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INVESTMENT REQUIREMENTS AND DIVIDEND POLICIES—

A Study of Small Indian Cotton Textile Companies : 1961-64

ABSTRACT

The purpose of this investigation is to find out whether investment requirements influence the dividend policies of the small Indian firms within the basic framework of the well-known Lintner Dividend Model, and to estimate the short and long run dividend payout ratios. Our results strongly suggest that the dividend policies of the small Indian cotton textile companies are influenced by their expansion requirements.

INTRODUCTION

The Lintner Dividend[1] model, advanced over a decade ago, has received wide recognition as an important step in our understanding of corporate dividend behaviour, introducing the two useful concepts of Target Dividend Payout Ratio and the Reaction or Adjustment coefficient into the finance literature. Prof. Lintner contends that corporate financial policy is dividend oriented relegating all other considerations, in particular investment needs, into background. While his model provides an excellent point of departure in the quantitative analysis of dividend policies, his conclusions in general are being increasingly called into question. The studies made by Dhyrmes and Kurz [2] and Thomas F. Pogue [3] contain considerable amount of

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empirical evidence on the existence of the influence of investment requirements on dividend policies of American Corporations; this is supported, in a smaller measure, by some studies [4] carried out in the Indian context.

The Lintner Model states, briefly, that companies in general want to pay out in the long run a fixed proportion (Target Payout Ratio) of their current net income, but in view of their well known preference for dividend stability, they adjust only a fraction of the amount indicated by the target ratio whenever their net income changes. Mathematical formulation of his model runs as :

$$D^*_t = r\,P_t \qquad (1)$$

$$\Delta D_t = a + c\,(D^*_t - D_{t-1}) + u_t \qquad (2)$$

$$D_t = a + crP_t + (1-c)\,D_{t-1} + U_t \qquad (3)$$

where D^*_t = The desired long run or the target, amount of dividends.

D_t = Amount of cash paid as dividends during the period t.

ΔD_t = The change in dividend payments during the period t-1 to t.

r = The longrun or target payout ratio.

c = The reaction or adjustment coefficient.

a = The intercept term.

u_t = Random error.

Thus D_t is expressed as a function of P_t, r and c. These two parameters, as elsewhere, are set by a combination of various subjective and objective considerations. Prof. Lintner does not give a sufficient explanation of the manner in which the Target Payout Ratio and the Reaction Coefficient are determined. But we can safely infer that all the relevant factors, in particular, the management's general disposition towards risk and uncertainty, their attitude towards external financing, their policy concerning the pace and mode of business expansion in the light of the goals of the firm, the degree of fluctuations in cash flow etc., are brought to bear on this particular decision. In the case of all those companies governed by conservative management committed to substantially self-financed growth both these parameters will be low in value. For those companies, enjoying stable profits with few inhibitions about external financing 'r' and 'c' will be relatively high. This is what one can elaborate from the two statements above without doubt.

For all appearances [3] is derived from a dynamic model. Nevertheless one cannot ignore the fact that of all the current financial variables only one, P_t, finds a place in the model and as such it can only be, unless suitably enlarged, descriptive of highly static financial policies that recognize changes in just the net income only. What is worse, it essentially belongs to the class of the stock-adjustment models which are no more than forecasting models that artificially collapse the entire underlying structural relation into much smaller dimensions, providing only the minimum of explanation as commonly understood in econometric work.

We must caution that Prof. Lintner gives an elaborate, though unconvincing, explanation for keeping the model as simple as it stands.[5] All that he says reduces to the point that the business community is too naive to understand any kind of reasoning that cannot be epitomised into statements laying down one-to-one correspondence between net income and dividends. As though this is not enough, Prof. Lintner emphasizes time and again that the financial policies are formulated in such a manner as to obviate any need of frequent changes in the values of 'r' and 'c'.

Specifically, much of the criticism of the Lintner model converges on its failure to provide explicitly for the requirements of business expansion and the attendant repercussions on the financial structure of the firm, sweeping under the rug the whole gamut of important and difficult issues in finance.

While Dhrymes and Kurz[6] and Pogue[7] brought out systematic influence of investment requirements on dividend decision, other studies[8] succeeded in this direction to a limited extent. In another study Prof. Kuh, on the basis of his results was led to the conjecture— "Lintner Dividend Model might be inadequate in its formulation for the omission of 'an extremely' important element conditioning the reaction coefficient, the fluctuation of inventories and other current assets and liabilities. To the extent the major fluctuation in asset acquisition arises through variations in inventory levels instead of plant and equipment additions, the dividend decision will be most closely geared to the inventory and other current assets."[9] Further, he adds, "the next step for empirical investigation will be to evaluate reaction coefficients which take into account the Joint Plant and equipment; inventory influence on dividend decisions."

In this study, we propose to test, empirically, the proposition: '*Investment requirements constrain Dividend decision of the firms.*'

Traditional economic theory does not observe any difference between the costs of internal and external sources of funds for financing investment requirements. Hence it argued the independence of investment decisions from other sources of finance. The usual financial texts relying largely on the professed financial practice of the business community, rightly or not, consider internal sources to be cheaper than the other alternative ways of raising funds. In view of this widespread belief, it is natural that firms should, whenever possible, put more reliance on internal financing for their business expansion requirements. This tendency is supposed to be more prevelant with regard to small firms because of their difficult access to the investment market and the prohibitive costs involved on these rare occasions they succeed in locating funds.

In our present study, as already pointed, we seek to establish empirically, without aiming at any elaborate theoretical construct, that investment requirements constrain the dividend decisions. For a start, the present investigation confines itself to the analysis of the dividend decisions of the small Indian cotton textile firms, since an earlier study of large, Indian firms[10] (among them are included many large cotton textile firms) contains considerable amount of evidence of the influence of investment on dividends.

We expect, in line with Kuh and others, an inverse relationship between investment and dividends.

One way of quantifying the proposition is to add, linearly, a variable representing investment requirements to the basic Lintner model. Hence the estimating equation is :

$$D_t = a_1 + a_2P_t + a_3D_{t-1} + a_4\triangle A_t \qquad (4)$$

where $\triangle A_t = A_t - A_{t-1}$: Changes in gross fixed assets in the period t (a proxy for investment)

and all others are defined as earlier.

Prof. Yance[11] pointed out the inconsistency of the intercept term with the main elements of Lintner's theory, hence suggested its suppression; this was supported by Kuh's[12] results as well as some other, empirical studies[13] made specifically to examine its relevance statistically. Hence, in our present study, we constrain the intercept to zero in our estimating equation.

So, our estimation equation is :

$$D_t = a'_2 P_t + a'_3 D_{t-1} + a'_4 \triangle A_t + u_t \qquad (5)$$

The presence of the lagged dependent variable as a regressor will bias the regression coefficients when Ordinary Least Squares (OLS) is used. The alternative, the instrumental variable method, proposed by Liviatan [14] was found to be inferior to OLS by Malinand. [15] The applicability and superiority of 3-pass least squares [16] method and Generalised Least Squares method [17] are not clear in our present case. Hence, we propose to circumvent the difficulties associated with old estimation of equation 5 by making use of the identity :

$$P_{it} = D_{it} + R_{it} \qquad (6)$$

where P_{it} & D_{it} are as defined earlier; and R_{it} represents retained earnings of i^{th} firm in t^{th} period.

Now by substracting both sides of equation (5) from the quantity P_t, we have

$$P_t - D_t = P_t - (a'_2 P_t + a'_3 D_{t-1} + a'_4 \triangle A_t) - u_t$$
$$= b_1 P_t + b_2 D_{t-1} + b_3 \triangle A_t + V_t \qquad (7)$$

where $b_1 = 1 - a'_2 = 1 - Cr$,

$b_2 = -a'_3 = -(1-c)$ and $b_3 = -a'_4$.

This transformation does not seem to lead to any serious problem of estimation ; the standard error of the estimate will change by the quantity $\beta_i \Sigma_{1 \cdot 1} x_1 x_i - \Sigma x_1 y_i$ (where x_i' 's are explanatory variables and Y is the dependent variable) whether upwards or downwards depend on its sign. Similar is the case with R^2. Besides this, there is one-to-one correspondence between the coefficients of equations 5 and 7. So, we propose to estimate equation 7 with OLS and translate its coefficients later as coefficients of our required equation (*i.e.* equation 5) since by doing so we can overcome the difficulties of estimating (5) with OLs technique.

THE DATA AND THE SAMPLE

To start with for this study we consider small cotton textile firms only. The firms whose paid up capital is less than or equal to Rs. one million in the year 1964 are considered as small since the earlier study [18] defines all firms having over Rs. 1 million as large. The data of all such firms, which are listed on stock exchanges, are collected. Among them, those which are not having dividends for atleast 3 years during the period 1960-64 are deleted, with the result our sample consists of 28 firms. The relevant data for these firms are collected from the Bombay Stock Exchange year book for the period 1960-64. Thefi gures were rounded to the nearest thosuand.

All the variables are deflated by total assets to express them as a fraction of a unit of assets. It can be noted, however, the OLS estimates for the data in ratios will be somewhat biased. Apart from this, the error variances of cross-sections will be usually higher than the independent time-series error, hence the significance of each coefficient will be reduced upto some extent. However, it is decided, in this study, to arrive at the required with the help of OLS technique and tolerate the errors.

EMPIRICAL RESULTS

Tables 1.A. and 1.B. show the regression coefficients together with their standard errors, the standard error of the estimate (S) and R^2, obtained for equations of R_t and D_t by applying OLS method. Yet, because of the presence of lagged dependent variable, the estimates of 1.B. may not be reliable, and they are given only for comparison. Hence, analysis of results is done with reference to table 1.A.

In general, the value of R^2 are improved and that of 'S' are reduced, slightly when the basic Lintner Equation is extended.

Investment appears, in three out of four years, with the correct expected sign and is not significantly different from zero for the fourth year. Its coefficients are statistically significant, being more than twice their standard errors. This enables us to draw the conclusion that business expansion requirements do constrain the dividend decisions of small Indian cotton textiles firms as hypothesized.

Incorporation of the investment variable into the basic Lintner Equation does result in a change in the values of the regression coefficients, as is to be expected. The short-run marginal dividend payout ratio registers, in general, a considerable increase (from 0.15 to 0.17) and consequently, brings down the value of reaction coefficient from 0.45 to 0.39. For a similar reason the target or long-run payout ratio shows a noticeable increase (from 0.35 to 0.45) in its value. These results are in line with those obtained in the case of large Indian companies: the short and long-run dividend payout ratios of the basic Lintner equation are biased downwards and the reaction coefficients are biased upwards.

SMALL *VS* LARGE COMPANIES

It was mentioned earlier that the small companies are obliged to be much more self-reliant in financing their business expansion than large firms. If this is true, the relevant parameters of the small firms must be different from those of the large firms. We shall examine this point in this section from the data available in India and elsewhere. as presented in Table II.

TABLE II

Comparison of Short & Long-run Payout Ratios and Reaction Coefficients

Model	*Parameter*	*Small Indian Companies*	*Large Indian companies*	*Canadianb*	*U.S.A.C.*	*U.K. Small firms*
Extended Lintner Model.	Short run payout ratio.	0·17	0·20	0·44	N.A.	N.A.
Basic Lintner Model	Cr	0·15	0·18	0·35	0·22	0·14
Extended Lintner Model	Target payout ratio	0·45	0·63	0·71	N.A.	N.A.
Basic Lintner Model	r	0·35	0·50	0·57	Model 40·41 0·60	0·34
Extended Lintner Model	Reaction coefficient	0·39	1/3	0·62	N.A.	N.A.
Basic L.D.	c.	0·45	1/3	0·61	0·50	0·41

Sources : (*a*) J· Purnanandam : "Dividends in Large Indian Companies" (Unpublished Ph. D. thesis, 1969)
(*b*) David Smith : "Corporate Savings Saving Behaviour", The Canadian Journal of Economics & Political Science, Aug. '63.
(*c*) Kuh, E: "Capital Stock Growth: A Micro Econometric Approach", North Holland Publishing Co., 1963.
(*d*) Bates, J. and Henderson, S.J.: "The Determinants of Corporate Saving in Small Private Companies in Britain, 1954-56", The J. of the R.S.S., Vol. 130, 1967.

From table II, it appears that small firms, on the average, have a much lower target payout ratio (0.45) than large Indians firms (0.63), as expected in view of their greater need for self financing. Similarly, the short run payment ratio of the small firms is smaller (0.17) than that of the large firms (0.20). However, the average reaction coefficient is about the same, 1/3, for both the small and large Indian firms; this means that the small firms, having set lower short and long run payout ratios, low enough to plough back all the money required for their planned physical expansion, do not find it necessary to reduce their reaction coefficient still further. All in all, small firms behave differently from the large ones, consistent with our expectations, emphasizing the need for substantive studies of small company behaviour. This point is further confirmed by the U.S.[19] and Canadian[20] large company estimates.

Although strictly comparable results for Canada, U.S.A. and U.K.[21] are not available, we will now try to observe whether small Indian firms are behaving differently from the firms belonging to those countries on the basis of available results. The required figures for this comparison are also presented in table II.

It appears that the small Indian companies pay out less, both in the short run (0.17) and long run (0.45) than the Canadian manufacturing companies, 0.44 and 0.71 respectively. Similarly the reaction coefficient of the Canadian companies (0.62) is higher than the 0.39 of the small Indian companies. It may be noted that Prof. David Smith analysed only the aggregate time series data of manufacturing sector and as such may be taken as description of both the small and large Canadian companies.

In the case of U.S.A., Prof. Kuh gives the results of his analysis of capital goods producing and so apparently large, companies using the basic Lintner equation. His estimates for the U.S. companies are higher than those of the small Indian companies: short-run and long-run dividend payout ratios of firms in U.S. are 0.22 and 0.50, while the corresponding Indian estimates for small companies using the basic Lintner equation are smaller at 0.15 and 0.35 respectively. Similarly the average reaction coefficient for U.SA. is 0.50 while that of the Indian small companies is 0.45.

We have to caution that the Indian estimates are derived from cross-section analysis while the Canadian and U.S.A. figures are derived from the analysis of time series data and these two methods rarely yield the same results. With this reservation in mind we can conclude that small companies pay out less, both in the short and long-run, than large companies, consistent with what is generally known about corporate financial behaviour.

Professors Bates and Henderson investigated the saving behaviour of small companies in the U.K. making use of cross-section analysis. They use the estimating equation given earlier by Dobrovolsky[22] which is similar to that of Lintner except that Dobrovolsky expresses all his variables as a percentage of net worth. (It may be recalled that our variables are expressed as percentage of total assets to facilitate cross-section analysis though using the Lintner model). The small companies in India and U.K. appear to behave in a similar manner: the U.K. short-run, long-run payout ratios and the reaction coefficient, respectively, are 0.14, 0.34 and 0.41 while the Indian figures, as already mentioned, are 0.15, 0.35 and 0.45 respectively. While we do not read much into the remarkaby close correspondence between the U.K. and Indian figures, we may safely infer that these estimates, though derived from different environments, do reflect the common concern of small companies anywhere to be largely self-reliant in financing their business expansion programmes.

Finally, we should draw attention to a rather large scale study of the small company saving behaviour in U.S.A. by John Korbel [23]. Though he analyses 6 years data of about 600 small Wisconain companies using 5 estimating equation with different dependent variables, no clear picture emerges in the end. However, in the Lintner type estimating equation, with dividends as the dependent variable and previous year's dividends as one of the regressors, investment both in fixed and current assets appears statistically significant : 0.002735 with a 't' value of 2.3. It will be noted that though significant, (the investment variable) its magnitude is much less than that of the small Indian firms.

However, the Korbel result mentioned above is strongly suspectable. The coefficient of the lagged dividends is very low in contrast to the extremely high — often explosive—values observed in most econometric studies; he even gets the wrong signs in two cases. Korbel seems to think this as to be an inherent characteristic of small firms. In view of this peculiar result we are not going for further enquiry into this study and its comparison with the Indian results.

CONCLUSIONS

1. Investment requirements constrain the dividend decisions of the small Indian cotton textile companies. Its coefficient is on the average 0.035 as against the 0.0134 of the large Indian companies.

2. The incorporation of the investment variable into the basic Lintner equation increases both the short and long run dividend payout ratios. This means the estimates of the basic Lintner equation are biased downwards.

Similarly, the reaction coefficient of the basic Lintner equation is biased upwards.

3. Small Indian companies, in general pay out, both in the short and long-run, much less than the large firms as dividends to their common stockholders which is consistent with the general understanding of corporate financial behaviour.

4. There is a close correspondence in the behaviour of the small companies in India and U.K.

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TABLE I. A.

Regression Coefficients of Equation 6 After Translating them as Coefficients of Equation 5. [S] Represent standard Error.

Year	Model	P_t	D_{t-1}	ΔA_t	R^2	S
1961	Extended Lintner Model	·1425	·5183	·0239	·9387	·0199
		(·0489)	(10586)	(·0878)		
	Basic Lintner Model	·1425	0·699		·9387	·0199
		(·0489)	(·1540)			
1962	Extended Lintner Model	·1635	·0433	—0·478	·9646	·0070
		(·0502)	(·1125)	(·0216)		
	Basic Lintner Model	·1029	·6000		·9661	·0083
		(·0440)	(·1375)			
1963	Extended Lintner Model	·1369	·7268	—·0512	·8780	·0096
		(·0602)	(·1269)	(·0210)		
	Basic Lintner Model	·1800	·6188	·8341	·0110	·0110
		(·0817)	(·1375)			
1964	Extended Lintner Model	·2401	·5584	—·0533	·9529	·0067
		(·0514)	(·0633)	(·0195)		
	Basic Lintner Model	·1918	·5259		·9412	·0076
		(·0549)	(·0706)			

TABLE I. B.

Regression Coefficients. (?) Standard Errors of Equation (5)

Year	Model	P_t	D_{t-1}	ΔA_t	R^2	S
1961	Extended Lintner Model	·1923	·5696	·0243	·9504	·0066
		(·0162)	(·0532)			
	Basic Lintner Model	·1212	·5614		·8058	·0128
		(·0316)	(·0992)			
1962	Extended Lintner Model	·1435	·6254	—0·371	·8696	·0160
		(·0845)	(·1894)	(·0364)		
	Basic Lintner Model	·1296	·5667		·8157	·0120
		(·0654)	(·2078)			
1963	Extended Lintner Model	·1519	·6865	—·0528	··8718	·0106
		(·0785)	(·1413)	(·0232)		
	Basic Lintner Model	·1839	·6025		·7479	·0128
		(·0998)	(·1850)			
1964	Extended Lintner Model	·2416	·5269	—·0539	·9495	·0078
		(·0599)	(·0737)	(·0227)		
	Basic Lintner Model	·1936	·5259		·9646	·0070
		(·0505)	(·0650)			

ABBREVIATIONS

M	Imports of Inputs
MI	Import Duties
O	Inputs of Industries which are not assigned columns
1,2,3....n*....n	refer to Industries
II	Intermediate Inputs
Cuh	Consumption Expenditure of Urban Households
Crh	Consumption Expenditure of Rural Households
Cg	Consumption Expenditure of Government
Cuh (I)	Imputed Consumption of Urban Households
Crh (I)	Imputed Consumption of Rural Households
X	Exports
GDFK	Gross Domestic Fixed Capital Formation
ΔS	Increase in Stocks
FD	Final Demand
Mf	Imports of Finished Goods
It	Indirect Taxes
D	Distribution
GVA	Gross Value Added
GNPmp	Gross National Product at Market Prices
P	Output