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DIVIDEND POLICY AND MARKET VALUATION: A REPLY

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PROFESSOR BAUMOL's comment is essentially directed against the plausibility of our postulate of "symmetric market rationality." This postulate, it will be recalled, was stated as follows:

First, we shall say that an individual trader "imputes rationality to the market" or satisfies the postulate of "imputed rationality" if, in forming expectations, he assumes that every other trader in the market (*a*) is rational in the previous sense of preferring more wealth to less regardless of the form an increment in wealth may take, and (*b*) imputes rationality to all other traders. Second we shall say that a market as a whole satisfies the postulate of "symmetric market rationality" if every trader both behaves rationally and imputes rationality to the market [p. 427].

We went on to show that if market behavior was "rational," in the sense of the above postulate, then dividend policy would have no effect on the current price of shares (in a perfect capital market) even under conditions of uncertainty.¹

Professor Baumol's argument that it is impossible to imagine our postulate holding for real-world capital markets, even in the

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¹ As this reply was going to press, an article by John Lintner appeared ("Dividends, Earnings, Leverage, Stock Prices and the Supply of Capital to Corporations," *Review of Economics and Statistics*, XLIV, No. 3 [August, 1962], 243-69) purporting to prove that dividend policy would count under uncertainty unless all investors had identical anticipations. We should like to take this opportunity, therefore, to remind readers that our proof of the irrelevance of dividend policy under uncertainty was in no way dependent on any such assumption of uniform anticipations. Readers may readily convince themselves of this merely by adding an explicit "investor subscript" to each of the terms in the last paragraph of p. 428; and then carrying through the subsequent proof for each investor in turn.

long run and on the average, rests on three propositions. First, he points out that even if all investors are individually rational, their belief or suspicion that *others* might not be rational and might, in particular, undervalue low payout shares, could lead to a fall in the price of such shares. With this proposition, of course, we have no serious quarrel. We fully recognized that individual rationality might not be sufficient in a world of uncertainty to insure "rational" market valuations. Indeed, as we pointed out at some length (p. 428) it was precisely this difficulty that led us to introduce our postulate in the first place!²

But while we obviously accept the proposition we do have serious reservations about his manner of stating the point. We feel, for example, that his frequent references to the prisoners' dilemma and, even more so, to the farmers' problem may mislead the unwary into thinking that the valuations implied by our postulate are of an unstable, "knife-edge" kind and hence can be dismissed out of hand as being of no empirical significance. Actually, there is nothing whatever in the stock market case that corresponds to the prisoners' joint gain or to the monopoly profit that farmers could earn by a "rational" cartel to exploit the outside

² This is worth some emphasis since we fear that Baumol may not have fully understood our motives for introducing the postulate. Our suspicions on this score are aroused by the opening sentence of his Part II: "Miller and Modigliani go on to maintain that their proposition [i.e., the irrelevance of dividend policy] can be extended to situations which encompass a variety of imperfections provided that investors satisfy a postulate which they label 'symmetric market rationality.'" Actually, of course, "imperfections," either singly or in variety, have nothing to do with the postulate. But we can see how someone who thought they did might be a good deal less concerned than we were (and are) about the prospects for *any* systematic description of stock market behavior if the postulate does not hold even in the long run and on the average.

buyers. And while the farm cartel does represent an inherently unstable solution—in the sense that it pays any rational farmer to increase his own output regardless of whether he regards other farmers as rational or irrational—rational valuation under our postulate corresponds to a stable Nash solution and would tend to be restored when displaced by random shocks.

The second proposition in the Baumol argument is that it is plausible to suppose that rational investors *will* think that other investors will undervalue low payout shares. Here, again, the difference between us is not really a matter of substance, but one of presentation and emphasis. Like Baumol we do not find it hard to visualize chains of circumstances that might lead investors to think that low payout shares will be undervalued by others. The “bird-in-the-hand” argument, after all, is an extremely appealing one and the fallacy in it is difficult to detect.³ Furthermore, as we noted, “growth” stocks (in our sense) are indeed “riskier” than non-growth stocks; and since “growth” stocks tend, on the average, also to be low payout stocks it is easy to imagine the discount for the greater uncertainty of future “growth” opportunities slopping over to low payout shares generally. The trouble is, however, that it is equally easy to construct “plausible” rationalizations that lead to the opposite presumption; or to situations in which low payout shares are sometimes undervalued and sometimes overvalued so that payout counts, but never in any systematic or predictable way. Since the reliable evidence on actual market valuations is still so meager we, at least, did not (and still do not) feel there is much point in dreaming about what form “irrational” valuations were likely to take if they did in fact occur.

Baumol’s third proposition is that, if the fear that others will be irrational leads to an undervaluation of low payout shares, then “there is nothing the individual security purchaser can or should do about it in terms of his own interests. The fact that a

³ See, in the latter connection, Lintner, *op. cit.*, p. 256, n. 30.

share is ‘undervalued’ according to the Miller-Modigliani criterion does not imply that low payout stocks are a bargain which the rational investor should grab up.” Clearly, this is a crucial point. For if it were really the case that nothing could be gained by acquiring the undervalued, low payout shares, then the very concepts of “undervaluation” and “rational valuation” are rendered essentially empty. Certainly, they would be of little interest to the actual investor. Nor would they be of much greater interest to the economist since the market would never be tending toward such rational valuations even in the long run and even as knowledge and sophistication spread. That is, the “equilibrium” that the theory describes, would, at best, be only of the trivial neutral variety.

Unfortunately, Baumol, while recognizing the crucial nature of this point, has failed to analyze it thoroughly. Had he done so, he would have found that the rational investor could in fact gain by acquiring low payout shares *if their undervaluation is at all systematic*. We pointed this out in our paper (see esp. p. 425), but since the matter is apparently not obvious we shall here provide a simple illustration.⁴ In the interests of brevity we shall restrict the discussion to the convenient special case of constant growth rates under certainty (see pp. 421–25) leaving the relatively straightforward but somewhat tedious extension to the stochastic case (along the lines of our proof on pp. 428–29) as an exercise for the interested reader.

Consider two companies with the same assets currently and having identical opportunity to invest in every future period a constant fraction k of their (identical) total profits to yield a rate of return ρ^* . The firms differ only in that one company, say N , re-

⁴ We thought it was obvious because it is implied virtually by the very nature of the present-value operation. The words “capitalization rate” and “market rate of return,” after all, are merely two different ways of looking at the same thing. Hence if one says that the stream of dividends plus capital gains of low payout corporations is capitalized at a higher rate than that of high payout corporations, one is also saying that the market rate of yield is higher on the low payout shares.

tains none of its profits while the other retains k of its profits. Let ρ^* be the market capitalization rate for the (perpetual) stream of dividends in companies paying out all their earnings as dividends and for further convenience assume $\rho_N = \rho^*$. Then, if we let $x_N(0)$ denote the current (and, since $\rho_N = \rho^*$, also the prospective) rate of earnings and dividends per share of company N , its current price per share will be $p_N(0) = x_N(0)/\rho_N$. An investor with A dollars who bought $A/p_N(0)$ shares would have at the end of the first period a total wealth equal to

$$\begin{aligned} & x_N(0) \frac{A}{p_N(0)} + p_N(1) \frac{A}{p_N(0)} \\ &= A \frac{x_N(0)}{p_N(0)} + A \frac{p_N(1)}{p_N(0)} = A [1 + \rho_N], \end{aligned}$$

since $x_N(0)/p_N(0) = \rho_N$ and $p_N(1) = p_N(0)$. Similarly, let $x_R(t)$ be the earnings per share of company R in period t and hence $x_R(t)[1 - k]$ be its dividend per share during that period. If the market's dislike of low payouts were to lead these dividends to be capitalized, not at the rate ρ_N , but at some higher rate ρ_R , the current value of a share in company R would be

$$p_R(0) = \frac{x_R(0) [1 - k]}{(\rho_R - k\rho_N)},$$

where $k\rho_N$ would be the rate of growth of dividends and of price per share (see our pp. 421-24). Hence the terminal value of an investment of A dollars would be

$$\begin{aligned} & x_R(0) [1 - k] \frac{A}{p_R(0)} + p_R(1) \frac{A}{p_R(0)} \\ &= A \frac{x_R(0) [1 - k]}{p_R(0)} + A \frac{p_R(1)}{p_R(0)} \\ &= A (\rho_R - k\rho_N) + A (1 + k\rho_N) \\ &= A [1 + \rho_R]. \end{aligned}$$

Since ρ_R is greater than ρ_N , the rational investor could thus clearly increase his return by switching from high payout shares to undervalued, low payout shares.⁵

Baumol seems to have missed this source

of gain to the rational investor largely because he looked only at a single numerical counterexample of his own contriving without realizing that it represented an extreme, and not very interesting, special case. The peculiar nature of this case and of the *ad hoc* assumptions on which it rests (see n. 7, below) is not readily apparent from Baumol's present text because the numbers are there put down without derivation. But Baumol has explained their derivation to us in the course of an exchange of correspondence and, with his permission, we quote his letter to us exactly:

Consider an investor who has \$100 to invest for ten years, and has two options:

1) a firm which he expects to earn 10 per cent per year, to pay out all earnings in annual dividends (which our investor can put back into bonds at the same rate of return and which is capitalized at 10 times earnings), as compared to

2) a firm with similar earnings prospects which pays nothing out in dividends, and whose value is under-estimated by the market because its shares are valued for the foreseeable future at only 9 times earnings.

In the first firm a \$100 investment will yield him a current capital value respectively at the end of the first, second and third years of \$110.00 and \$121.00, while a \$90 share in the second firm gives him corresponding figures of \$99.00 and \$108.90 which is 90 per cent of the company's true asset values in the three years. It seems to me that our rational investor should be prepared to pay no more than 90 dollars for

⁵ For the sake of completeness, rather than from any belief in their practical importance, certain other possible sources of gain from acquiring undervalued, low payout shares might be mentioned. Payout policies do tend to change over the "life-cycle" of the firm. In particular, payout ratios are likely to rise as new firms mature and their desired rate of growth of assets slackens. Hence, if such firms were undervalued during their low payout years, holders could look forward to a substantial capital gain when the payout rates eventually rose and the discount vanished. Furthermore, even if some company's low payout policy is not likely to be changed of its own accord, a change can be forced on the company. If the discount on low payouts is at all substantial, there is always an incentive for outsiders to buy heavily enough to gain control with a view to raising the payout, eliminating the discount, selling out at the enhanced price and moving on to the next raid.

the share of the second firm, for then either share offers him 10 per cent compounded. That is, he will be neutral as between purchases of the shares of the two firms despite the fact that the market is not expected by him to undervalue the latter company's shares more than it does at present.⁶

The main, though not sole, trouble with this argument is that it works only when the low payout firm pays literally zero dividends. Had Baumol assumed that his low payout firm would distribute some positive fraction of its earnings, no matter how small, he would have seen that it was indeed advantageous to hold the low payout shares in preference to the high payout shares. For example, if the low payout company paid even 20 per cent of its profits in dividends, the shareholder would receive at the end of the first period a dividend of \$2.00 plus a capital gain of \$7.20 (i.e., $[9] [10 - 2] [.10]$) for a total realized rate of return of 10.2 per cent as compared with 10 per cent on the no-retention shares.⁷

All this, of course, is not to say that it is impossible to construct examples in which there is no benefit to holders of low payout shares. Obviously, this can always be done by making the valuation of low payout shares sufficiently "unsystematic," that is, by adjusting the "discount" on low payout shares period by period so as to make the combined dividend plus capital gain per dollar invested come out to any number one pleases. But remember that Baumol is not arguing the possibility of such a result, but rather the *plausibility* that market valuations will have this property!

We would thus conclude that Baumol has not succeeded in his attempt to establish a strong case against the plausibility of our postulate. This does not mean, however,

⁶ Letter from W. Baumol to F. Modigliani and M. Miller, May 5, 1962.

that we think we have established a strong case *for* its plausibility. Actually, as we pointed out in our article and have stressed in this reply, we really do not think it is profitable to approach the problem in "plausibility" terms at all. It may well be true that real world valuations do not conform to our postulate. There is, unfortunately, only one way to find out: by the hard and tedious route of patiently building up the empirical evidence. We can only hope that these comments of Baumol are merely his way of signaling to the profession his intention to enter the field in earnest.

⁷ More generally, let ρ_R^* be the internal rate of return for the low payout firm and, as in Baumol's example, let it have the same value as ρ_N , the rate at which the market capitalizes the current earnings of the no retention firm. Let ρ_R be the rate at which the market capitalizes current earnings for the retaining firm, with $\rho_R > \rho_N$. If the initial earnings are $x_R(0)$ per share, the current price of a share in the retaining firm will be $p_R(0) = x_R(0)/\rho_R$. By reinvesting a fraction k of the current profits the firm's earnings rise to $x_R(0)[1 + k\rho_R^*]$, and hence

$$p_R(1) = \frac{x_R(1)}{\rho_R} = \frac{x_R(0) [1 + k\rho_R^*]}{\rho_R}.$$

Thus the return per dollar invested in the low payout shares will be

$$\frac{p_R(1) + [1 - k]x_R(0)}{\rho_R(0)} - 1 =$$

$$\rho_R^* + (1 - k) [\rho_R - \rho_R^*],$$

which is clearly greater than ρ_R^* , and hence ρ_N , if $\rho_R > \rho_N$.

Note that the rate of return on the low payout share is not equal to the capitalization rate ρ_R as it was in our example above or as it would be in any example in which the only "irrationality" was the market's tendency to vary the capitalization rate with the payout rate. We get this curious result in Baumol's example only because he has slipped in, without stating it or defending its plausibility, the *ad hoc* assumption that the market values shares by capitalizing their *current* earnings.