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*The Journal of Business*, Vol. 59, No. 4, Part 2: The Behavioral Foundations of Economic Theory. (Oct., 1986), pp. S451-S468.

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*The Journal of Business* is currently published by The University of Chicago Press.

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## Behavioral Rationality in Finance: The Case of Dividends\*

### I. Introduction

As the title suggests, this paper attempts to get to the specifics of the behavioral rationality theme of this conference by focusing on an area in the main core of finance, namely, the demand and supply of dividends, where, by common consent, the essentially "rationalist" paradigm of the field seems to be limping most noticeably. Important and pervasive behavior patterns on both the paying and the receiving ends have despairingly been written off as "puzzles" even by theorists as redoubtable as Fischer Black (see esp. his much-cited 1976 article). Behaviorists have homed in on precisely these same dividend-related soft spots in the current body of theory (see esp. Shefrin and Statman 1984). We seem to have, in sum, an ideal place to look for signs of an imminent "paradigm shift" in the behavioral direction of precisely the kind envisioned by some of the other contributors to this conference.

The dividend-related difficulties and supposed anomalies at issue here are more than just the parochial concern of finance specialists. The

\* Helpful comments on an earlier version of this paper have been received from Nai-fu Chen, Jean-Marie Gagnon, Gur Huberman, Kose John, James Poterba, and especially Melvin Reder.

(*Journal of Business*, 1986, vol. 59, no. 4, pt. 2)

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0021-9398/86/5904-0025\$01.50

Dividends seem a natural area in finance where the introduction of behavioral/cognitive elements might help resolve long-standing anomalies, particularly the seeming failure of supply to adjust to tax-induced price penalties. A closer look at the empirical record, however—particularly at evidence of responsiveness to major structural changes—shows behavior of the aggregates to be less anomalous than conventional handwringing might suggest. Behavioral/cognitive elements, whatever they might contribute to the description of particular microdecisions, do not appear to be essential adjuncts to the basic finance model in the major, comparative static applications for which it was intended.

finance model of the firm, after all, *is* the standard economists' model of the firm, but with some of the components grouped differently. The finance version, focusing on the interaction between the firm and the capital markets, subsumes the details of optimizing output, product pricing, and factor-input combinations into a single intertemporal "transformation function" of current resource inflows to future resource outflows. The firm in finance becomes, as it were, simply an abstract engine that "uses money today to make money tomorrow," as Alfred P. Sloan, that most quintessential of finance-oriented business executives once (almost) described his General Motors Corporation. The firm's objective function, reflecting the specifically intertemporal statement of the firm's problem, must go beyond the familiar rubric of maximizing "profits" to maximizing the net present value of future cash flows. But that is the merest of details.<sup>1</sup> The two models of the firm, the finance model and the price theory model, are variations on a single theme; moreover, the anomalies burdening any one class of users must be of some concern to the other classes as well.

How much concern should they show at this point about our dividend anomalies? Less, I will argue here, after a fresh look at the evidence, than I and others in finance may once have thought (see, e.g., the introduction to Miller and Scholes [1978]). This is not to say that we do not have our share and more of still-unsolved problems. Finance, after all, is one of the newer specialty areas in economics. But I do not see us in such disarray, even on the much-mooted dividend issues, that we must think of abandoning or even drastically modifying the basic economics/finance paradigm on which the field has been built.

The first task of the paper will be to sketch out briefly what the supposed dividend anomalies are all about. Their perception as anomalies will then be shown to a considerable extent to be traceable to a misinterpretation of the basic model, to a misreading of the empirical record, and perhaps also to exaggerated expectations of what our models can hope to accomplish.

## II. The Dividend Anomalies

The dividend anomalies at issue here are mainly tax related. They are instances in which a substantial body of corporate managers, presumably acting on behalf of their shareholders, appears to have been responding or, more precisely, failing to respond over long periods to large and persistent incentives in the tax system.

Recall the essential tax facts. Under U.S. law, the net income of the large, publicly held corporations that are our main concern is first

1. The relation of the two models is discussed at length in Fama and Miller (1972), esp. ch. 3.

subject to tax at progressive rates that quickly reach 46%. Marginal rates at these levels (and higher) were first reached during World War II and have been maintained with only minor changes over the entire period since then. Any dividends paid by the corporation out of its current or accumulated past after-tax earnings are subject to tax (with the inevitable minor exceptions) at the regular progressive rates under the personal income tax.<sup>2</sup> These rates currently peak at 50%, their low point for the postwar era; but the maximum has reached as high as 92% in the years during and immediately following World War II. The dividends received would also be taxable under state income taxes as well.

By contrast, the portion of the after-corporate-tax profits not paid out in dividends, but retained in the firm, is not directly subject to personal income tax.<sup>3</sup> The earnings retained by the corporation may still be reached by the tax system, but by a somewhat more indirect route. The retained earnings increase the value of the shares—or at least that is the presumption in the model whose anomalies are being probed. Should the share subsequently be sold at a price greater than its original cost, the price appreciation will constitute a taxable capital gain. The rates applied to such gains are hard to describe briefly, but, for individual holders, the rates on realized capital gains are never higher than those on ordinary income and are typically lower. For securities owned for more than a minimum holding period—which has varied from 6 months to 1 year in the post-World War II era—the statutory rate on gains has rarely been more than half the regular rates and then only for taxpayers who have triggered one of the minimum-tax provisions that Congress tends to enact in its periods of loophole-closing frenzy. The maximum rate on capital gains was capped for much of the postwar era at 25%, so the maximum gap between the top rate on ordinary income and on capital gains could have been as much as 67 percentage points! Remember, that is for *realized* gains only. Shares not sold during one's lifetime but held for one's estate escape the capital gains tax altogether.

Our tax law, in sum, thus places a substantial penalty on dividends as opposed to retained earnings/capital gains. Why, then, in the face of these penalties, do firms continue to pay them? Before the modern finance model was developed, economists and public finance specialists may have presumed that firms had no better alternative. Invest-

2. For tax years after 1981, the first \$100 of dividends (\$200 on a joint return) could be excluded from income. Special provisions, which expired at the end of 1985, were also made for the dividend reinvestment plans of utilities. Prior to 1936, dividends were exempt from the low, flat-rate normal tax but fully subject to the progressive surtaxes.

3. Small, closely held corporations, but only such, may elect to be taxed as partnerships under subchap. S of the Internal Revenue Code, in which case, no corporate income tax is levied and the entire net profit of the corporation, whether distributed or not, is taxed as ordinary personal income to the shareholders.

ment in projects at declining rates of profitability could proceed until the marginal return on internally financed investments had been driven to equality with the stockholders' after-tax dividend return. But thereafter, paying out the funds and taking the dividend tax hit would dominate further pouring of funds into low-return rat holes. In the finance model, however, there are better alternatives to dividend payouts than wasteful real investments. The technological concavity in the opportunity set imposed by the law of diminishing returns on real investment can be bypassed, as it were, for any one firm by adjoining the essentially linear technology of transactions in securities in well-functioning capital markets. The production function in the finance model of the firm is only weakly concave, not strictly concave.<sup>4</sup>

In such a setting, the firm is pictured as taking any internally generated funds remaining after profitable real investment opportunities have been exhausted and using them not for paying tax-disadvantaged dividends but for the purchase of securities, either its own or those of other firms (or governments). On these financial investments the firm will presumably earn not a rat-hole return but the same market, risk-adjusted return that serves as its own capital budgeting cutoff. The firm's shareholders, moreover, whatever their tax status, would, if they are behaving rationally, also seem to be unanimous in favoring such a strategy.<sup>5</sup> Some of the shareholders, like pension funds and university endowments, are themselves tax exempt and hence have no incentive to shun dividends. But, by the same token, they would seem to have no tax incentive to oppose the efforts of their taxable brethren to improve their lot by transforming the firm's return from fully taxable dividends to untaxed or at least lower-taxed capital gains. It may be a weak-inequality form of unanimity, but it is still unanimity.<sup>6</sup>

4. The critical role of external securities in the dividend supply function was first noted explicitly by Miller and Modigliani (1961). That was indeed a major thrust of their paper, though somewhat obscured perhaps by the more controversial and provocative material on the valuation of shares. Their point, however, is also a fairly direct implication of the standard Fisherian model of the finance firm, as can clearly be seen from the discussion in ch. 2 of Fama and Miller (1972).

5. Not quite. Nothing in our tax law ever seems that clear-cut. Corporations holding shares in other corporations are permitted to exclude 85% of intercorporate dividends received. The effective maximum tax on intercorporate dividends is thus about 7%, which is substantially below the corporate capital gains tax rate. Corporate holdings of shares for investment purposes, however, are predominantly in the form of preferred stocks. Corporate shareholding is worth a mention but is not a major part of the story to be developed here.

6. Another qualification should be entered for the record. Where a firm has adopted a dividend reinvestment plan (DRIP) with a significant price discount (frequently as high as 5%) on the shares acquired, its institutional investors would no longer be neutral between dividends and capital gains but would strongly prefer dividends. By reinvesting the dividends and then immediately selling off the shares so acquired, they pick up a substantial quasi-arbitrage profit. Relative to the issues of concern here, however, DRIP are of too recent an origin and too limited a scope to play any major explanatory role.

Such, then, is the anomaly plaguing the current finance model of the dividend-paying firm. It rests essentially on the belief that firms are systematically failing to benefit their shareholders by converting high-taxed dividends to low-taxed capital gains. Most nonspecialists will suspect that the most likely route for resolving the anomaly is on the cost-of-conversion side. Surely, they will presume, there can be no free lunches in conversions. They will certainly be correct with respect to one of the main financial strategies for conversion suggested by the underlying model, namely, buying the securities of other firms (and governments). It may be instructive, therefore, to get at least that class of distractions out of the way before turning to the more serious issues raised by the other conversion strategy of buying back the firm's own securities.<sup>7</sup>

### **III. The Costs of Avoiding Cash Payouts by Buying Outside Securities**

A first look at the finance model can all too easily lead one to the belief that even investing in government bonds normally would be better (and never worse) for the shareholders than paying out cash dividends. Not so, however. In fact, holding significant amounts of government bonds or other purely financial instruments is not even a feasible alternative for corporations under U.S. tax laws.

The infeasibility is more than just a matter of Internal Revenue Code section 532, which imposes a penalty tax for "improper accumulation of surplus." That provision has indeed been part of the code almost from its inception, and its purpose has been precisely to keep shareholders from avoiding the personal income tax on dividends by piling up cash in the corporation. But few firms have ever been caught in its meshes.<sup>8</sup>

The moral to be drawn from this lack of bite, however, is precisely the opposite of that usually drawn, which is that the section is a tooth-

7. Although the emphasis in this paper will be on the conversion opportunities available to firms, individuals too have methods for converting dividends to capital gains. In principle, as shown in Miller and Scholes (1978), these tactics could make the corporate conversion possibilities redundant; but, in practice, these techniques are likely to be availed of only by the small (but possibly important) minority of stockholders who regularly buy stocks on margin.

8. The penalty will not be invoked if the firm can show that its accumulations have a "valid business purpose," and proving that presents little challenge to even a moderately competent tax lawyer. In the last few years, the Internal Revenue Service has begun to put some additional muscle behind its enforcement efforts and to reach firms substantially larger than had earlier been the case. But the firms affected have all been closely held or at least clearly controlled by a dominant shareholder. No publicly traded firm with widely dispersed ownership (of the kind that the finance model is concerned with) has ever been hit by sec. 532. The similarly motivated personal holding company penalties are also confined to closely held corporations.

less tiger, not even worth mentioning as a deterrent to cutting back on dividends. Clearly, from the section's existence and history we know that both Congress and the Internal Revenue Service are aware of the potential for dividend tax avoidance via corporate hoarding as well as of the steps that would have to be taken to close off that route. That they have not troubled to do so suggests that the route is not being sufficiently traveled to make an effort via section 532 worthwhile.

Section 532 has been rendered largely superfluous for publicly held corporations by another and much more fundamental tax provision, the corporation income tax itself. Under that tax, the interest earned on any government bonds in the corporate hoards would be taxable in principle at the full marginal corporate rate of 46%.<sup>9</sup> Hence any pension fund or other institutional holder offered a choice between receiving an immediate cash dividend or having the corporation invest the cash in government bonds would not be indifferent, or anywhere close to it, even though the institution itself was tax exempt and subject to no tax on either dividends or capital gains. Nor are institutional investors the only body of shareholders disadvantaged when a taxable corporation uses otherwise available funds to purchase securities that those investors could acquire directly. Taxable shareholders can also be hurt if the numbers are such that the front-end bite of the dividend tax on the dollars paid out turns out to be less than the present value of the stream of additional corporate tax payments incurred on the funds invested. Precisely where that boundary lies need not be spelled out in detail. The present concern is simply whether observed corporate dividend behavior can be regarded as anomalous relative to the standard finance model because investment in securities by the firm would be a uniformly or even weakly superior alternative to paying dividends. Merely establishing that a cutoff exists means that the answer is no.<sup>10</sup>

9. The inevitable qualification: the IRS will tolerate a limited amount of stashing away of tax-free investments by "overfunding" the firm's pension fund.

10. The argument in this section about the purely tax disadvantages of financial investment relative to dividends was first made in the finance literature, as far as I am aware, by David Emanuel (1983). Essentially the same point could have been made, though in a less transparent way, in terms of standard finance "capital structure" models. In a so-called before-tax equilibrium world, as in Modigliani and Miller (1963), e.g., any investment in taxable, interest-bearing securities would be "negative leverage" and hence would, *ceteris paribus*, lower the value of the shares. In an "after-tax equilibrium" world, as in Miller (1977), holding of taxable securities by the firm would deprive the tax-exempt and low-bracket shareholders of the "bondholders' surplus" that they could earn with the funds on their own. Investments by corporations in preferred stock of other taxable corporations are less tax disadvantageous to institutional and low-bracket holders than investments in interest-bearing securities, thanks to the 85% exclusion on intercorporate dividends received. Hence the great popularity in recent years of new instruments such as ARPs (adjustable rate preferreds) or MARs (multiple adjustable rate preferreds) as temporary abodes for cash. To the extent, however, that yields adjust and issuers recapture some of the tax benefits, as appears to be the case, the corporate buyers are paying what Scholes, Mazur, and Wolfson (1984) have dubbed an "implicit

To dispose of a dividend-related anomaly by invoking a tax argument is never entirely satisfactory even when, as here, the anomaly itself is tax induced. The dividend policies of firms and individuals today are similar, at least in broad outline, to those found before the present tax system and in countries with tax regimes very different from our own. It is worth emphasizing, therefore, that the tax case against corporate hoarding is offered here in the sense of sufficiency, not necessity. No shortage exists of other costs and drawbacks to a policy of holding securities at the corporate level beyond the liquidity needs of the business. Too much of the benefits would accrue to the firm's creditors, and, more to the point, the treasures might attract raiders, as the story of the Rhine Maidens and their ring reminds us. Indeed, much of the presumed motivation of the acquirers, and certainly much of their rhetoric, in recent highly publicized takeover struggles has focused precisely on getting underproductive assets out of corporate solution and into the hands of the shareholders.<sup>11</sup> Hoarding, in sum, is not a feasible alternative to dividends. With that established, we can turn now to some dividend-conversion strategies available to the firm that make the tax anomaly less easy to shrug off.

#### IV. Share Repurchase and the Supply of and Demand for Dividends

Rather than buy government securities or the securities of other firms, a firm, in this country at least, always has the option of purchasing its own securities.<sup>12</sup> This route can get excess funds out of corporate

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tax" over and above the nominal 7% (i.e.,  $.46 \times .85$ ). For holdings of common stock by corporations, the implicit tax on the dividends is smaller. Some would argue, as we shall see, that it is substantially negative because dividends sell at such a substantial discount. Even if true, however, it would clearly be a self-referencing paradox to imagine every cash-rich dividend-paying corporation to be avoiding payment of dividends by investing in the dividend-paying shares of other cash-rich corporations. Of course, the cash-rich firms could purchase the shares of the cash-poor corporations. Indeed, some, but only some, of the seeming merger wave of recent years has been so motivated. But merger activity that eliminates one firm's securities from the capital markets is perhaps more appropriately treated as real investment than as financial investment. (I have benefited from discussions of these issues with my colleague Gur Huberman but absolve him from responsibility for any errors.)

11. Interestingly enough, the raiders have been zeroing in on hoards of passive investment funds even when held in tax-exempt form in overfunded pension plans; see, e.g., Asinof (1985). For a discussion of some moral hazard problems in overfunding pension plans, see also Ippolito (1985). Recent spin-offs of developed oil field properties into limited partnerships (not subject to corporate income tax) offer additional examples of efforts to get what amounts to passive "investment income" out of corporate form and attendant tax burdens.

12. The qualification is made because the frequently heard, conventional wisdom is that corporate law in Great Britain and in most European countries rules out share repurchase. Perhaps so, if taken literally; but one suspects that there must be other, equivalent tactics that permit a business to reduce in size. In Belgium, the explicit restrictions appear to apply only to self-tenders, not to open-market purchases. In



solution, thus avoiding the class of difficulties just seen but without creating dividends, which are taxable as ordinary income under the personal income tax.

At first sight, the policy of share repurchase may seem to benefit only those shareholders who choose to take the other side of the firm's offer to buy. But that is not so. The policy of share repurchase, like the quality of mercy, is twice blessed. It blesses not only those who sell but also those who do not. In fact, the nonsellers are thrice blessed because their benefit takes the form, not of realized, but of unrealized capital gains.<sup>13</sup> Note also that, when allowance is made for the taxes, stayers under the buy-back plan might be better off than under a dividend plan, even if the firm had to pay the sellers a premium over the market price, as is often the case when the firm tenders for the shares. The gain from nontaxability more than offsets the loss from dilution.<sup>14</sup>

Share repurchase is thus clearly superior to corporate hoarding as a method of transforming current dividends into current capital gains. But it is not a costless alternative to paying dividends. Brokerage fees must be incurred, and, in the case of tenders, often underwriting expenses must be paid as well. Still, transaction costs of this kind seem small when compared with the statutory tax differentials between divi-

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Canada, Jean-Marie Gagnon of Laval University in Quebec, commenting on an earlier version of this paper, notes that share repurchase very definitely is permitted under Canadian law, subject, however, to the standard restrictions on actions damaging to the firm or its creditors. He suspects that a misinterpretation of those restrictions may be the source of the folk belief that share repurchase is somehow illegal.

13. For nonspecialists, perhaps the following numerical example may help sort things out. Suppose, to keep things simple, there were no taxes to complicate calculations, and suppose a firm with 1 million shares outstanding had set aside \$4 million for return to the shareholders. Suppose further that, after it announced the setting aside of \$4.00 per share, the *cum-dividend* price of each share at this time were to be \$44. After the dividend was paid, each shareholder would have \$4.00 in cash plus an *ex-dividend* share worth \$40, *ceteris paribus*. Imagine now that, instead of paying the dividend, the firm had used the same \$4 million to buy 90,909 shares at the predistribution price of \$44. The nonselling shareholders receive no cash, of course, but each of their shares now represents a larger fraction of the firm. In fact, each will be worth \$44 ( $\$40,000,000 \div 909,091$ ). Thus every stockholder winds up with the same net worth of \$44 per share no matter which policy the firm follows in disposing of the cash. The only difference is in how the net worth is divided between cash and shares (a uniform \$4.00 in cash and \$40 in shares for every holder under the dividend route vs. \$44 in cash for the sellers and \$44 in stock for the stayers under the buy-back route).

14. But the premium cannot be set too high or the procedure becomes self-defeating. If everyone tenders and is prorated, the cash distribution is "proportional" and will be treated as a dividend for tax purposes. Under present rules, a reduction in fractional interest in the corporation of 20% or more is required to assure any stockholder that payments received in a share self-tender offer are not deemed to be merely disguised dividends. These restrictions do not apply to open-market repurchases and are moot, of course, even under self-tenders for nontaxable institutional shareholders. But that does not mean that such investors will be indifferent between dividends and self-tenders. A tender offer at a premium above market (but not so far above to get even the taxable holders to tender) may well be better for them than a dividend after all costs have been taken into account.

dends and capital gains. So much so, in fact, that it might be daunting to a behavioral theorist of the firm to venture even a boundedly rational explanation of why dividends continue to be paid (at least by firms other than public utilities).

Remember, however, that in the finance model of the supply of dividends, whose possibly anomalous status is our concern, the tax differentials under the personal income tax do not enter the firm's objective function directly. The managers of large, widely held corporations are not pictured there as solving dividend decision problems by performing "thought experiments," as we here have been doing, about what might or might not be in the best interests of this or that group of the shareholders—though they may well tend to couch their explanations in those terms. Rather, as with constructing any other supply function in the theory of the firm, the managers are assumed to be responding to the signals conveyed to them by market prices. The process is a bit harder to visualize for dividends, perhaps, because the price of dividends relative to capital gains is not quoted directly, as such, in the columns of the *Wall Street Journal*. But that price can be *inferred*, at least within tolerable limits, from the stock prices and dividend yields reported there and from the analyses, formal and informal, performed on that and other relevant data by financial analysts within and outside the firm.

For the finance model of dividend supply to be held anomalous, therefore, or at least as requiring important structural modifications (including, quite possibly, the grafting on of major elements from the behavioral theory of the firm), it would be sufficient (and, in my view, also necessary) to show that the observed market price of dividend return can confidently be placed too far below the observed market price of capital gain return to be plausibly attributed to the likely cost of converting current dividends to current capital gains. The feeling that empirical research has established that dividends have, in fact, long been selling at a substantial discount appears to be the major contributor to the sense of unease within the profession about the status of the model. It is important, therefore, to be clear about what has and what has not been shown about the market price of dividends relative to capital gains.

## V. The Empirical Record

The conventional impression that academic empirical research has shown a large and long-standing price penalty on dividends is perhaps nowhere so neatly capsulized as in a "box score" table added to the last edition of Brealey and Myers's (1984) excellent textbook on corporate finance. Ten separate statistical studies of the average cross-sectional relation between risk-adjusted stock returns and dividend

yields are summarized in the table (p. 348). In eight of the 10 studies, the regression coefficient representing the return premium for dividends—or, equivalently, the price discount for dividends—was substantial both in absolute size (equivalent, say, to an effective “tax differential” on dividends over capital gains of from 25% to as high as 56%) and relative to its reported standard error. There were only two exceptions to the modal result.<sup>15</sup> One was the classic study by Black and Scholes (1974). If the results of the Black-Scholes study had to be expressed as a single point estimate, then it too would have been a dividend discount on the order of 20%. But the essential message of the paper, stressed repeatedly by the authors themselves, was that, with the data and techniques then available, the differential in the weight on dividends relative to capital gains could not be pinned down in size or even in sign.

The other study departing from the general trend was one by Miller and Scholes (1982). In that study, however, our concern was not to provide the best estimate of the dividend coefficient but to show that the dividend coefficient reported in another and very influential study (Litzenberger and Ramaswamy 1979) was sensitive to seemingly small adjustments in the definition of dividend yield used. In addition, and more to the present point, we showed that what Scholes and I called the “short-run measure” of dividend yield used by Litzenberger and Ramaswamy was, for a variety of reasons, inappropriate for measuring the market price obtainable for dividends supplied. On that score, at least, something approaching a consensus has emerged, and virtually all recent cross-sectional empirical work on the dividend issue has relied on so-called long-run measures of dividend yield, in the same spirit as the original Black-Scholes study, though with some improvements in detail.<sup>16</sup>

15. There is even one very small piece of evidence often cited in support of the position that the relative price of dividends may actually be *higher* rather than lower than that of capital gains. This is the case of Citizens' Utility as reported by Long (1978). The company was allowed by the Treasury to issue two classes of shares, one paying cash dividends and the other dividends in stock, with the stock dividend shares convertible to the cash dividend shares. The ratio of the stock dividend to the cash dividend was subject to change (and hence to some uncertainty at the time of purchase). But after making reasonable adjustments, Long concludes that the cash dividend shares were selling at a premium relative to the stock dividend shares. It is difficult, however, to know how much weight to place on observations on a stock so thinly traded. For an updated look at Citizens' Utility that comes to somewhat different conclusions, see Poterba (1985).

16. The use of short-run measures of dividend yield makes a test essentially one of the size of the momentary cum-dividend/ex-dividend (cum-ex) differential. The substantial body of literature attempting to use the direct, cum-ex route to establish the discount for dividends has established that the differential is certainly affected by taxes but that transactions costs, dividend “arbitrage” games, and the distortion of the normal patterns of transactions around ex days make it impossible to draw any reliable inferences about the price of dividends over the longer intervals that are relevant for the supply curve of dividends. For an account of the current state of the cum-ex experiments, see Grundy (1985).

One of the most provocative of these post-Black-Scholes studies is that of Marshall Blume (1980). Blume showed that, looking solely at firms that were actually paying dividends, there did indeed appear to be a substantial average cross-sectional dividend yield premium—an excess return so large, in fact (as Blume noted), as to be beyond plausibility as a compensation for tax differentials. But the cross-sectional scatters showed that the relation between risk-adjusted returns and dividend yields—which, when properly scaled, is the sought-for measure of the market price of dividends—was U-shaped. The market appeared to demand a return premium both from those firms paying the most in dividends and from those paying the least (i.e., zero).

Attempting to account for puzzling extreme observations can sometimes turn up important neglected aspects of the problem under study, and such indeed proved to be the case with Blume's U. Donald Keim (1982) noticed that the firms at the two ends of the U—the zero-dividend firms and the highest-dividend-yield firms—were primarily small companies. What made that observation so interesting was the rapidly building mountain of research on the so-called small-firm effect.

The small-firm effect is the finding, by now amply documented both here and abroad, that small firms, even after adjustment for the standard CAPM-based measures of risk, appear to earn significantly higher rates of return than do large firms (for a recent survey, see Schwert [1983]). These higher returns, moreover, appeared to have a marked seasonal pattern: they occurred mostly in January (Keim 1983). The same was true of the dividend-yield return premiums on each arm of Blume's U. What, therefore, were all the dividend studies measuring? Dividend effects? Small-firm effects? January effects? All the above? None of the above?

Since Keim's work, the focus of empirical research has shifted to seeking more powerful econometric methods for isolating the separate contributions of these effects. The search, however, has yet to produce much in the way of results. This should not be entirely surprising in view of the high degree of collinearity between each of the intertwined effects and between each of them and the CAPM-based risk measure. There is the further complication that the true functional form of the relation between returns and the variables may not be the linear one to which we are effectively restricted. If, then, we happen to turn up a significant coefficient for one or more of our variables, how can we be confident that we are seeing genuine economic contributions and not mere correlations of the variable with residuals induced by the misrepresentation of the functional form?

Until recently, at least, we could hope that these difficulties would someday be overcome and that eventually we would get a sharp enough fix on the market price of dividends to determine whether the

aggregate corporate supply of dividends has really been in long-standing disequilibrium relative to the predictions of the standard, value-maximizing model of the firm. My colleagues Nai-Fu Chen, Bruce Grundy, and Robert Stambaugh (1985), however, have been devoting their not inconsiderable econometric prowess to this task and have reluctantly concluded that the estimating equations are too sensitive even to small variations in the risk measure to establish confidently whether dividends sell at a discount relative to capital gains. We are back to Black and Scholes!

This inconclusiveness is certainly not the best that one could have hoped for; but it is also not the worst. At least, it puts to rest the charge that the corporate sector has systematically failed to respond to the price signals being sent by the market. No clear and steady signal to management to reduce dividends is coming through the noise.<sup>17</sup>

But we can actually do somewhat better than this. We may not be able to say as much as we would like about the long-run equilibrium *price* of dividends, but, as will be shown in Section VI, evidence is accumulating that the *quantity* of dividends brought to market does vary appropriately in response to significant exogenous shocks to demand or supply.<sup>18</sup> After all, comparative statics—explaining and predicting the economy's adjustment to change—is why we build maximizing models in the first place.

## VI. The Response to Shocks

The most promising place to look for experiments testing the dividend supply and demand model is along the fault line between corporate and personal income taxes. While a method of integrating the two taxes that is not open to serious attack on economic or political grounds has

17. If the tax penalty on dividends does not show up in the price of dividends, where can it have gone? The answer to be offered in Sec. VI (and proposed earlier by Black and Scholes, though in somewhat different terms) is that the quantity of dividends supplied has adjusted. The current equilibrium price of dividends, at the intersection of demand and supply, is now not easily distinguished from the price of capital gains, suggesting that the fabled "marginal shareholder" is a tax-exempt institution, or at least someone with a low cost of switching between dividends and capital gains.

18. Soon we may also have at least some indirect evidence as to whether the market for dividends is so far out of equilibrium as to generate substantial arbitraging side flows between "clienteles," i.e., between those who might have high relative demand prices for dividends and those who might have low demand prices. Recent Treasury rulings have permitted one firm, the Americus Trust, to purchase shares of ordinary corporations and reissue them in two pieces, one giving rights (essentially) to the dividends and the other (essentially) to the capital appreciation. The two pieces can be recombined at any time and turned in to the trust for a single underlying share. At present, only two stocks are involved, AT & T and Exxon, but more are promised. A separation of dividends and capital gains has long been available, though less efficiently, via so-called dual funds. The aggregate holdings of all such funds, however, represent only a tiny fraction of corporate shares outstanding.

yet to be found (and, indeed, may not exist), the possibility of switching to a different, more fashionable method of integration is always on the tax policy agenda. When such switches in tax regime are implemented, drastic, order-of-magnitude changes can occur in the relative demand price of dividends, supply price of dividends, or both.

In the United States, such changes in regime have unfortunately (or perhaps fortunately) been rare. A deduction at the corporate level for part of dividends paid was a feature of the recent Treasury tax reform proposals and the subsequent House of Representatives tax reform bill, but it remains unlikely that academic researchers will ever have the benefit of observing that particular comet. Aside from these periodically proposed and usually aborted integration schemes (which would not leave even a trace for an event study) and some trivial relief under the personal income tax such as the flat \$100 dividend exclusion (which, of course, effects no decisions at the margin), I am aware of only one major, detectable change of regime in the United States since the income tax took its modern form during World War I. I refer to the Undistributed Profits Tax of 1936. This now-all-but-forgotten piece of New Deal legislation levied a tax on corporate profits remaining after corporate income taxes (then at a rate of 11% in the top bracket), interest on U.S. government securities, and payment of taxable cash dividends. The rates of the undistributed profits tax were progressive, starting at 7% of undistributed profits and reaching a maximum rate of 27% when 100% of after-tax income was retained.

The tax was in full force for only 2 years, 1936 and 1937. It was still technically on the books in 1938, but by then it had been virtually emasculated (see Rolbein 1939, esp. pp. 221–22, n. 3). During the 2 years of 1936 and 1937, when the cost of not paying dividends was increased so sharply, the flow of cash dividends paid surged dramatically. A study undertaken shortly after the incident, while memories were still fresh, puts the extra flow of dividends (beyond what might normally have been expected at that stage of the business cycle) at about 33 $\frac{1}{3}$ % (see Lent 1948). A collapse of equivalent magnitude occurred in 1938, when the tax was, mercifully, put to death.

Although the episode of the Undistributed Profits Tax exhausts the list of major regime changes in the United States, the set of instructive experiments can be expanded substantially by drawing on experience from abroad. In 1973, for example, Canada abandoned its long-standing policy, common to tax systems adapted from the old British model, of exempting from tax all capital gains and losses (except for brokers and others in the business of dealing in securities). The same Canadian statute also reduced effective tax rates on dividends so that the combined effect (though not uniform across all income levels) amounted on balance to a substantial tipping of the scales in favor of dividend income.

For the period immediately after the shift, Khoury and Smith (1977) report a significant increase in the rate of growth of dividends on the part of a representative sample of Canadian firms. They also find significant differences in the predicted direction between the dividend payout policies before and after the tax change of their Canadian sample, relative to a matched sample of comparable U.S. firms.

In Great Britain, as many as five distinct changes in tax regime can be discerned in the post-World War II era as Labour and Conservative governments alternated their tenure in office (for a detailed description, see Poterba and Summers [1985]). The direction of change in the relative burdens on dividends and capital gains was not always uniform across all income levels; also, dividend responses by firms were inhibited over part of the period by direct controls on dividends.<sup>19</sup> Still, Poterba and Summers are able to document reasonably clear signals of the appropriate kind being sent to management by changes in stock prices in the period following the changes and of an appropriate adaptation of dividend flow to those signals when firms had the freedom to do so.

Although changes in tax regime provide the most dramatic and hence informative experiments, changes in the rate structure, if sudden enough and drastic enough, can be almost as effective. In the United States, for example, the transition of the income tax from a minor nuisance to a major engine of income redistribution was a matter of only a few years. Surtax rates on ordinary income, which would include dividends, surged upward in the mid-1930s and were ratcheted up again during the rearmament period of the late 1930s and the war years of the early 1940s. The adjustments of corporate payout policies (and of individual portfolio strategies) to the new environment was masked for a while by concern with other, even more massive tax effects on corporate profits (notably, those coming from the excess-profits tax and the carryback of postwar losses and unused credits against wartime taxes). But by the early 1950s, the increased reliance on retained earnings by U.S. corporations, compared with their payout practices in the 1920s and early 1930s, was widely noted among economists. In fact, it is worth remembering that the classic dividend study of John Lintner (1956) was undertaken precisely in response to the then-controversial issue of whether there had indeed been a fundamental shift in the corporate propensity to save. Lintner concluded that there had not been a shift. But a subsequent, much more detailed study

19. The United States too has been known to institute dividend controls. Under the Nixon price controls of 1973-74, dividend growth was to be "voluntarily" restricted by firms to 5%. A noticeable bulge in share repurchases occurred during this period. In fact, some cynics regarded the spectacle of leading corporate officials standing at the side of Arthur Burns and calling for voluntary dividend restrictions as a classic example of the Brer Rabbit tactic of pleading not to be thrown into the briar patch.

by John Brittain (1966) showed quite convincingly that a downward shift in corporate dividend payout policies had occurred and that it could not be attributed to any of the proposed explanatory factors other than the change in the tax environment.<sup>20</sup>

Although major tax changes of the kind discussed above are likely to provide the most direct demonstrations of the comparative statics of the finance/dividend model, they are certainly not the only detectable shocks to which the underlying demand curves and supply curves are subject. We seem, in fact, to be undergoing just such a major shock at the moment in the form of a dramatic reduction in the cost of going back and forth between cash and securities.

These costs of getting in and out of cash are important to the model if only because they are presumed to be a major part of what justifies our speaking of a demand curve for dividends. The direct and indirect costs of converting shares to cash, if high enough, create a demand for cash dividends, even on the part of taxable investors, that would support a nonzero equilibrium supply of dividends by the corporate sector. With the coming of discount brokers, however, and with new financial instruments such as Cash Management Accounts that can make a portfolio of stocks the virtual equivalent of a checking account, the liquidity benefits of dividend-paying shares are fast eroding. The demand curve for cash dividends would thus appear to be shifting to the left.<sup>21</sup> Furthermore, casual observation of corporate share repurchase activity (especially, but not only, in connection with well-publicized takeovers and recapitalizations) suggests that supply too is adjusting—but slowly. In the last analysis, it may well be this slowness to adjust, as well as the seemingly endless persistence on both sides of the market of long-outmoded habits of thought about dividends, that is at least partly responsible for the concern within the profession about the predictive power of the underlying model.

Some of what appears to be sluggishness in corporate dividend policies relative to model predictions can be traced to the failure, in the short run, of the model's strong information assumptions. The equilibrium conditions in the model are worked out under essentially "double dummy" rules in which all the players are presumed to know each other's cards. Over the long pull, disclosure policies, both mandatory and voluntary, may make this a reasonable enough approximation. But

20. Poterba and Summers (1985, p. 270) report that the shift in supply first noted by Brittain appears to have been a permanent one. They find no signs in the period after Brittain's study of any return to prewar payout patterns.

21. It was thus somewhat ironic that dividend relief was included among the administration's and the Ways and Means Committee's tax reform proposals. The technological improvements and regulatory changes that have lowered the cost of security transactions by individuals have also done so for corporations. Reductions at that level have reduced the cost of both increasing dividends (by outside finance) and decreasing dividends (by share repurchase) so that the net effect remains unclear.



in the shorter run—and certainly at the time that any single particular dividend in the temporal sequence is under active consideration—management can be presumed to know more than outside investors about the current and immediate prospects of the firm. Under these conditions of asymmetric information, dividend decisions can take on an additional strategic dimension that, on balance, tends to inhibit changes in policy. That inhibition is likely to be particularly strong where, as at present, the objective conditions seem to be suggesting a fall in the demand for dividends. Passing or cutting the dividend has often been taken by the market as a bad-news signal despite the most elaborate educational preparation by the management and its public relations support teams. Many, indeed, are the corporate treasurers who have wished to be the *second* major firm in their industry to slash dividends.

Taking these strategic and information-related elements more formally into the basic model is clearly desirable and is, in fact, currently the focus of much research (for a survey of some recent efforts, see Miller [in press]). But developments of the underlying apparatus in these directions should not be taken as implying any systematic drawing away from the rationality postulate. If anything, signaling models and other models in information economics tend, in some ways, to place even greater demands on the rationality assumption than the valuation models from which they take off.<sup>22</sup>

## VII. Conclusion: What Role for Behavioral Models of Dividends?

The purpose of this paper has been to show that the rationality-based market equilibrium models in finance in general and of dividends in particular are alive and well—or at least in no worse shape than other comparable models in economics at their level of aggregation. The framework is not so weighed down with anomalies that a complete reconstruction (on behavioral/cognitive or other lines) is either needed or likely to occur in the near future.

Having tried to establish that, let me conclude on a more conciliatory note by freely conceding again (see, e.g., Miller 1977, esp. pp. 272–73) that, at the most micro decision level, behavioral/cognitive elements are very much a part of the picture. If the concern is primarily with the fine details of specific cases—as it may well often tend to be in many business school finance classes—they cannot be ignored. It was not a lack of command over standard theoretical tools that led John Lintner (1956) to encapsulize his months of observation of actual dividend

22. The same strong thread of rationality also runs through another and even larger current stream of research in finance, i.e., the literature on agency theory and optimal contracting.

decisions in the neat little behavioral model we have all come to call the Lintner model. (I assume it to be a behavioral model, not only from its form, but because no one has yet been able to derive it as the solution to a maximization problem, despite 30 years of trying!) Nor should we be surprised to find evidence of “satisficing,” “organizational slack,” “rules of thumb,” or “bounded rationality” in the making of individual dividend decisions. Corporate treasurers have many other, and often vastly more important, problems to contend with on a day-to-day basis, particularly in the highly volatile and takeover-jittery capital markets of recent years. The amounts of money involved in a quarterly dividend are typically not large in relation to corporate cash and financing flows (though crises do occasionally arise), and many corporate finance officers find it convenient under normal conditions to defer (or, at least, to pretend to defer) to the judgment of the firm’s directors, who have the technical responsibility for declaring the dividend. Policy reviews and changes do occur, but only fitfully and at a pace that all recently hired M.B.A.’s are bound to regard as maddeningly slow.

The behavioral/cognitive elements in decisions involving dividends (including, perhaps, even some of the cognitive, cash-preference illusions imagined by Shefrin and Statman [1984]) are also likely to loom larger for individual investors who hold modest amounts of stock directly and who, unlike institutional and other large investors, do not rely heavily on professional portfolio advisers. For these investors, stocks are usually more than just the abstract “bundles of returns” of our economic models. Behind each holding may be a story of family business, family quarrels, legacies received, divorce settlements, and a host of other considerations almost totally irrelevant to our theories of portfolio selection. That we abstract from all these stories in building our models is not because the stories are uninteresting but because they may be too interesting and thereby distract us from the pervasive market forces that should be our principal concern.

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*Journal of Law and Economics*, Vol. 28, No. 3. (Oct., 1985), pp. 611-651.

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