow.

The theory predicts that value-increasing takeovers occur in response to breakdowns of internal control processes in firms with substantial free cash flow and organizational policies (including diversification programs) that are wasting resources. It predicts hostile takeovers, large increases in leverage, the dismantling of empires with few economies of scale or scope to give them economic purpose (for

example, conglomerates), and much controversy as current managers object to loss of their jobs or changes in organizational policies forced on them by threat of takeover.

Free cash flow theory predicts that many acquirers will tend to perform exceptionally well prior to acquisition. Empirical evidence from studies of both stock prices and accounting data indicates exceptionally good performance for acquirers prior to acquisition (Magenheim and Mueller 1985; Bradley and Jarrell 1985). This exceptional stock price performance is often associated with increased free cash flow, which is then used for acquisition programs as observed in the oil industry.

Targets will be of two kinds: firms with poor management that have done poorly before the merger, and firms that have done exceptionally well and have large free cash flow that they refuse to pay out to shareholders. Both kinds of targets seem to exist, but more careful study is required. Asquith (1983) finds evidence of below-normal stock price performance for 302 target firms in the 400 days before 20 days prior to the takeover bid. Mandelker (1974) finds negative abnormal performance for target firms in the period from 40 months before until 9 months before the outcome of the merger bid is known. Langetieg (1978) reports significant negative returns in the period from 72 months before until 19 months before the outcome date, but positive abnormal returns in the 19 months preceding the merger date.

The theory predicts that takeovers financed with cash and debt will create larger benefits than those accomplished through exchange of stock. Stock acquisitions do nothing to take up the organizations' financial slack and are therefore unlikely to motivate managers to use resources more efficiently. The recent evidence on takeover premiums is consistent with this prediction.²¹

Stock acquisitions tend to be different from debt or cash acquisitions and are more likely to be associated with growth opportunities and a shortage of free cash flow. They therefore represent a fundamentally different phenomenon from the nongrowth- or exit-motivated acquisitions that have been occurring in the 1980s. Thus, the growth-oriented and conglomerate mergers and acquisitions of the late 1960s and the early 1970s reflect a different phenomenon than that represented by the exit-motivated mergers and acquisitions of the late 1970s and 1980s.

Free cash flow theory predicts that mergers in the same line of activity will show larger profits than diversification mergers. Elgers and Clark (1980) find shareholders of merging firms gain more from conglomerate than non-conglomerate mergers, and Wansley, Lane and Yang (1983) and Asquith and Kim (1982) find no differences in returns for

²¹ See Wansley, Lane and Yang (1987 forthcoming) who find higher returns to targets and to bidders in cash transactions, and Wansley and Fayeze (1986).

conglomerate and non-conglomerate mergers.

Palepu (1986), in the best study to date of the determinants of takeover, finds strong evidence consistent with the free cash flow theory of mergers. He studied a sample of 163 firms acquired in the period 1971–79 and a random sample of 256 firms that were not acquired. Both samples were in mining and manufacturing and were listed on either the New York or the American Stock Exchange. He finds that target firms were characterized by significantly lower growth and lower leverage than the nontarget firms, although there was no significant difference in their holdings of liquid assets. He also finds that poor prior performance (measured by the net of market returns in the four years before the acquisition) is significantly related to the probability of takeover and, interestingly, that accounting measures of past performance such as return on equity are unrelated to the probability of takeover. He also finds that firms with a mismatch between growth and resources are more likely to be taken over. These are firms with high growth (measured by average sales growth), low liquidity (measured by the ratio of liquid assets to total assets), and high leverage, and firms with low growth, high liquidity, and low leverage. Finally, Palepu's evidence rejects the hypothesis that takeovers are due to the undervaluation of a firm's assets as measured by the market-to-book ratio.

The McConnell and Muscarella (1985) finding of positive average market response to announcements of increases in capital expenditure programs in all industries except oil is inconsistent with free cash flow theory. The inconsistency between the results reported in table 2 and in this study could occur because firms that announce changes in capital expenditure programs tend not to have free cash flow. Resolution of these issues awaits more explicit tests.

Free cash flow is only one of the many factors that go into a takeover decision. But the evidence indicates that it is an important factor and that it provides a useful perspective on the conflict.

High-Yield, Non-Investment-Grade ("Junk") Bonds

The past several years have witnessed a major innovation in the financial markets—the establishment of active markets in high-yield bonds. These bonds, rated below investment grade by the bond-rating agencies, are frequently referred to as junk bonds, a disparaging term that bears no relation to their pedigree. High-yield bonds are best viewed as commercial loans that can be resold in secondary markets. They are further evidence of the securitization that has converted formerly illiquid financial claims such as mortgages into marketable claims. Total publicly held high-yield bonds have risen from \$7 billion in 1970 to

\$125 billion in 1986, or 23 percent of the total corporate bond market (Taggart 1986; Drexel Burnham Lambert 1987). By traditional standards these bonds are more risky than investment-grade bonds, and therefore they carry interest rates 3 to 5 percentage points higher than the yields on government bonds of comparable maturity. In an early study, Blume and Keim (1984) find that the default rates on these bonds have been low and the realized returns have been disproportionately higher than their risk.

High-yield bonds have been attacked by those who wish to inhibit their use, particularly in the financing of takeover bids. The invention of high-yield bonds has provided methods to finance takeover ventures similar to those used to finance more traditional ventures. Companies commonly raise funds to finance ventures by selling claims to be paid from the proceeds of the venture; this is the essence of debt or stock issues used to finance new ventures. High-yield bonds used in takeovers work similarly. The bonds provide a claim on the proceeds of the venture, using the assets and cash flows of the target plus the equity contributed by the acquirer as collateral. Similarly, individuals purchase homes using the home plus their down payment as collateral for the mortgage. The structure of this contract offers nothing inherently unusual.

Some might argue that the risk of high-yield bonds used in takeover attempts is "too high." But high-yield bonds are by definition less risky than common stock claims on the same venture since the claims of common stockholders are subordinate to those of the holders of high-yield bonds. Would these same critics argue that the stock claims are too risky and thus should be barred? The risk argument makes logical sense only as an argument that transactions costs associated with bankruptcy or recontracting are too high in these ventures, or that the bonds are priced too high and investors who purchase them will not earn returns high enough to compensate for the risk they are incurring. This overpricing argument makes little sense, however, because there is vast evidence that investors are capable of pricing risks in all sorts of other markets. That they are peculiarly unable to do so in the high-yield bond market is inconceivable.

In January 1986 the Federal Reserve Board issued a new interpretation of its margin rules that restricts the use of debt in takeovers to 50 percent or less of the purchase price. The rule has had little effect on takeovers, because bidders otherwise subject to the constraint have instead used high-yield preferred stock rated below investment grade, which is converted to debt after completion of the acquisition or bridge loans. This rule was apparently motivated by the belief that the use of corporate debt had become abnormally and dangerously high and was threatening the economy. This assessment is not consistent with the

Table 3
Ratio of Debt to Equity as Measured by Nonfinancial Corporations

Year	Book Value	Current Asset Value	Market Value
1961	57.1	41.1	38.5
1962	58.2	42.5	45.6
1963	59.6	44.5	41.7
1964	59.9	45.4	39.8
1965	61.1	46.5	40.0
1966	62.7	47.4	48.4
1967	64.7	48.7	41.3
1968	67.2	50.5	40.2
1969	68.1	50.3	50.3
1970	70.5	50.7	54.7
1971	70.4	50.7	50.0
1972	70.2	50.3	48.1
1973	70.9	48.9	67.7
1974	70.2	43.9	105.2
1975	66.7	41.6	79.5
1976	65.6	41.1	74.2
1977	67.7	41.4	87.6
1978	69.1	41.1	94.8
1979	69.9	39.9	88.7
1980	68.3	37.8	70.0
1981	71.0	38.3	82.7
1982	74.3	40.0	77.7
1983	73.0	40.6	69.2
1984	81.4	46.1	80.5
1985	78.0	46.5	60.8

Source: Board of Governors of the Federal Reserve System.

facts. Table 3 presents measures of debt use by nonfinancial corporations in the United States. The debt-equity ratio is measured relative to three bases: market value of equity, estimated current asset value of equity, and accounting book value of equity measured at historical cost.

Although debt-equity ratios were higher in 1985 than in 1961, they were not at record levels. The ratio of debt to book value of equity reached a high of 81.4 percent in 1984 but declined to 78.0 percent in 1985. Debt-equity ratios in which equity is measured on an historical cost basis are relatively high now because of the previous decade of inflation. The ratio of debt to current asset value of equity, which takes account of inflation, was 50.7 percent in 1970 compared to 46.5 percent in 1985. The market-value ratio rose from 54.7 percent in 1970 to 80.5 percent in 1984 and then plummeted to 60.8 percent in 1985. The 1985 market-value ratio was 44 percentage points below its 1974 peak of 105.2

percent. Thus, the Federal Reserve System's own data are inconsistent with the reasons given for its restrictions on the use of debt.

High-yield bonds were first used in a takeover bid in early 1984 and have been involved in relatively few bids in total. In 1984, only about 12 percent of the \$14.3 billion of new high-yield debt was associated with mergers and acquisitions. The following year, 26 percent of the \$14.7 billion of new high-yield debt was used in acquisitions.²² According to *Mergers & Acquisitions*, 1986 acquisitions-related high-yield debt still represented less than one of every 12 dollars in acquisition value. Nevertheless, high-yield bonds are an important innovation in the takeover field because they help eliminate mere size as a deterrent to takeover. They have been particularly influential in helping to bring about reorganizations in the oil industry.

Historical default rates on high-yield bonds have been low, but many of the bonds are so new that the experience could prove to be different in the next downturn. Various opponents (including executives who desire protection from the takeover market and members of the financial community, such as commercial banks and insurance companies, who want to restrict competition from this new financing vehicle) have backed regulations and legislation to restrict the issuance of high-yield bonds, to penalize their tax status, and to restrict their holding by thrifts, which can now buy them as substitutes for the issuance of non-marketable commercial loans. These proposals are premature, to say the least.

The holding of high-yield bonds by thrifts is an interesting issue. The recent deregulation of the banking and thrift industries presents many opportunities and challenges to the thrifts. Elimination of restrictions on interest paid to depositors has raised the cost of funds to these institutions. Thrifts have also received the right to engage in new activities such as commercial lending. Survival requires thrifts to take advantage of some of these new business opportunities.

The organizational costs of developing commercial lending departments in the 3500 thrifts in the country will be substantial. Thousands of new loan officers will have to be hired and trained. The additional wage and training costs and the bad-debt losses that will be incurred in the learning phase will be substantial. High-yield bonds provide a potential solution to this problem. If part of the commercial lending function could be centralized in the hands of investment bankers who provide commercial loans in the form of marketable high-yield debt, a thrift could substitute the purchase of this high-yield debt for its own commercial lending and thereby avoid the huge investment in such loan departments.

²² Source: Drexel Burnham Lambert, private correspondence with the author, 1987.

Conclusion

Although economic analysis and the evidence indicate that the market for corporate control is benefiting shareholders, society, and the corporation as an organizational form, it is also making life more uncomfortable for top-level executives. This discomfort is creating strong pressures at both the state and federal levels for restrictions that will seriously cripple the workings of this market. In 1985, 1986 and 1987 dozens of bills on this topic were in the congressional hopper, all proposing various restrictions on the market for corporate control. Some proposed major new restrictions on share ownership and financial instruments. Within the past several years the legislatures of numerous states have passed antitakeover laws and the U.S. Supreme Court has recently upheld the Indiana law that prohibits someone who purchases 20 percent or more of a firm's shares without permission of the board of directors from voting those shares unless such approval is granted by majority vote of disinterested shareholders. New York state law now bars the purchaser of even 100 percent of a firm's shares from doing anything with the assets for five years unless permission of the incumbent board is obtained.

This political activity is another example of special interests using the democratic political system to change the rules of the game to benefit themselves at the expense of society as a whole. In this case, the special interests are top-level corporate managers and other groups who stand to lose from competition in the market for corporate control. The result will be a significant weakening of the corporation as an organizational form and a reduction in efficiency.

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Discussion

*Edward J. Frydl**

Does a process of mergers and acquisitions that results in a more leveraged corporate sector strengthen or weaken the economy? Michael Jensen answers this question by using the free cash flow model. This model implies that increased leverage, or other change in financial structure that reduces the free cash flow under management discretion, improves the value of the firm and is therefore of overall economic benefit. Under this view, management refrains from paying out dividends or taking other actions that constrain free cash flow, in order to avoid the discipline of recurrent financing in the capital markets. Furthermore, managers are viewed as less knowledgeable about capital investment opportunities overall than the market at large. In such circumstances, increased leverage, such as that achieved through the substitution of debt for equity, can be of economic benefit through the efficiency gains it brings about.

Jensen does note in passing that potential bankruptcy costs are a counterweight to the benefits of leverage and that highly debt-intensive acquisitions such as management-led leveraged buyouts have yet to be tested by the difficult phase of the business cycle. And he does stop short of claiming that the free cash flow model is a fully sufficient explanation of merger activity. All these qualifications aside, however, the gist of Jensen's message is clear: more corporate leverage brought about by real or potential takeovers is better.

My comments on this line of argument fall into two classes: those that express some doubts about the adequacy of the underlying free

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cash flow model and those that question whether the benefits of leverage implied by that model are the only consequences worth concern.

Is the Free Cash Flow Model Adequate?

Time Series Patterns

In support of the free cash flow model, Jensen has marshalled an impressive array of cross-sectional evidence from unrelated studies. That model, however, appears to be less useful in explaining the most prominent stylized fact of time series data on mergers and acquisitions, the existence of distinct merger waves. Corporate sector cash flow has a cyclical character; merger waves, despite the name, do not. If excess cash flows are generated by relative price swings—a factor cited as important in the oil industry mergers—takeover activity should be more randomly distributed over time.

Indeed, of the four factors that Jensen cites as behind the 1980s merger wave—(1) easier antitrust enforcement, (2) withdrawal of resources from declining industries, (3) deregulation in various sectors and (4) changes in “takeover technology,” including the availability of finance—only the third meshes well with the free cash flow model. The first and last factors, basically changes in behavior at the Justice Department and at investment banks, are, I agree, major causes of the merger wave. But what do they have to do with the excess cash flow of firms? And declining industries, like the poor, we will always have with us. Why are they specific to the 1980s? Yes, the sectoral deregulation of recent years can affect the cash flows of firms and create merger opportunities. But not all deregulations work that way. Some, such as regional banking pacts, lessen a direct constraint on mergers without directly affecting cash flow. Others, such as telephone industry deregulation, lead to divestitures, not mergers.

Managers and Raiders

The free cash flow theory rests on an assumption that profit maximization is systematically violated. In Jensen’s formulation, managers do not maximize the value of the firm but instead optimize a broader utility function that includes free cash flow as an argument. This variable does not enter as a “good” in and of itself, but stands in proxy for something like an easy life in the executive suite. But in any realistic managerial utility function, job security must surely count as an argument. No rational, utility-maximizing manager will willingly turn himself into shark bait. However, the systematic relation between job security and free

cash flow will be negative. And in that case, there is no longer a clear presumption that the manager's optimum differs from the corner solution of profit maximization.

But let us assume that agency costs do introduce a tendency to deviate from the economic optimum. Takeovers are portrayed as a systematic correction to this tendency. At this point a questionable asymmetry gets slipped in: managers have human weakness that leads to deviations from optimum but acquirers always spot value. But why should they? Raiders are not a random sample of the market at large. The recurrence of the same names—Pickens, Posner, Icahn, Goldsmith, and so on—at least suggests that the thrill of the hunt may supplement cold calculation. Once we allow that raiders may have motives beyond maximizing value, presumptions about the benefits of takeovers get murkier. But do not takeovers drive up stock prices? Yes, but maybe raiders overpay. Post-takeover operating profits do not paint so convincing a picture of efficiency gains.

Is More Leverage Better?

From the viewpoint of the free cash flow model, greater leverage is a benefit since it puts management under the whip and promotes efficiency. But there can be negative effects from leverage as well.

Inefficiencies from Leverage

Consider leveraged buyouts. Most of the concern about these deals is that the high degree of debt creates financial risk. But in many examples this has hardly been so. In these leveraged buyouts, asset sales have yielded the new owners rates of return on equity of several hundred percent in very short order, sometimes less than a year. No financial risk here. The realization of operating efficiencies is unlikely to account for such a quick big payoff. Rather, management had a better awareness of the true value of corporate assets than the stock market did. In such circumstances, there may be a problem of fair treatment involved but not a problem of economic efficiency. But, in theory anyway, ready access to leveraged buyout finance could worsen agency-cost inefficiencies. It could induce management to favor investments in projects with backloaded or relatively obscure payoffs that will appear relatively unprofitable to the general market, which will be lacking crucial information. The firm will then be truly undervalued and management can capture the benefits through a leveraged buyout. But the investment projects that maximize the leveraged buyout payoff need not be the best economically.

Macrofinancial Risk

Concerns about the macrofinancial risks of corporate leverage have been expressed scores of ways. I want to make only one minor point along those lines. Takeover finance is a field of competition between commercial banks that lend and investment banks that can arrange funds in securities markets. With commercial banks under general competitive pressures, they are more inclined to be aggressive in this field. Now if the typical bank-financed takeover is the high-payoff leveraged buyout mentioned earlier, there is no problem. To the contrary, it would be one of the least risky loans for banks. But many leveraged buyouts do have a high degree of financial risk. And through bank financing those risks put another weight on the integrity of the deposit base.

As a final point, I feel compelled to defend the honor of the Federal Reserve against some extreme charges on the matter of the application of margin rules to takeover debt financing. Jensen writes: "This rule was apparently motivated by the belief that the use of corporate debt had become abnormally and dangerously high and was threatening the economy." He then cites numbers that show that on a book-value basis, debt-equity ratios are historically high, but on a replacement cost or "market-value" basis they are not. And he concludes: "the Federal Reserve System's own data are inconsistent with the reasons given for its restrictions on the use of debt."

Give us a break! First, Jensen's market-value ratio is really the ratio of book debt to market equity. New York Fed estimates of the market value of debt yield a ratio that does not "plummet" in 1985, a year of falling interest rates. It does not go to a new historical peak, but it remains far above the levels of the 1960s.

Second, if the Fed thought debt was dangerously high and a threat to the economy, I hope it would act with more resolve than through an essentially technical clarification of margin requirements—prompted, I will note, by an inquiry from an interested party to a takeover bid—that restricts financing through a shell operation only to 50 percent debt financing. The action taken was commensurate with the problem perceived. Chairman Greenspan has recently testified that he does not see corporate indebtedness as an immediate threat to the economy.

Third, the use of preferred stock in place of debt in takeover finance complies with the requirement. That this does not apparently restrict takeover activity is a free market decision. I can see no evidence that the intention of the Fed decision was to restrict takeovers. However, the view that preferred stock is the same thing as debt strikes me as bizarre and is reminiscent of the view that perpetual floating-rate notes are really a money market instrument. At a minimum, holders of preferred cannot start bankruptcy actions if dividends are interrupted.

A final comment. At some points I have taken issue with Jensen's findings. But the whole body of his research on takeovers is one of the brighter lights shining on a topic still wrapped in dark emotions. His work has defined the terms of the debate. And for readers with open minds, it has shaken loose some of the blinders of prejudice.