# THE MAIN THEORIES OF THE DIVIDEND DECISION

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## 1. Introduction

**The dividend decision** refers to all techniques used to determine the level of dividends that can be distributed to shareholders. In the latter, there is a question of choosing between the distribution of dividends and the capitalization of a grater part of the net profit for the company.

We must first state that the particular interest for the dividend issue has been the subject of numerous theoretical achievements and empirical studies of testing these theories and sentences without, however reaching a common point of view, and therefore we can not speak of a uniform dividend decision but rather of *the methods and practices underlying the decision distribution of dividends.*

Moreover, the theory in this area is the least developed and most incomplete. The dividend decision is the most controversial because the "*difficult point*" for both the investment decision and the financing decision is the dividend[1] itself.

**Theories of dividend decision** in literature are the support and the modelers of practices for the decisions in dividend of Western firms. There are, in particular, two ***theoretical trends*** well crystallized, namely:

- theories that promote the distribution of dividends;
- theories that discourages the distribution of dividends**.**

**Theories that favor the distribution of dividends** are inspired from **"Bird-in-the Hand Theory"** based on a plastic expression in English "*A bird in the hand is worth in the bush*" which, in other words, means: an U.S. dollar received today as dividend is safe, while future profits obtained as a result of the reinvestment of that U.S. dollar in the firm is uncertain. Its value is updated at a rate that incorporates the risk of future investment projects and, as such, it is less.

**Myrton Gordon** and **John Lintner** have tried to demonstrate with scientific arguments that shareholders are not indifferent to paying dividends; the share's value moving in function of the evolution rate of the distribution. Thus, they have shown that the dividend decision affects the rate of return required by shareholders (the cost of the capital), $R_c$, meaning that when there is a reduction in the rate of distribution of dividends, there is a rise of $R_c$, as shareholders are less confident of capital gains to be generated from accumulated profits reinvested, rather than by paid dividends[2]. In fact, they were those who said that investors give a higher value to a dividend of U.S. dollars, then to expected capital earnings of U.S. dollars because of the equation for determining the cost of capital:

$$R_c = \frac{D_1}{P_0} + g \qquad (1)$$

[1] S. Lumby, *Investment Appraisal and Financing Decision. A first course in financial management,* Fourth Edition, Chapman & Hall, London, 1991, pag.470

[2] P. Halpern, J.F. Weston, E. Brigham, *Management Finances,* Economic Editure, Bucharest, 1998, pag.678

The earning component of dividends (yield dividend), $\frac{D_1}{P_0}$, i.e. the dividend "in hand" has a lower risk rate than growth, g, of the dividend per share, i.e. capital gains possible "in the bush". Therefore, investors will demand a higher total income if the capital gains' component is more important in the overall than the earnings in dividends. From the point of view of the impact of the dividend on the share, American specialists and **Graham** and **Dodd** believe that "one U.S. dollar distributed in dividends has, in the price of shares, an impact, in average four times grater than one capitalized U.S. dollar" [3].

Among those who fought the view of Gordon and Lintner were **Franco Modigliani** and **Merton Miller.** They claimed that $R_c$ is independent of the dividend decision, i.e., in other words, investors' attitude towards the two components from the relationship (1) is the same. They called the argument of Gordon and Lintner the "sparrow in the hand" mistake because, from the view of Modigliani and Miller most investors plan reinvesting the amounts received from dividends on shares of the same company or similar, and in any case, the company's cash flow risk on medium and long term is determined only by the risk of operational cash flow and not by the dividend decision.

At the other pole, there are the **theories that discourage the distribution of dividends, "Residual Theory,"** in which the dividend is not in a direct relationship with the profit's level, as it is considered a residual variable. The basic idea of these theories is the capitalization of profits for self-investment projects when their expected profitability exceeds the cost of capital, in fact, an essential criterion of the theory of finance company.

In general, the dividend decision is very much influenced by investment opportunities and funds available to finance these investments. Residual dividend theory shows that in order for a firm to rightfully decide how they divide the net profit (for dividends and self), must take the following four steps:

- to determine an optimal investment budget;
- to determine the appropriate capital for financing these investments;
- to use, as much as possible, the profits accrued for financing investments;
- the payment of dividends only to the extent that the net available income is greater than the funds needed to cover the optimal investment budget.

The question whether firms apply this theory into practice is quite delicate, since it, mostly, involves irregular payments of dividends, so it becomes optimal only if investors are not disturbed by these fluctuations of dividends. In general, however, investors prefer stable dividends, and that is why companies try to stabilize the distribution of dividends, and to print a slightly rising.

In what follows, we try to cover ***the main theories of dividend decision*** in the chronological order of their appearance in the economic literature.

## 2. Lintner's partial adjustment model

This model is the result of an investigation conducted on 28 American companies judiciously selected by Lintner in 1956. **The conclusion** was that *"most shareholders prefer a reasonable dividend, stable, and that the market reacts positively to the stability or a gradual increase of the dividend".* Thus, the observed dividend decisions are characterized by a stable rate of distribution of profits, in particular "with a coupon, generally stable and in regular progression, mathematically modeled as follows:

$$\Delta D_t = a_0 + c \cdot (D_t^* - D_{t-1}) + e_t \quad (2)$$

[3] M. Albouy, P. Dumontier, *The dividend policy of enterprises*, Presses Universitaires de France, Paris, 1992, pag. 55

in which:

$\Delta D_t$ = $D_t$-$D_{t-1}$ is the dividend variation per share from one year to another;

$D_t^* = R_d^* \cdot PNA_t$; (3)

$R_d^*$ = target payout ratio;

c = the coefficient of the dividend speed of adjustment to increase profits;

$e_t$ = error term.

$D_t^*$ from the model is the dividend that would be paid if the dividend adjustment to the profit increase per share would be immediate, instead of partial and gradual.

By substituting $D_t^*$ from the relationship (3) in relationship (2), results:

$$D_t=a_0+a_1 \cdot PNA_t+a_2 \cdot D_{t-1}+e_t \quad (4)$$

In which:

$$a_1= R_d^* \cdot c \quad (5)$$

$$a_2=1-c \quad (6)$$

Equation (4) is solved with good results by using a multiple regression. With this model and annual data from 1918 to 1941, Lintner was able to explain 85% of the variations of dividends of the analyzed firms. He also showed that firms were tempted to conserve the distribution rate of profits ($R_d^*$), which is a good indicator of the dividend decision of firms. There are, however, large dispersions of these rates explaining varying dividend decisions from one company to another.

### 3. Models derived from the Lintner's model

The model developed by J. Lintner was the basis of advanced searches in the years that followed when carrying out practical studies in American and Western firms.

Thus, in a study by R. Cobbaut in 1969, on a sample of Belgian companies and American pairs with similar characteristics, the dispersion rate of distribution of dividends was as follows:

**Table 1**

| Target distribution rate (intervals) | Percentage total firms | |
|---|---|---|
| | American | Belgian |
| 20% - 40% | 3% | 12% |
| 40% -70% | 70% | 44% |
| 70% - 100% | 27% | 44% |

It is thus found a concentration of firms in the U.S. 40% - 70% of the rate of distribution of dividends and an increased dispersion in a wide range, 40% - 100% to Belgian companies. Cobbaut's *conclusion* was that American companies show a much lower speed of adjustment to profits increase than the Belgian companies, and that the first practice of more stable dividend decision than those in the second category and, as such, they are less exposed to risk of being forced to reduce dividends. These findings have permitted him to suggest changing Lintner's model in a **model of delayed distributions**, in which the current dividend is to be established in the light of past values of profit per share. In this situation, Lintner's model can be interpreted in an adaptative progressive logic of the dividend $\mathbf{R_d^*}$, the target payout ratio will express the dividend's tendency of flowing on long-term, and **c** short-term trend of the company to capitalize and (used for self-) profits.

In 1968, **Fama** and **Babiak** developed a more comprehensive analysis in an interval of 18 years (1946-1964), examining the behavior in terms of dividends of 392 major American companies to noticing the distribution sign, (+) for growth and (-) to decrease for three consecutive years. In the condition in which they noted that American companies distributed approximately 50% of net profits and adjusted their dividends to about one third of the increase in profits; they have found that dividend growth is likely the be greater when the recorded profits have a continuous growth. Thus, 81% of firms

who experienced increased net profits from one year to another within three years of review increased their dividend, 8% kept it constant and only 11% have dropped it. The results of the study confirm Lintner's findings but the authors propose the modification of the model by introducing **the profit lagged by a period.**

Based on Lintner's model, but inspired by the realities of the ninth century, in particular, by solving the conflict between shareholders, in 1990 **Malécot**, proposed a model for **assessing the integration of dividend restrictions on staff**, in which along with the variable dividends from the previous year and profits in the current and previous year he introduced variable debt contracted in the current year, as follows:

$$D_t = f(D_{t-1}, X_t, X_{t-1}, DTL_t) \quad (7)$$

In which:

$D_{t-1}$ = dividend distributed in "t-1";

$X_t$, $X_{t-1}$ = net profits recorded in the "t" and "t-1";

$DTL_t$ =long-term debt contracted in "t".

The expected signs f the function are as follows: positive (+) for the dividend and profits from the current year and negative (-) for the previous year's profit and debts.

The model tested on data collected from 170 companies, in 1966-1979, showed that dividends distributed by French companies do not make a residual decision, that there is certain rigidity (stability) of the payments and that this rigidity is more noticeable at lowering figures than to increase. In other words, the dividend increases at a lower rate than the profit increase, but decreases less when recording the decrease of profits.

Thus, from observations it results that dividends are maintained constant for more than half of cases in which there are three successive results in the decrease in previous years, while they increase to over 85% of cases when there are three successive growing results.

If all analyzed conclusions urge caution in the distribution of dividends, there are *opinions in favor of a more radical distribution (general*).

Thus, **Brigham** and **Gordon**, in 1968, express such conclusions starting from the famous model for assessing shares by updating dividends of Gordon and Shapiro, developed in 1956, presented as follows:

$$\frac{D_1}{P_0} = R_c - g \quad (8)$$

in which:

$D_1$= the anticipated dividend per share in the next exercise;

$P_0$= current course of action;

$R_c$= rate of return claimed by shareholders;

g = the dividend growth rate per share.

They empirically checked the situation through the equation of linear regression as following:

$$\frac{D_1}{P_0} = a_0 + a_1 \cdot g + e \quad (9)$$

If investors are indifferent between gains from dividends and gains from the capital, the coefficient $\mathbf{a_1}$ should be equal to -1. The variable $\mathbf{a_0}$ is then, an estimator of the rate of profitability, and **e** is an error term.

To reduce the impact of any statistical distortion, Brigham and Gordon tested on data from 69 electricity companies in the U.S. (sector considered stable in terms of profitability and the rate of increase in performance can be established without difficulty), in 1958-1962, the multiple regression equation:

$$\frac{D_1}{P_0} = a_0 + a_1 \cdot g + a_2 \cdot h + a_3 \cdot u + a_4 \cdot v + a_5 \cdot s + e \quad (10)$$

in which:

h = indebtedness rate (debt / equity)

u = the index of profit's stability per share;

v = percentage of sales represented by electricity;

s = company size index;

e = error term.

Regression coefficient $\mathbf{a_1}$ is in general equal to -0.4, because in their view dividends are preferred compared to plus-values (capital gains). The cost of capital is therefore a decreasing function of the rate of distribution.

In order to minimize the cost of capital and thus maximize the value of the company it is necessary for it to make a generous distribution of dividends.

### 4. Residual dividend theory

This theory starts from the idea that only investments increase the firm's value, and therefore the payment with dividends to shareholders must be made only after the capitalization of the amount of net profits needed to finance all profitable investment projects, respectively with a positive net present value (NPV).

From the beginning, it should be noted that this theory was developed in the perfect capital market and for the financing of investment projects other sources of capital outside the firm are not available.

In terms of dividend decision, the company's management should decide how much will be capitalized and how much will be distributed in the form of dividends at the time $t_0$ to ensure the maximum efficiency (maximizing shareholder wealth). As shown in Figure 1, it is assumed the detainment of a sum for self-AB and the distribution of the OB sum as dividend.

The decision to divide the net profit was taken by company managers taking into account the investment opportunities available and the interest rate on the perfect market. As such, the OB amount to be distributed to shareholders as dividends when $t_0$ was made up of remaining liquidity (residual) after the investment decision was taken. Therefore, *a rule of dividend decision is imposed*, that, the net cash flows acquired by the firm must remain in the company for reinvestment as long as investments meet the NPV criteria. Once exhausted these possibilities of profitable investments (i.e. the company is in Section C on graph), the remaining cash flows of the net profit are to be paid to shareholders as dividends. This is in fact, the **irrelevance assumption of the dividend** formulated by **Modigliani** and **Miller.** Therefore, *what increases the wealth of shareholders, the decision of investment and the dividend decision is irrelevant, is just a residual part of the investment decision*[4].

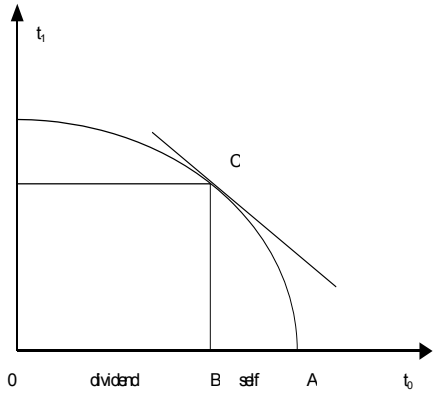


Fig.1 Distribution of residual dividend

This conclusion, however, was to be partly contradicted, when the dividend was shown to affect on the market the value of shares.

A ***mathematical model*** to express the concept of residual dividend was made by **Walter** in 1956, according to which the value of the shares, P0, is determined as follows:

$$P_0 = \frac{D + r \cdot (PNA - D) / R_c}{R_c} \qquad (11)$$

in which:
D = dividend per share;
PNA= net profit per share;
r = the investment's rate of profitability;
$R_c$ = required rate of profitability on the market (capitalization rate)

By processing relationship (11) we obtain:

[4] S. Lumby, *Investment Appraisal and Financing Decision. A first course in financial management, Fourth Edition,* Chapman & Hall, Londra, 1991, pag.473

$$P_0 = \frac{D + \frac{r}{R_c} \cdot PNA - \frac{r}{R_c} \cdot D}{R_c} = \frac{D\left(1 - \frac{r}{R_c}\right) + \frac{r}{R_c} \cdot PNA}{R_c} \quad (12)$$

Under this model, the optimal dividend decision, i.e. the one that maximizes the value of shares is the **zero distribution decision**. Indeed, if D =0, $P_0$ =maxim.

However, this conclusion is valid only if **r> Rc**, i.e., if respected the basic rule of financial management, that the company must invest retaining profits as long as the investment's profitability is higher than the cost of capital. If **r <Rc**, the company should distribute all net profits.

The model is objectionable because of the practical observations that resulted, because profitable firms do not take any extreme positions, i.e., distribution to be 0% or 100% distribution.

## 5. Conclusion

The decision to distribute dividends is considered low if the distribution rate is below 20%, and strong when it is more than 60%.

An optimal dividend decision involves ensuring the best part of the net profits distributed as dividends and the remained for self that will ensure future growth of the company, and therefore an increase in the price of shares.

When the general assembly of shareholders decides not to distribute all net profits, some shareholders are deprived from their private right to achieve immediate revenue in exchange for the hope of a future income. This is the basis for *selecting the company shareholders.*

The level distribution rate represents a direct interested for the company's creditors, and in particular, for its obligators, for not making a transfer of wealth from them to shareholders. Because compensation is, in most cases, fixed (the rate is fixed), if the risk that was taken into account in determining the interest rate is lower than the actual support, the value of their bonds will fall, entailing the recalled transfer.

Recalling the interests of company managers to enjoy by self of a direct source with a cost equal to the cost of equity but which improves the company's financial structure, the firm's interest to apply an optimal dividend decision to reconcile the contradictory interests of its key actors is obvious.

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