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The Theory of Corporate Finance:
A Historical Overview

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1 INTRODUCTION

Our purpose is to provide a review of the development of the modern theory of corporate finance. Through the early 1950s the finance literature consisted in large part of ad hoc theories. Dewing (1919; 1953), the major corporate finance textbook for a generation, contains much institutional detail but little systematic analysis. It starts with the birth of a corporation and follows it through various policy decisions to its death (bankruptcy). Corporate financial theory prior to the 1950s was riddled with logical inconsistencies and was almost totally prescriptive, that is, normatively oriented. The major concerns of the field were optimal investment, financing, and dividend policies, but little consideration was given to the effect on these policies of individual incentives, or to the nature of equilibrium in financial markets.

The undeveloped state of corporate finance theory also characterized the theory of financial markets in the late 1950s. Portfolio theory had not been developed, and the pricing and other implications of equilibrium in financial markets were largely ignored. The leading book on security analysis, Graham/Dodd (1951), focused on "picking winners" by valuing stocks on the basis of an analysis of the firm's assets, earnings, dividends, and so on. Given little attention were questions such as how those winners are formed into portfolios, or how such analysis could consistently succeed given the widespread competition among investors for undervalued securities.

In the 1950s, fundamental changes in finance began to occur. The analytical methods and techniques traditional to economics began to be applied to problems in finance, and the resulting transformation has been significant. This evolution was accompanied by a change in the focus of the literature from normative questions such as "What should investment, financing, or dividend policies be?" to positive theories addressing questions such as "What are the effects of alternative investment, financing, or dividend policies on the value of the firm?" This shift in research emphasis was necessary to provide the scientific basis for the formation and analysis of corporate policy decisions.

The logical structure of decision-making implies that better answers to normative questions are likely to occur when the decision maker has a richer set of positive theories that provide a better understanding of the consequences of his or her choices. This important relation between normative and positive theories often goes unrecognized. Purposeful decisions cannot be made without the explicit or implicit use of positive theories. You cannot decide what action to take and expect to meet your objective if you

have no idea about how alternative actions affect the desired outcome—and that is what is meant by a positive theory.[1] For example, to choose among alternative financial structures, a manager wants to know how the choices affect expected net cash flows, their riskiness, and therefore how they affect firm value. Using incorrect positive theories leads to decisions that have unexpected and undesirable outcomes.

In reviewing the development of the theory of corporative finance we begin in Section 2 with a brief summary of the major theoretical building blocks of financial economics. The major areas of corporate financial policy—capital budgeting, capital structure, and dividend policy—are discussed in Sections 3 through 5.

2 FUNDAMENTAL BUILDING BLOCKS

The years since 1950 have witnessed the formulation of the major building blocks of the modern theory of financial economics:

Efficient Market Theory—analysis of equilibrium behavior of price changes through time in speculative markets.

Portfolio Theory—analysis of optimal security selection procedures for an investor's entire portfolio of securities.

Capital Asset Pricing Theory—analysis of the determinants of asset prices under conditions of uncertainty.

Option Pricing Theory—analysis of the determinants of the prices of contingent claims such as call options and corporate bonds.

Agency Theory—analysis of the control of incentive conflicts in contractual

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[1]   Jensen (1983) provides an extended discussion of these and other methodological issues.

relations.

The development of a body of theory addressing these questions has evolved over time in roughly this order. Here, we briefly summarize them with emphasis on aspects central to corporate financial policy.

2.1 Efficient Market Theory

The efficient market hypothesis holds that a market is efficient if it is impossible to make economic profits by trading on available information. Cowles (1932) documents the inability of forty-five professional agencies to forecast stock price changes. Other early work in the field by statisticians such as Working (1934), Kendall (1953), and Osborne (1959, 1962) document that stock and commodity prices behave like a random walk, that is, stock price changes behave as if they were independent random drawings. This means that technical trading rules based on information in the past price series cannot be expected to make above-normal returns.

Samuelson (1965) and Mandelbrot (1966) provide the modern theoretical rationale behind the efficient markets hypothesis that unexpected price changes in a speculative market must behave as independent random drawings if the market is competitive and economic trading profits are zero.[2] They argue that unexpected price changes reflect new information. Since new information by definition is information that cannot be deduced from previous information, new information must be independent over time. Therefore, unexpected security price changes must be independent through time if

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[2] Probably the first to characterize pricing in security markets as efficient was Bachelier (1900). Although he anticipated the efficient markets hypothesis and developed models describing the pricing of options and the distribution of price changes, his work went largely unnoticed for over fifty years.

expected economic profits are to be zero. In the economics literature, this hypothesis has been independently developed by Muth (1961). Termed the rational expectations hypothesis, it has had a dramatic impact on macroeconomic analysis.

The efficient markets hypothesis is perhaps the most extensively tested hypothesis in all the social sciences. An important factor leading to the substantial body of empirical evidence on this hypothesis is the data made available by the establishment of the Center for Research in Security Prices (CRSP) sponsored by Merrill Lynch at the University of Chicago. The center created accurate computer files of monthly closing prices, dividends, and capital changes for all stocks on the New York Stock Exchange since 1926 and daily closing prices of all stocks on the New York and American stock exchanges since 1962 [Lorie/Fisher (1964) describe the basic data and its structure.] Consistent with the efficient markets hypothesis, detailed empirical studies of stock prices indicate that it is difficult to earn above-normal profits by trading on publicly available data because it is already incorporated insecurity prices. Fama (1970,1976) provides reviews of the evidence. However the evidence is not completely one-sided; see, for example, Jensen (1978), who provides a review of some anomalies.

If capital markets are efficient, then the market value of the firm reflects the present value of the firm's expected future net cash flows, including cash flows from future investment opportunities. Thus the efficient markets hypothesis has several important implications for corporate finance. First, there is no ambiguity about the firm's objective function: managers should maximize the current market value of the firm. [3]

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[3]   For security holders to prefer value maximization also requires that the firm's investment and financing decisions affect security holder consumption opportunities only through wealth changes.

Hence management does not have to choose between maximizing the firm's current value or its future value, and there is no reason for management to have a time horizon that is too short. Second, there is no benefit to manipulating earnings per share. Management decisions that increase earnings but do not affect cash flows represent wasted effort. Third, if new securities are issued at market prices which reflect an unbiased assessment of future payoffs, then concern about dilution or the sharing of positive net present value projects with new security holders is eliminated. Fourth, security returns are meaningful measures of firm performance. This allows scholars to use security returns to estimate the effects of various corporate policies and events on the market value of the corporation. Beginning with the Fama/Fisher/Jensen/Roll (1969) analysis of the effect of stock splits on the value of the firm's shares, this empirical research has produced a rich array of evidence to augment positive theories in corporate finance. We mention a few of the major recent contributions in each of the broad policy areas discussed in Sections 3 to 5 below.

2.2 Portfolio Theory

Prior to Markowitz (1952, 1959), little attention was given to portfolio selection. Security analysis focused on picking undervalued securities; a portfolio was generally taken to be just an accumulation of these securities. Markowitz points out that if risk is an undesirable attribute for investors, merely accumulating predicted "winners" is a poor portfolio selection procedure because it ignores the effect of portfolio diversification on risk. He analyzes the normative portfolio question: how to pick portfolios that maximize the expected utility of investors under conditions where investors choose among portfolios on the basis of expected portfolio return and portfolio risk measured by the

variance of portfolio return. He defines the efficient set of portfolios as those which provide both maximum expected return for a given variance and minimum variance for a given expected return. His mean-variance analysis provides formal content to the meaning of diversification, a measure of the contribution of the covariance among security returns to the riskiness of a portfolio, and rules for the construction of an efficient portfolio. Portfolio theory implies that the firm should evaluate projects in the same way that investors evaluate securities. For example, there are no rewards or penalties per se associated with corporate diversification. (Of course, diversification could affect value by affecting expected bankruptcy costs and thus net cash flows.)

2.3 Capital Asset Pricing Theory

Treynor (1961), Sharpe (1964), and Lintner (1965) apply the normative analysis of Markowitz to create a positive theory of the determination of asset prices. Given investor demands for securities implied by the Markowitz mean-variance portfolio selection model and assuming fixed supplies of assets, they solve for equilibrium security prices in a single-period world with no taxes.

Although total risk is measured by the variance of portfolio returns, Treynor, Sharpe, and Lintner demonstrate that in equilibrium an individual security is priced to reflect its contribution to total risk, which is measured by the covariance of its return with the return on the market portfolio of all assets. This risk measure is commonly called an assets "systematic" risk. The simplest form of the capital asset pricing model yields the following expression for the equilibrium expected returns, $E(R_j)$, on asset j:

$$E(R_j) = R_F + [E(R_M) - R_F]\boldsymbol{b}_j$$

where R_F is the riskless rate of interest; $E(R_M)$ is the expected return on the market

portfolio of all assets; and $\beta_j = \text{cov}(R_j, R_M)/\sigma^2(R_M)$, the covariance between the return on

asset j and the, market return divided by the variance of the market return, is the measure

of systemic risk of asset j. Thus, asset-pricing theory defines the opportunity cost of

capital for the firm's capital budgeting decisions. Much research has been devoted to

extensions and empirical tests of the model. Jensen (1972) provides a survey of much of

the literature, Roll (1977) offers criticisms of tests of the capital asset pricing model, and

Schwert (1983) provides a survey of size-related deviations of average returns from those

predicted by the capital asset pricing model.[4]

2.4 Option Pricing Theory

The capital asset pricing model provides a positive theory for the determination of

expected returns and thus links today's asset price with expected future payoffs. In

addition, many important corporate policy problems require knowledge of the valuation

of assets which, like call options, have payoffs that are contingent on the value of another

asset. Black/Scholes (1973) provide a key to this problem in their solution to the call

option valuation problem. An American call option gives the holder the right to buy a

stock at a specific exercise price at any time prior to a specified exercise date. They note

that a risk-free position can be maintained by a hedge between an option and its stock

when the hedge can be adjusted continuously through time. To avoid opportunities for

riskless arbitrage profits, the return to the hedge must equal the market risk-free rate; this

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[4]   Alternative valuation models such as the arbitrage pricing model suggested by Ross (1976) or the consumption-based asset pricing model suggested by Breeden (1979) may eventually lead to a better understanding of the structure of security prices and overcome limitations of the capital asset pricing model. However, at this time, each of these models implies that expected returns are related to the contribution of a security to a particular measure of total risk.

condition yields an expression for the equilibrium call price.

Black/Scholes note that if the firm's cash flow distribution is fixed, the option pricing analysis can be used to value other contingent claims such as the equity and debt of a levered firm. In this view the equity of a levered firm is a call option on the total value of the firm's assets with an exercise price equal to the face value of the debt and an expiration date equal to the maturity date of the debt. The Black/Scholes analysis yields a valuation model for the firm's equity and debt. An increase in the value of the firm's assets increases the expected payoffs to the equity and increases the coverage on the debt, increasing the current value of both. An increase in the face value of the debt increases the debtholder's claim on the firm's assets, thus increasing the value of the debt, and since the stockholders are residual claimants, reduces the current value of the equity; An increase in the time to repayment of the debt or in the riskless rate lowers the present value of the debt and increases the market value of the equity. An increase in the variance rate or in the time to maturity increases the dispersion of possible values of the firm at the maturity date of the debt. Since the debtholders have a maximum payment which they can receive, an increase in dispersion increases the probability of default, lowering the value of the debt and increasing the value of the equity. For a review of this literature, see **Smith** (1976, **1979**)[5] and Cox/Ross (1976).

2.5 Agency Theory

Narrowly defined, an agency relationship is a contract in which one or more persons [the principal(s)] engage another person [the agent] to perform some service on

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[5]   Articles reprinted in this volume are highlighted in boldface.

their behalf which involves delegating some decision-making authority. Spence/ Zeckhauser (1971) and Ross (1973) provide early formal analyses of the problems associated with structuring the compensation of the agent to align his or her incentives with the interests of the principal. **Jensen/Meckling (1976)** argue that agency problems emanating from conflicts of interest are general to virtually all cooperative activity among self-interested individuals whether or not it occurs in the hierarchical fashion suggested by the principal-agency analogy.

Jensen/Meckling define agency costs as the sum of the costs of structuring contracts (formal and informal): monitoring expenditures by the principal, bonding expenditures by the agent, and the residual loss. The residual loss is the opportunity cost associated with the change in real activities that occurs because it does not pay to enforce all contracts perfectly. They argue that the parties to the contracts make rational forecasts of the activities to be accomplished and structure contracts to facilitate those activities. At the time the contracts are negotiated, the actions motivated by the incentives established through the contracts are anticipated and reflected in the contracts' prices and terms. Hence, the agency costs of any relationship are born by the parties to the contracting relationship. This means that some individuals) can always benefit by devising more effective ways of reducing them. **Jensen/Meckling** use the agency framework to analyze the resolution of conflicts of interest between stockholders, managers, and bondholders of the firm.

The development of a theory of the optimal contract structure in a firm involves construction of a general theory of organizations. Jensen (1983) outlines the role of agency theory in such an effort. **Fama (1980)** and Fama/Jensen (1983a, b) analyze the

nature of residual claims and the separation of management and risk bearing in the corporation and in other organization forms. They provide a theory based on trade-offs of the risk sharing and other advantages of the corporate form with its agency costs to explain the survival of the corporate form in large-scale, complex nonfinancial activities. They also explain the survival of proprietorships, partnerships, mutuals, and nonprofits in other activities. Since the primary distinguishing characteristic among these organizational forms is the nature of their residual or equity claims, this work addresses the question: What type of equity claim should an organization issue? This question is a natural predecessor to the question of the optimal quantity of debt relative to equity—the capital structure issue—that has long been discussed in finance.

One factor contributing to the survival of the corporation is the constraints imposed on the investment, financing, and dividend decisions of managers by what Manne (1965) calls the market for corporate control. **Jensen/Ruback (1983)** argue that this market is the arena in which alternative management teams compete for the rights to manage corporate resources, with stockholders playing a relatively passive role accepting or rejecting competing takeover offers. In the last ten years, there has been extensive examination of the stock price effects associated with corporate takeovers through mergers, tender offers, and proxy fights. The evidence indicates that successful tender offers produce approximately 30 percent abnormal stock price performance in target firms' shares and 4 percent abnormal stock price performance in bidding firms' shares, while for mergers the numbers are 20 percent and 4 percent. **Jensen/Ruback** provide a review of this literature.

3 CAPITAL BUDGETING DECISIONS

In his 1951 book, *Capital Budgeting,* Dean recommends that the firm make investment decisions by looking to the capital markets for the firm's cost of capital, accepting each project with an internal rate of return that exceeds this market-determined cost of capital. (The internal rate of return is the discount rate at which the present value of the net cash flows equals zero). Subsequently, Lorie/Savage (1955) and Hirshleifer (1958) draw on the earlier analysis of Fisher (1907, 1930) and Lutz/Lutz (1951) to analyze deficiencies in the internal rate of return decision criterion (for example, it can yield decisions that are not unique and it cannot correctly account for a nonflat term structure of interest rates). They offer the net present value criterion for investment decisions as a solution. The net present value rule directs the manager to discount project cash flows at the market-based cost of capital and to accept all projects with positive discounted values. Analysis of the firm's investment decisions has been well understood for so long that now the best discussions are in textbooks [e.g., Brealey/Myers (1981, Part 2)].

The net present value criterion can be implemented in a relatively straightforward manner when the capital market contains traded claims on identical projects, for example, scale-expanding projects. In this case new claims can be priced by observing the prices of existing claims for identical projects. However, for new projects, a theory is required to identify the characteristics of the project that are important in determining the cost of capital. Asset pricing theory identifies those characteristics and the manner in which they determine the project's cost of capital and thus provides a theory for valuing cash flows in capital budgeting under uncertainty.

4 CAPITAL STRUCTURE POLICY

4.1 The Irrelevance Proposition

In 1958, Modigliani/Miller laid an important foundation for a positive theory of financial structure by developing the implications of market equilibrium for optimal debt policy. They demonstrated that given the firm's investment policy and ignoring taxes and contracting costs, the firm's choice of financing policy does not affect the current market value of the firm. [6] Their capital structure irrelevance proposition demonstrates that the firm's choice of financing policy cannot affect the value of the firm so long as it does not affect the probability distribution of the total cash flows to the firm. The Modigliani/Miller irrelevance proposition is a special case of the more general proposition developed by Coase (1960) that in the absence of contracting costs and wealth effects, the assignment of property rights leaves the use of real resources unaffected. For a review of the capital structure irrelevance literature, see **Fama (1978).**

4.2 Toward an Optimal Financing Policy

While Modigliani/Miller (1958) permanently changed the role of economic analysis in discussions of capital structure, their work provides no explanations for the corporate. financing policies observed in practice. The Modigliani/Miller irrelevance proposition tells us that if corporate financing policies affect the value of the firm, they must do so by changing the probability distribution of the firm's cash flows. The cash flow distribution can be affected by the choice of financing policy because there are

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[6]   This basic argument was anticipated by Williams (1938, pp. 72-75).

important tax consequences, or because contracting and agency costs are important, or because there are other important interdependencies between the choice of financing policy and the choice of investment policy.

Taxes The early analysis addressing the normative question "How should the optimal debt/equity ratio be set?" followed the Modigliani/Miller admonition to avoid confusing investment and financing policies. By explicitly holding investment policy fixed, the analysis focuses on other factors that influence net cash flows. Modigliani/Miller (1963) argued that since the corporate profits tax allows the deduction of interest payments in calculating taxable income, the more debt in the capital structure, the lower the corporate tax liability, the higher after-tax cash flows, and the greater the market value of the firm.

Miller (1977), building on the analysis of Farrar/Selwyn (1967) and Black (1973), argues that the tax advantage of debt is exaggerated by considering the corporate profits tax in isolation from personal income taxes. He argues that the corporate tax advantage of debt is offset by personal tax rates on investors' debt income that are higher than tax rates on investors' equity income. In addition, Brennan/Schwartz (1978) also argue that the corporate tax advantage of debt is lower because the interest tax shield is lost if the firm goes through bankruptcy and liquidation. Furthermore, **DeAngelo/Masulis (1980)** argue that substitute tax shields, such as investment tax credits, also reduce the corporate tax advantage of debt.

Bankruptcy Costs   Kraus/Litzenberger (1973) formalize the argument that the corporate tax shield is offset by increased expected bankruptcy costs, to produce a theory of the optimal capital structure. Increases in leverage increase the probability of

bankruptcy and thus increase expected bankruptcy costs. The point at which additional leverage generates an increase in expected bankruptcy costs that just offset the tax subsidy to the incremental debt defines the optimal capital structure.

Bankruptcy costs can take two forms, direct and indirect. **Warner (1977b)** examines the magnitude of the direct bankruptcy costs for a sample of railroad firms. He finds that the expected present value of the out-of-pocket expenses associated with bankruptcy is small relative to the market value of the firm. His analysis avoids many of the problems of previous studies which largely consisted of examinations of personal and small business bankruptcies.

In addition to direct bankruptcy costs, Baxter (1967) argues that there are important indirect costs of bankruptcy. Indirect bankruptcy costs are specific contracting costs which arise because the firm's investment policy and other resource allocation decisions (such as corporate compensation and marketing policies) are not fixed. Indirect costs include lost sales, lost profits, costs associated with restrictions on the firm's borrowing, and higher compensation that managers demand because of higher probability of unemployment. Some of these costs arise because the bankruptcy trustee is an agent of the court and thus has limited incentives to make value-maximizing investment or financing decisions. Good estimates of these costs do not yet exist; but in general, they are unlikely to be trivial.

Agency Costs Conflicts of interest exist among common stockholders, bond-holders, and managers because corporate decisions that increase the welfare of one of these groups often reduce the welfare of the others. **Jensen/Meckling (1976)** use the agency framework to provide a positive analysis of the effects of conflicts of interest

among stockholders, managers, and bondholders on the investment and financing decisions of the firm. They argue that viewing the financial structure problem as one of determining the optimal quantities of debt versus equity is too narrow. More generally the problem involves determining the optimal ownership structure of the firm including the relative quantities of debt and equity held by managers and outsiders as well as the details of the debt (short-term, long-term, public, private, convertible, callable, and the covenants associated with each) and equity (common stock with unrestricted or restricted alienability, the allocation of voting rights, preferred stock, warrants, etc.). At its most general level the capital structure problem involves the determination of the entire set of contracts among stockholders, bondholders, and managers as well as other agents in the nexus of contracts, including customers, employees, lessors, insurers, etc.

Myers (1977) and **Smith/Warner (1979)** provide a detailed analysis of the monitoring and bonding technology for control of the conflict of interest between bondholders and stockholders, demonstrating how observed bond contracts should vary in response to these agency problems. Smith/Watts (1982) examine the control of the conflict between stockholders and managers. They analyze the structure of management compensation contracts focusing on the trade-offs between salaries, stock options, restricted stock, bonus plans, and other frequently observed compensation provisions. Mayers/Smith (1982) analyze corporate insurance purchases and argue that insurance contracts produce an efficient allocation of riskbearing and provide for efficient administration of claims against the corporation.[7]

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[7]   There has been significant research relating the corporate choice of accounting procedures to political pressures and the firm's management compensation and financial policies. For a review of this literature, see Holthausen/Leftwich (1983).

4.3 Corporate Leasing Policy

Leasing is a contractual arrangement in which a firm acquires the services of an asset for a specified time period and therefore is an alternative to purchasing the asset. **Myers/Dill/Bautista (1976)**, Miller/Upton (1976), and Lewellen/Long/McConnell (1976) analyze the corporate leasing decision. As in the original Modigliani/Miller capital structure analysis, when the cash flow distribution is unaffected, leasing policy has no effect on the value of the firm. However, like debt, leasing can affect the firm's cash flows in a number of ways. Given the investment decision, leasing provides an alternative to purchasing that can affect the incidence of taxes and thus after-tax corporate cash flows. When tax rates differ between lessor and lessee, leasing provides opportunities to reduce total tax payments by shifting tax shields to individuals and companies who value them most highly.

Flath (1980) and **Klein/Crawford/Alchian (1978)** in their analyses of the corporate leasing decision explicitly relax the assumption that investment and other resource allocation decisions are fixed. **Flath** analyzes the reduction in contracting costs associated with leasing when the useful life of the asset is significantly longer than the period over which a particular company or individual expects to use the asset. **Klein/Crawford/Alchian** analyze the conditions where it is more efficient to have assets jointly owned rather than independently owned and operated under leasing or other contractual arrangements. They demonstrate that agency costs are reduced when organization-specific assets (assets that are more highly valued within the organization than in their best alternative use) are owned rather than leased.

4.4 Recent Empirical Results Related to Capital Structure Issues

Exchange Offers   **Masulis** (**1980b**, 1983) studies exchange offers. He argues that since the offers are simply a swap of one class of securities for another, the transaction has no effect on the firm's investment policy and thus should have no effect on firm value if the Modigliani/Miller theorem is applicable. He measures the effects on the firm's security prices of a relatively pure financial structure change, providing important evidence on the significance of tax, agency, and other hypotheses. His analysis is supplemented by the McConnell/Schlarbaum (1981) paper on income bonds and **Mikkelson's (1981)** examination of calls of convertible securities. Taken as a whole, the evidence presented in these papers is strikingly inconsistent with the predictions of the Modigliani/Miller proposition. Each of the studies documents statistically significant equity value changes associated with changes in corporate leverage. On average, leverage-increasing events are associated with positive stockholder returns while leverage-decreasing events are associated with negative stockholder returns. The studies also indicate that tax effects alone cannot explain the major results.

Stock Repurchases Evidence on the equity price changes associated with common stock repurchases is consistent with that from exchange offers; leverage-increasing events are generally associated with positive stockholder returns. **Dann (1981)**, Masulis (1980a), and Vermaelen (1981) examine the effect of corporate stock repurchase tender offers on the value of the firm. They find the average premium above the preoffer market price of the stock is approximately 23 percent and the average abnormal return to the nonparticipating stockholders of the repurchasing firms is approximately 15 percent. Vermaelen (1981) finds that when a corporation repurchases

its stock through open market purchases stockholders earn average abnormal returns of approximately 4 percent. In contrast Dann/DeAngelo (1983) and Bradley/Wakeman (1983) examine privately negotiated repurchases from large block stockholders and find that nonparticipating stockholders lose approximately 4 percent in these transactions. One explanation for the stockholder losses in negotiated repurchases as compared with the gains in tender offer and open market repurchases is that they reflect the loss of expected benefits of takeovers to the repurchasing firm, since takeover offers are frequently cancelled at the time of such targeted repurchases.

Security Sales Ibbotson (1975) examines the sale of unseasoned new stock issues between 1960 and 1969 and documents that the issues were offered at an average discount of 11.4 percent relative to their market price one month after issuance. He also finds that after the first month's trading stockholders only earn normal rates of return. Weinstein (1978) examines newly issued corporate bonds, finding that they are underpriced by approximately 0.4 percent at issue. Like unseasoned stock issues, in subsequent months they earn a normal rate of return. **Smith (1977)** documents that underwritten stock offerings for seasoned new issues are underpriced on average between 0.5 percent and 0.8 percent.

Scholes (1972) presents evidence that prices fall roughly 2 percent at secondary common stock offerings and that these price effects are independent of the size of the offering. This evidence along with that of **Smith** documenting the absence of any significant abnormal stock price effect associated with sales of stock through rights offerings indicates that, contrary to much conjecture, the supply schedule of capital to a firm is highly elastic. **Smith** documents significant economies of scale in flotation costs,

and Hansen/Pinkerton (1982) show that flotation costs decline with concentrated stock ownership.

Bond Pricing   Several papers examine the efficiency of corporate bond markets with respect to various events and provide a better understanding of the effects of various policy choices. **Weinstein (1977)** examines bond price changes around the announcement of bond rating changes and concludes that the information reflected in rating changes is fully impounded in bond prices prior to the rating change announcement. **Wakeman (1981)** analyzes reasons for the existence of bond rating agencies even though the information reflected in bond rating changes is already reflected in bond prices. **Ingersoll (1977)** examines the timing of calls of convertible bonds. Although his analysis suggests that these bonds are systematically called at prices significantly above those predicted by his model, the implications for value-maximizing actions by the firm are unsettled. **Warner (1977a)** analyzes a sample of bankrupt railroads, demonstrating that courts deviate from absolute priority in settling claims in reorganization. He establishes that the market prices these firms' bonds to reflect an unbiased assessment of their payoffs in the reorganization process.

5 DIVIDEND POLICY

5.1 The Irrelevance Proposition

In 1961, Miller/Modigliani extended their capital structure analysis to dividend policy. They argue that as long as the probability distribution of the firm's cash flows is fixed and there are no tax effects, the firm's choice of dividend policy leaves the current market value of the firm unaffected. In their analysis, increased dividends are financed by

the sale of new stock. Because the total value of the firm remains constant, the sale of new stock reduces the per share price of the existing shares by an amount equal to the increased dividend per share paid from the proceeds of the sale. This means that for the existing shareholders, there is a one-for-one trade-off between higher expected dividends and lower expected capital gains. Thus, with the probability distribution of cash flows fixed, dividend policy is irrelevant.

Questions regarding (1) why firms pay dividends and (2) the effects of alternative dividend policies when firm cash flow distributions are allowed to vary with dividend policy have been the source of much debate and empirical examination. **Black (1976)** provides a concise summary of the unresolved issues.

5.2 Toward an Optimal Dividend Policy

In determining an optimal dividend policy, an important question is how the market values cash dividends versus capital gains. The Miller/Modigliani dividend proposition demonstrates that if for the marginal supplier there is no differential cost of producing dividends or capital gains and if for the marginal demander there is no differential benefit to dividends or capital gains, then a dollar of dividends and a dollar of capital gains are valued equally. Thus, the "bird-in-hand" argument that dividend policy matters because investors value current dividends more highly than uncertain future capital gains is false. Valuation will be determined by the marginal cost of producing dividends and capital gains; without differential costs of production, preferences will be reflected only in relative quantities of dividends and capital gains, not in the value of firms.

Taxes Brennan (1970) suggests that higher effective tax rates on dividends relative to capital gains will result in higher expected pretax returns on high-dividend stocks of equivalent risk. Miller/Scholes (1978) argue that the tax disadvantage of dividends is reduced by investor's ability to offset dividend income by interest deductions on borrowings, combined with investment of the proceeds from the borrowing in tax-sheltered means of accumulation like life insurance contracts and retirement accounts. Whether this tax reduction mechanism is used by enough investors to affect prices is unknown at this time.[8]

Agency Costs Because dividend payments not financed by new equity sales reduce the asset base securing corporate bonds, bond values can be increased by providing appropriate protection from expropriation through unrestricted dividend payments. **Smith/Warner (1979)** and **Kalay (1982)** analyze the restrictions on dividends specified in corporate bond contracts. They show that through the cash flow identity, dividend and investment policies are interdependent; specifying a lower maximum on dividends imposes a higher minimum on the fraction of earnings retained in the firm. Increased earnings retention, however, imposes overinvestment costs on a firm that expects few profitable projects over the life of the bond. Thus, the theory predicts that an unregulated firm which forecasts recurring profitable future investment projects will set a low maximum on dividends and therefore a high minimum on retentions. This will reduce both the requirements for externally raised equity capital and the associated equity

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[8]   Furthermore, there is an apparent contradiction between the Miller/Scholes analysis of dividends and Miller's (1977) tax-based model of financial structure. The mechanisms which Miller/Scholes apply to avoid taxes on dividends can also be applied to avoid personal taxes on interest income. This apparently eliminates the effective differential tax rates on equity and debt that are the basis of Miller's model. The issue is unresolved as yet.

flotation costs as well as the present value of agency costs.

5.3 Empirical Results Related to Dividend Policy

The analysis of dividend policy has proceeded with a close interaction between theory and empirical tests. A number of authors estimate the direct effects of dividends on security prices. The evidence is mixed. Charest (1978), Ahrony/Swary (1980), **Asquith/Mullins (1983)**, and Brickley (1983) document positive abnormal stock price changes around the announcement date of positive dividend changes. However, these studies are unable to distinguish between price changes caused by information revealed to the market through the dividend changes and price changes caused by a pure dividend effect.

The results of cross-sectional examinations of the effect of dividend yields on expected returns are unsettled. **Litzenberger/Ramaswamy** (1979, **1982**) conclude that higher dividends are associated with higher expected returns; **Black/Scholes (1974)** and **Miller/Scholes (1981)** conclude that higher dividends have no effect on expected returns; and **Long (1978)** concludes that higher dividends are associated with lower expected returns. **Litzenberger/Ramaswamy** argue that their examination of the effect of dividend yield on expected return employs more prior information about corporate dividend policy and thus produces more efficient estimates. **Miller/Scholes** argue that the **Litzenberger/Ramaswamy** procedure introduces bias in estimation, overstating the magnitude of the estimated dividend effect. **Long** examines the Citizens Utilities Corporation, a unique company with two classes of stock which differ only in terms of their dividends and tax treatment: one class receives cash dividends and the other receives stock dividends. The special circumstances of this company provide powerful

controls for potentially confounding differences in investment and financing policies in the usual tests of dividend policy effects. **Long** finds that the class receiving cash dividends is priced at a premium over the class receiving stock dividends.

6 CONCLUSIONS

The finance profession has moved from a largely ad hoc, normatively oriented field with little scientific basis for decision making to one of the richest and most exciting fields in the economics profession. Financial economics has progressed through its stage of policy irrelevance propositions of the 1960s to a stage where the theory and evidence have much useful guidance to offer the practicing financial manager. The theory and evidence are now sufficiently rich that sensible analysis of many detailed problems such as the valuation of contingent claims, optimal bond indenture covenants, and a wide range of contracting problems are emerging. Science has not as yet, however, provided a satisfactory framework for resolving all problems facing the corporate financial officer. Some of the more important unresolved questions are how to decide on: (1) the level of the dividend payment, (2) the maturity structure of the firm's debt instruments, (3) the marketing of the firm's securities (i.e., public versus privately placed debt, rights versus underwritten offerings), and (4) the relative quantities of debt and equity in the firm's capital structure. We expect the frontiers of knowledge in corporate finance to continue to expand. That expansion promises to be rapid over the next decade, and the results of this research will be of great value in solving the practical problems faced by corporate financial officers.

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