

Theoretical Models of Dividend Policy

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Summary:

Why do modern corporations pay dividends and how does dividend policy affect company's performance remain controversial theoretical questions in both developed and emerging markets. This paper aims to describe concepts and empirical evidence about three of the most widely discussed theories: namely the theory of the dividend payment preference, the theory of irrelevance, and the theory of tax benefits from profit reinvestment. This is a preliminary stage of a study of the dividend policy of publicly traded companies in Bulgaria. By using these theories the future research of data will be based on the achievements of world science and the applied models will be comparable with the results obtained in other countries.

Key words: dividends, dividend policy, public companies, personal wealth

JEL Classification: B26, D31, G32, G35

1. Introduction

The development of dividend policy is closely linked to the evolution of the corporate form of government in Western Europe and the USA. When the first joint-stock companies were founded at the end of XVI and the beginning of XVII century

the payment of dividends was usually by distributing the liquidation share (in cash or in the form of commodities) after the successful return of the ships from a venture sailing. Over time, dividends were restricted and linked exclusively to the profits of companies and payments from current earnings and the impairment of the initial capital were announced illegal. At this stage through regular dividend distribution companies managed to gain investors' confidence and to offset the negative effects of information asymmetry between shareholders and managers.

With the development of capital markets and the creation of the first stock exchange in Amsterdam and later in London, the number of such companies grew. The existence of substantial public debts and the need for their funding in some countries, such as England and the USA, in XVII and XVIII century contributed to the development of the bond market. The guaranteed regular payments of coupons on these instruments are considered as their major advantage and the key incentive for investors to buy and hold them. Investing in stocks is compared to purchasing bonds, which requires the provision of regular dividend payments.

The insufficient control over the management of corporations, the lack of transparency about financial information and the prospects of the ventures are the reasons why payment of dividends is often preferred to reinvestment of profits by shareholders.

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This policy is evaluated as a good indicator of the company's performance.

The importance of the question about the relevance of dividend policy has become even more relevant with the recent development of capital markets that has led to an increase in their efficiency. Why do modern corporations pay dividends and how does dividend policy affect company's performance and future remain controversial theoretical questions.

There are three main alternative theories related to dividends:

- Theory of the dividend payment preference ("A bird in the hand" Theory) - based on the thesis that high dividend payments increase the value of the company and shareholders' satisfaction.
- Theory of irrelevance (Theory of indifference to dividend policy) - proves that a perfect market dividend policy is not relevant to the company and its value and does not affect shareholders' wealth.
- Theory of tax benefit from reinvestment of profits - postulates that because of the higher tax burden on dividends versus capital gains dividend payments should be minimized.

The main purpose of this work is to describe these three theories: the assumptions they are based on, their main arguments and conclusions, and discuss the empirical evidence, obtained by different authors. This is a preliminary stage of the study on dividend policy of publicly traded companies in Bulgaria. By using these theories the future research of data will be based on the achievements of global science and the applied models will be comparable with results obtained in other countries.

The paper is structured as follows: sections 2, 3 and 4 are dedicated to a specific theoretical model. The conclusion wraps it up and provides directions for further research.

2. Theory of the Dividend Payment Preference ("A bird in the hand" Theory)

This theoretical model implies that the value of the company (the price of its shares respectively) is positively related to and determined by the payout of dividends. It argues that with the increase in dividend payments in time, the value of company's shares will increase dramatically.

John Williams (1938) is one of the first economists, who believes that the share price is determined by its intrinsic value. He concluded: the value of a share is determined only by the money that it brings. Therefore, intrinsic value or long-term value of an ordinary share is the sum of the present value of its expected future net inflows in the form of dividends received and the present value of the selling price.

Graham and Dodd (1934 cited by Graham et al., 1962, p. 486-488) developed the following assumption: They claim that a dollar in dividends paid has on average four times greater impact on the share price than \$ 1 in retained earnings. That's the basis for the idea of determining the share price by usage of dividend multiples.

Key supporters of the theory are James Walter, Myron Gordon, and John Lintner. They adopted the logic: if market conditions are uncertain and the information is asymmetric, then dividends are evaluated differently from capital gains. The concept is summarized by the proverb „a bird in the hand is worth two in the bush". The model is based on the following assumptions:

- The company is financed by equity only.
- There is a perpetual flow of earnings for the firm.
- Retention ratios for the company are constant – that implies constant growth rate.
- Cost of capital (discount rate) is greater than the growth rate.
- Corporate taxes do not exist.

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It is believed that investors prefer safe dividend payments – cash today (the bird in the hand) to more risky future capital gains – expected appreciation of share price in the future. The higher the current dividends – the lower investors' uncertainty of future cash flows. The reduction in risk leads to a decrease in the required rate of return on investment for shareholders. As a result, companies with higher dividend payout ratio will have a lower cost of capital and respectively higher value of the shares. Finally, the theory "bird in hand" seeks to prove that high dividend payments maximize the value of the company.

Gordon and Shapiro (1956, pp. 102-110) developed the following model to determine the value of the company, which is based on discounting its future dividend payments:

$$V_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+r_t)^t} \quad (1)$$

where

V_0 – present value of a firm (its shares) in period $t = 0$

D_t – total dividend payments, in period t

r_t – discount rate for period t

The model shows that payout of increasingly high dividends over time leads to an increase in the share price. Payment of dividends reduces the funds available for investment, which results in a lower growth rate of dividends. On the other hand, low levels of paid dividends, according to Gordon, lead to higher discount rate. As a result, the increase in the share price due to the low cost of capital can offset its decline caused by low growth. Nowadays, the model of Gordon finds application in financial valuation. Dividend multiples are used to determine share value based on the dividend payments.

In addition Lintner (1956, pp. 97-113) examined dividend policy of a sample of firms and found out that managers prefer

to maintain dividend payments at certain constant levels. He introduced the concept of sticky dividends: managers consciously keep the amount of dividend payments at a level comparable to previously distributed dividends. As a result, fluctuations in dividends are much weaker than those of the stock price or profits. Lintner is convinced that dividend policy is an important part of corporate governance and decisions about determining the amount of financial reserves and retained earnings are dependent on the size of dividend payments.

To prove his theory, in his next survey Gordon (1959, pp. 99-105) provided empirical evidence by considering three possible hypotheses for the reasons why investors would buy a certain share. These are: to receive dividends and capital gains; to receive only dividends; or to receive only capital gains. He examined these assumptions and calculated various regression models using data samples from four industries for two years, namely 1951 and 1954. The dividend hypothesis was tested using linear regression of the following type:

$$P_{it} = \alpha_0 + \alpha_1 D_{it} + \alpha_2 R_{it} + \varepsilon_{it} \quad (2)$$

where:

P_{it} – price of shares of company i in period t

D_{it} – dividends paid by company i in period t

R_{it} – retained profit by company i in period t

α_1 – required rate of return on common shares with no growth (dividend coefficient)

α_2 – price of growth (coefficient of retained profit)

Gordon's calculations proved that dividends have a greater impact on the share price than retained earnings. He confirmed that the required rate of return increases proportionally to retained earnings due to the greater uncertainty of future profits. Fischer (1961, pp. 121-141) confirmed the same conclusions in his publication that analyzed

data from the United Kingdom for the period between 1949 and 1957.

The model does not represent the situation appropriately due to its strict assumptions. It fails to explain the following problems.

- The variations in the levels of risk for specific companies from different sectors are not considered. This can lead to an undesired deviation of the dividend coefficient α_1 to higher values. As a result of this inaccuracy risky shares may be associated with lower dividends and low price, and shares with low risk – with high dividends and high price.

- In the equation it is assumed that growth is a result only from the investment of retained earnings. The option that the growth that can be achieved by using external financing is ignored. This leads to errors in determining the value of the ratio of retained earnings α_2 .
- If the company applies a policy of sticky dividends, then short-term changes in the level of earnings will affect mainly the level of retained earnings. If stock prices and dividends are related to the current profit rather than to regular one, these short-term fluctuations will distort the result of the equation in favor of dividends.
- Due to some accounting constraints dividends can be measured more accurately than retained earnings. As a result, the ratio of retained earnings α_2 is undergoing further deviation to lower values.

To avoid the above inaccuracies in the results of the equation Diamond (1967, pp. 15-30) developed a regression model used in the average three-year coefficient market value – income per share (Price/Earnings Ratio) for the previous period ($t-1$). He examined the impact of dividends

and retained earnings on the share's price using a sample of 255 American companies from eight industries in 1961 and 1962. On the one hand Diamond identified the slight confirmation of the thesis that investors prefer dividend payments to investment earnings. He even found that in sectors where the level of growth is relatively high retention of profits is somewhat more preferred to dividends payments. On the other hand, propensity to distribute dividends prevailed in the more developed sectors with low growth. These trends indicate a negative relationship between company growth and dividend payments.¹ The results Diamond obtained are a confirmation of the earlier studies of Friend and Puckett (1964, pp. 656-682).

At the turn of the XXI century a study was conducted by Baker et al. (2002, p. 267-283) that aimed at managers of firms traded on the NASDAQ over-the-counter market in New York. One of the purposes was to evaluate how they perceive and apply the "bird in the hand" dividend policy theory. One of the questions in the questionnaire asked the respondents to evaluate the statement: "Generally investors prefer paying dividends today rather than an uncertain future increase in the share price." The total amount of respondents was 186 company executives. From those, a minority, only 17.1% agreed with this statement, 54.9% rejected it completely and 28% were uncertain or hesitant. This study concluded that the thesis of the theory of investor's preference for dividend payments found no support among managers.

As a result of the publications of Myron Gordon and John Lintner the prevailing view (before the development of the theory of Modigliani and Miller about the neutrality of dividend policy) is that dividends are important to the welfare of

¹ There is empirical evidence that companies with high growth and investment tend to allocate little or no dividends: Fama, E., K. R. French, 2001, pp. 3-43.

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shareholders. It was thought that other things being equal (*ceteris paribus*) shares of companies with high dividend payments are considered less risky and are sold at higher prices than those of the companies providing low or no dividends, bearing higher company's risks.

Subsequently, Franco Modigliani and Merton Miller criticized the "bird in the hand" theory and claimed that corporate risk is the risk associated with operating cash flow, and was not influenced by the fact of payments of dividends by the company. Bhattacharya (1979, pp. 259-270) is even more assertive and provided evidence that actually corporate risk affects the size of dividends, and not vice versa. Therefore, an increase in the level of dividends can not affect corporate risk.

However, the claim that the companies whose future cash flows are uncertain, tend to disburse relatively lower dividend payments is considered viable and is implied as justification in some modern theories like signaling effects and asymmetric information. There are a lot of studies² that provide empirical evidence of a negative relationship between dividends and corporate risk, i.e. with the increase of corporate risk dividend payments decreased.

The main thesis of the theory of preference for dividend payments, i.e. dividends are preferred by investors to capital gains, finds its antipode in the theory of tax models.

3. Dividend-Irrelevance Theory

The concept of dividend-irrelevance policy was developed by Franco Modigliani and Merton Miller (MM) in their 1961 publication (pp. 411-433). They refined their thesis rejecting the broadly supported Gordon's theory that share prices are determined by the level of dividends paid.

Modigliani and Miller are considered one of the first scientists to apply rigorous analytical methods for solving financial problems. The basis for the development of the model of irrelevance of dividend policy is grounded in an earlier publication (Modigliani, Miller, 1958, pp. 261-297) which demonstrates that under certain conditions, the total value of the company is independent of its capital structure, respectively debt/equity ratio. In their initial study MM argue that if:

- for the market participants there are possibilities for effective arbitrage,
 - perfect capital market exists, which includes zero fees, taxes and bankruptcy costs,
 - there is an universal constant rate to lend and borrow money both for companies and investors, and
 - unlimited opportunities for credit,
- then a firm's debt-equity ratio does not affect its market value.

MM subsequently applied similar approaches to analyze the dividend policy. Their main thesis is that in perfect capital markets the value of the company does not depend on its dividend policy.

They reiterate their important assumptions (Miller, Modigliani, 1961, pp. 412).

- Perfect capital market – includes behavior of "price taking" where neither the seller nor the buyer can directly influence the price of the shares; free access to information about prices; zero transaction costs and commissions to financial intermediaries; lack of tax differentiation between dividend payments and capital gains.
- Rational behavior – means that investors are oriented to maximize their wealth and do not distinguish between dividends and capital gains.

² See: Rozeff, 1982, pp. 249-259. Jensen et al., 1992, pp. 247-263.

- Transparency of information – suggests that there is no information asymmetry between company's insiders and external shareholders, actual data for future cash flows and profits are known to investors.
- The joint stock company follows a long-term investment policy that is not influenced by changes in dividend payments.

A major postulate of MM's theory is that optimal investment policy of a company is defined for a long-term period. This provision allows stocks and bonds to be treated as equivalent sources of funds. Sometimes we provisionally accept the assumption that firms are just equity financed (only by issuing shares), i.e. not using an external debt capital.

Under these pre-conditions, *MM* use the following fundamental principle to assess the company's value: all outstanding shares in the market, characterized by the same level of risk, will have the same return (sum total of dividends and capital gain per unit invested) at any point in time. On perfect capital markets this is achieved through the mechanism of arbitration. Given that a set of shares bear equal risk, investors will sell shares with lower returns and buy those with higher returns, to increase their wealth. As a result of this process, the price of the first group of shares will decline, while the second – will increase until the difference in returns is eliminated.

Under these assumptions *MM* defined that the rate of return on equity per share r_e for each firm is the sum of dividends and capital gains divided by the current share price. Thus r_e has a constant value in time:

$$r_e = \frac{d_t + p_{t+1} - p_t}{p_t} \quad (3)$$

where:

- r_e – return on equity per share;
- d_t – dividend per share paid in period t
- p_t – the price of a share at the beginning

of period t , ex-dividend for the period $(t-1)$
 p_{t+1} – the price of a share at the beginning of period $(t+1)$, ex-dividend for the period t .

If we rearrange the equation it is clear that the current stock price (in period t) depends on the value of the entitled current dividend plus the share price for the next period:

$$p_t = \frac{d_t + p_{t+1}}{1 + r_e} \quad (4)$$

Based on this relationship we derive the equation for the company's value in the current moment t .

$$V_t = n_t p_t = \frac{D_t + n_t p_{t+1}}{1 + r_e} \quad (5)$$

where:

- V_t – company's value in period t
- n_t – number of outstanding shares in period t

D_t – total dividend payable for period t

($D_t = n_t d_t$)

p_t – the price of a share in period t

p_{t+1} – the price of a share in period $t+1$

r_e – return on equity per share

The value of the company may be expressed through its future value in period $t+1$, less the value of additional shares issued.

$$V_t = \frac{D_t + V_{t+1} - m_{t+1} p_{t+1}}{1 + r_e} \quad (6)$$

where:

V_{t+1} – the value of the company in period $t+1$

m_{t+1} – the amount of additionally issued shares, sold during the period t by ex-dividend price p_{t+1} ($n_{t+1} = n_t + m_{t+1}$)

p_{t+1} – the price of a share in period $t+1$

Given that an investment policy aims to maximize company's value, there is a relationship between the additionally issued shares and dividends paid by the company.

Entirely internal financing of investment projects leads to reduced net profit by the value of investments. In the model of MM residue is used entirely for dividend payments. If the total amount of dividends exceeds this residue, additional financing will be required. Assuming there is just equity financing, the required funds will be obtained by new issue of shares. This means that the sum of investments and dividend payments equal the sum of net profit and the proceeds from the sale of new shares. Therefore, the described close relationship between the amount of newly issued shares and dividends paid may be expressed by incorporating the level of investments I_t and net profit X_t , as follows:

$$m_{t+1}p_{t+1} = I_t - (X_t - D_t) \quad (7)$$

When we substitute from equation (7) the equal term in equation (6) the final result will be:

$$V_t = \frac{D_t + V_{t+1} - I_t + X_t - D_t}{1 + r_e} = \frac{V_{t+1} - I_t + X_t}{1 + r_e} \quad (8)$$

where:

I_t – the value of current investments in period t

X_t – net profit of the company in period t

From equation (8) it becomes obvious that the value of the company does not depend on dividends (D_t), but on the level of investments I_t and net profit X_t . This is the mathematical proof of *MM*'s dividend irrelevance theory in perfect markets. Under these assumptions the value of the company is determined by its investment policy and its ability to generate profits. This relationship results in the residual dividend theory, according to which the amount of the dividend is equal to the residue of the profit, which was not invested.

Based on the theory of *MM* the concept of "homemade" dividends was introduced. It describes investors' ability to determine their

own disposable cash by selling a portion of shares they hold, and bypass the dividend policy of companies. That way required cash to finance current consumption depends on investors' will. When the shareholder does not spent that money immediately he can reinvest cash received from company's "homemade" dividends.

Gordon (1963, pp. 264-272) formulated his theory by challenging the assumption of *MM* that the discount rate may have a constant value. He argues that the company's dividend policy may change the level of risk or uncertainty about future dividends perceived by investors', which in turn should lead to an alteration in the return on the shares. In general his arguments can be regarded as precursors of the theory of information asymmetry.

Brennan's (1971, pp. 1115-1121) and Rubinstein's (1976, pp. 1229-1230) studies

examined Gordon's option for a company to retain part of its net profit and invest the money in projects with zero net present value (*NPV*). They compare it to the approach of full allocation applied by *MM* in the form of dividends of the amount of net profit, which is not predetermined as an investment. Rubinstein proves that both approaches will lead to equal value of free cash flows. Therefore, in a perfect financial market the models of *MM* and Gordon provide equal value for shareholders, which does not depend on dividends. *MM* prove that whether the investor receives dividends and/or capital gains the total return for him will be the same.

More recent research papers by DeAngelo and DeAngelo (2006, pp. 293-315) question the theory of neutrality of dividend policy by pointing out that the model of *MM* requires that the company distribute as dividends all

the available free cash flow that remains from net profit after financing the investment policy. They seek to whitewash the importance of dividend policy and discuss the observed practice of managers to retain part of the free cash flow and to direct it towards investments with a negative NPV.

In their subsequent publication, DeAngelo and DeAngelo (2007, pp. 11-27) concede that the optimal corporate policy is to allocate the full amount of free cash flow to investors in the form of dividends.

In their latest research on the dividend policy DeAngelo et al. (2008, p. 105-109), conclude that in practice market failures (asymmetric information, agency costs and others) are the most important factors that determine the managerial decisions about how much of free cash flow should be distributed or retained.

The findings of DeAngelo and DeAngelo are considered controversial, but criticism towards their conclusions is usually followed by their new publications. One of their critics, Berlingeri (2006), proves the thesis that partial retention of free cash flow will not reduce the value of the company, because of the risk-free arbitrage opportunities.

In addition Magny (2010, pp. 232-247) proves mathematically that the irrelevance of dividend policy applies even when managers do not pay the entire free cash flow in the form of dividends and retained funds are invested in projects with zero net present value ($NPV = 0$). He stated that if there are agency problems, then managers could invest unallocated funds in projects with negative net present value, and in such cases the dividend policy is significant.

In conclusion, the mathematical proof confirms that the theory of MM about neutrality of the dividend policy as part of the neoclassical school of economics is valid in a perfect capital market. Investment policy is the

leading factor in creating corporate value. In certain conditions, residual dividends can be applied as a manifestation of dividend policy. Since cash flows depend on the return on investment, the only way to increase corporate value is to invest in projects with positive net present value (Al-Malkawi et al., 2010).

Because of the strict assumptions it is based on, MM's theory remains an idealized model not applicable in its entirety in practice due to a number of market imperfections in the real world. However, the significance of this fundamental theory is undeniable and it is used as a basis for further development of the knowledge of the dividend policy.

A wide array of contemporary theories consider market failures as the main reason for the significance of the dividend policy. Lease et al. (1999) and Baker et al. (2002, pp. 241-261) divide the market imperfections into two groups: the large three and the small three. The group of three major imperfections includes: taxes, information asymmetry and agency costs. In the second group there are: transaction costs, public offering expenditure and behavioral issue. The study of these market imperfections led to the development of new theoretical explanations about the importance of the dividend policy for corporate governance.

4. Models of Tax and Clients' Effects

Different theoretical models about the potential effects of various determinants of dividend policy were developed in order to reveal the secret of the "dividend puzzle" (Black, 1976, p. 5): what is the underlying cause for managers to pay dividends to shareholders. Some of these theories lay special emphasis on tax preferences and customer effects.

In practice, very often individual investors are taxed with a higher tax on dividends than on capital gains³. Additionally, taxes on

³ In Bulgaria, according to the current legislation, in 2014 dividend payments are subject to withholding tax at the rate of 5%, and capital gains realized on the BSE – Sofia, are not taxable.

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dividends are to be paid immediately, while taxes on capital gains (if any) are paid only after the shares are sold. This suggests that to maximize the wealth of its shareholders, companies should not pay dividends. Therefore, to avoid payment of high taxes on distributed corporate profits by shareholders, companies must use share buybacks. Thus the theory of tax effects⁴ explains the reason why investors and companies should generally avoid cash dividends. According to the theory upholders, little or no dividend payments will reduce the cost of capital and will lead to an increase in the share prices of the company.

In their theory of dividend-irrelevance policy Modigliani and Miller (1961, pp. 431-432) prove that in a perfect market the dividend policy is irrelevant, as the value of the company and the welfare of its shareholders are not determined by these decisions. But one of their assumptions is the lack of taxes. On the other hand, if dividend payments and/or capital gains are taxed, shareholders, as rational investors, would prefer to receive the income which is taxed at a lower rate. In his famous publication MM pay attention to that impact, consider taxes as primarily systemic imperfection of capital markets, and mention the possible effects of the tax clientele.

The models revealing the connection between dividends and taxation can be classified into two distinct groups, as defined by Frankfurter et al. (2003, pp. 81-87).

- Tax-adjusted models: investors, considering the tax effect, will require shares carrying cash dividends to have higher returns. In this case the planned dividend payments should be high enough to ensure the required level of net income to shareholders after taxation. As a consequence investors tend to pay lower prices for shares carrying cash dividends. According to these models it is advisable

that companies limit or completely terminate the provision of cash dividends. Publications of Farrar and Selwyn (1967, pp. 444-454), Brennan (1970, pp. 417-427), Litzenberger and Ramasvami (1979, pp. 163-195), and many others are cited in support of tax-adjusted models.

- Tax-avoidance models: Miller and Scholes (1978, pp. 333-364; 1982, pp. 1118-1141), Kalay (1982, pp. 1059-1070), Kalay and Michaely (2000, pp. 55-75) and others claim that no indication of a change is observed in investors' behavior depending on whether the shares are carriers of cash dividends or not. Moreover, the taxation of dividend payments is seen as a factor insignificantly influencing investment decisions. They deny the existence of a relationship between dividend payments and taxes.

In tax effects theory one of the important issues to be considered is whether investors are indifferent to choosing between dividends and share buybacks. In response to this question Farrar and Selwyn (1967, pp. 444-454), supported by Myers (1967, pp. 455-462), expand MM's model with income tax (1963, pp. 433-443), considering both corporate and personal taxes. They use the model of partial equilibrium, assuming that investors seek to maximize their net income. To make a choice between the two alternatives: cash dividends or repurchase, an investor needs to calculate which one brings a higher net income.

If the company decides to distribute its earnings in the form of cash dividends, the shareholder will receive the following income per share after payment of taxes:

$$Z^d = [(X_t - kD_c)(1 - t_c) - kD_p](1 - t_p) \quad (9)$$

where:

Z^d – potential net income of the investor from cash dividends per share after deducting all taxes

⁴The theory is called also: tax differentiation theory; tax preferences theory, and theory of minimization of cash dividends.

X_t – operating income per share of the company

D_c – corporate debt, attributable to one share

D_p – personal debt, attributable to one share

t_c – the corporate tax rate

t_p – personal tax rates on dividends to individual shareholders

k – interest rate on debt, which is considered to be the same for corporations and individuals.

When the company repurchases its own shares, the shareholder will receive income, which is taxed as a capital gain, according to the following equation:

$$Z^g = (X_t - kD_c)(1 - t_c)(1 - t_g) - kD_p(1 - t_p) \quad (10)$$

where:

Z^g – potential net income of the investor from capital gain per share after deducting all taxes

t_g – personal tax rate on capital gains of the individual shareholder

Equation (10) can be represented as follows:

$$Z^g = [(X_t - kD_c)(1 - t_c) - kD_p](1 - t_g) + kD_p(t_p - t_g) \quad (11)$$

By comparing of equations (9) and (11) one will find out that the size of the potential net income of the investor depends on the amount of personal tax rates on dividends (t_p) and personal tax rates on capital gains (t_g) of the individual investor. There are three options.

- When $t_p < t_g$, then $Z^d > Z^g$ and rational investor would prefer to receive his income in the form of cash dividends rather than capital gains.
- When $t_p = t_g$, then $Z^d = Z^g$ the investor would be indifferent whether he will receive income in the form of cash dividends or capital gains.

- When $t_p > t_g$, then $Z^d < Z^g$ and the investor can maximize his income, preferring capital gains over dividends.⁵

Finally Farrar and Selwyn reached the conclusion that when the tax burden on cash dividends is greater than on capital gains no cash dividends should be paid in order to maximize net income to investors. Repurchase of shares is proposed to be used as a substitute for cash dividends.

A number of studies assessed the impact of personal taxes on dividends using Capital Asset Pricing Model (CAPM) by adding additional variable representing the price of the dividend component. If the coefficient of the dividend factor is positive, the results are in compliance with tax-adjusted models

and theory of tax differentiation – reported returns from dividend-bearing shares are higher. If the coefficient is zero, then tax-avoidance models apply.

Brennan (1971, pp. 1115-1121) used CAPM in order to develop the concept of Farrar and Selwyn within the overall market equilibrium. The results from his work

(positive coefficient of dividend factor) supported their conclusion. This model, conjoining dividends, taxes and return on shares, is attributed to compliance with tax-adjusted models and is under scrutiny from a number of studies that lead to conflicting results.

Thus, for example, Black and Scholes (1974, pp. 1-22), Miller and Scholes (1982, pp. 1118-1141), and Hess (1983, pp. 537-554) have reported negligible or negative values of the coefficient of dividend factor. They claim that there is no link between stock prices and dividends and support tax-avoidance models.

⁵ Such is the case in Bulgaria at the end of 2015

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Later on, Litzenberger and Ramasvami (1979, pp. 163-195, 1982, pp. 429-443) expanded the model of Brennan and found a significant positive dividend factor, which supports the theory of tax-adjusted effects. Subsequently, their findings are criticized by Miller and Scholes (1982, pp. 1118-1141), and Kalay and Michaely (2000, pp. 55-75) respectively. They explained the results obtained with the impact of information effect.

The contradictory results raise questions about the appropriate method of analysis.

The inadequacy of the methods used for analysis, which lead to conflicting results may be due to the following:

- The selection of the corresponding linear model (Blume, 1980, pp. 567-577; Elton et al., 1983, pp. 135-146).
- The selection of the market sample for testing (Roll, 1977, pp. 129-176).
- The impact of information effects.

Tax-adjusted models are also criticized as incompatible with rational behavior (Frankfurter et al., 2003, p. 83). According to Miller and Scholes (1978, pp. 333-364), individual investors should be indifferent to whether they receive dividends or capital gains, because they can avoid tax on this income. They argue that the tax burden on cash dividends can be avoided by spending the dividend income to cover the interest on the loan that is invested in tax-exempt life insurance or pension funds. For example, if the investor has € 5000 income from cash dividends to defer payment of taxes on that amount, he can borrow from lending institution € 100,000 at 5% interest and invest the amount in an insurance policy that pays 5% interest. Thus interest of € 5000 on credit will be covered with money from dividends and the payment of the tax due is deferred until the withdrawal of money from the insurance policy. In practice, however, shareholders rarely resorted to this form of

tax avoidance. Feenberg (1981, pp. 265-269), Peterson et al. (1985, pp. 267-282) confirmed that the shareholders continue to pay considerable amounts in taxes on dividend income and do not seek to minimize them. These results question the importance of the tax effects for investors and whether and how often taxes affect their investment decisions.

5. Dividends Clientele Models

Investors, subject to higher tax rates, are strongly biased against dividend taxation. Their rational choice is to buy stocks bearing zero or minimum dividends. On the other hand, shareholders with low tax burden will be attracted to stocks that provide higher cash dividends. This difference in preferences caused by different taxation creates the so called tax clientele. According to the clientele effect, as discussed by Berk and DeMarzo (2013, pp. 245-280), the dividend policy of the company has to optimize the pressure of taxation pursuant to the characteristics of its investors.

Allen and Michaely (cited in Constantinides et al., 2003, pp. 337-429) distinguish two main types of tax-clientele models depending on the impact on informational effects.

- Static clientele models. These include the previously described model of Modigliani and Miller whereby companies are motivated to offer shares to minimize tax burdens for their clients. Then, when market equilibrium is reached, because of the lack of additional opportunities to reduce the tax burden, all companies will be equally evaluated. In the particular case studied by Farrar and Selwyn, Brennan, etc., when all investors are subject to the same tax rate on cash dividends, which is higher than that of capital gains, the most favourable policy for the company is to refrain from payment of cash dividends. Other things being equal, companies that

pay high dividends will get lower assessment compared to the respective companies with low or zero dividends.

- Dynamic clientele models. The trend, documented by Campbell and Beranek (1955, pp. 125-228), for the share price to decline on the ex-dividend date to a lesser extent than the amount of the cash dividend is used as a reference point for the development of these models. In these models, in addition to the theory of the existence of tax clientele, the hypothesis of the existence of investor clientele generated by transaction costs is considered.

Transaction costs affect dividend policy twofold: by investors' securities portfolio and by financial policy.

First, transaction costs are associated with the sale of shares or reinvestment of funds from investors. For example, shares bearing dividend will be preferred by investors who rely on this income to maintain or increase current consumption because the provision of funds through the sale of shares may involve significant transaction costs. However, wealthy investors who prefer capital gains over dividends will buy adequate stocks to avoid transaction costs associated with the reinvestment of dividends.

Second, the dividend policy affects the capital structure of the company. Sometimes the payment of dividends can be partially financed through a new issue of shares or by borrowing. The firm will bear the expenditures of new issue or the costs to service the loan. If these costs are significant, then the company's management will be tempted to use mostly their own internal financial resources and refrain from paying out dividends. Transaction costs affect dividend policy in a similar manner as taxes on dividends. As a result, the hypothesis of the existence of clientele due to transaction costs arises. The company must comply with these costs, mainly by following stable and consistent dividend policy.

Elton and Gruber's (1970, pp. 68-74) mathematical model is based on taxes and is an eloquent example of dynamic clientele models. Using statistical data they found a positive relationship between the dividend income from a share and the relative drop in price on the ex-dividend date. They argued that the ex-dividend date stock prices are at such a level that marginal long-term investors are indifferent whether they will buy or sell before or after this date. They confirmed the conclusion of Modigliani and Miller that investors with high tax burden prefer stocks with low dividend income, while investors with smaller tax obligations choose stocks with high dividend income. This hypothesis is confirmed not only for the US market, but also for other countries in the world (Isaksson and Islam, 2013, pp.73-88).

Later on, new hypotheses emerge to explain the ex-dividend behavior of stock prices with market microstructure (Bali and Hite, 1998, pp. 127-159; Frank and Jagannathan, 1998, pp. 161-188) or by short-term trading of brokers (Kalay, 1982, pp. 1059-1070).

Elton et al. (2005, pp. 579- 586) rejected the allegation of market microstructure.

The second hypothesis, known as dividend-capture theory, postulates that brokers, using short-term trading around ex-dividend date, can achieve arbitrage profits if they pay minimum transaction costs and their dividend tax does not exceed the tax on capital gains. This hypothesis fails to fully explain the ex-dividend behavior of stock prices. A market research by Dutta et al. (2004) conducted in Canada developed the idea and claimed that this could be achieved by combining theories of short-term trading and tax effects.

Another group of theoretical models explores how changes in the tax burden on income from dividends affect the share price of

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the companies that pay or do not pay dividends. The hypothesis stating that when the tax on dividends drops (to or below the rate of tax on capital gains) the demand for dividend-bearing shares from investors will rally is formulated, and the market price of the company paying dividends will soar. Respectively, companies will be encouraged to start or increase the payment of cash dividends.

Examples discussed are mostly from the market history of the United States and Western European countries. When changes in the tax treatment of dividends are more significant, the researcher is able to explore more profoundly the importance of tax effects on dividend policy.

Some of the studies did not find arguments in favor of the hypothesis. Another group of research papers have reached conclusions that support it. Some of these studies are mentioned below.

- The results observed following the decrease in the tax rate on dividends in 2003 in the US⁶ are as follows. With the rise of expectations that the tax burden on dividends will be diminished – the price of shares carrying dividend rally. (Auerbach and Hassett, 2005; Auerbach and Hassett, 2006, pp. 119-123). When the legislation is adopted – a growth in the number of non-financial companies starting to pay out dividends is observed (Chetty and Saez, 2005, pp. 791-833; Chetty and Saez, 2006, pp. 124-129). Finally, tax cuts on dividends are not of primary importance in determining the dividend policy of companies. (Brav et al., 2008, pp. 611-624).
- The majority of researchers who analyze changes in the taxation of dividends in Canada, found arguments supporting the theory of tax effects (Booth and Johnston, 1984, pp. 457-476; McKenzie and Thompson, 1995, pp. 463-472).

- For the British market studies are also available supporting the hypothesis that reduction of the tax burden on dividends leads to a rise in the price of shares providing dividends (Bond et al., 1996, pp. 320-333).

In the course of the analysis of the responses of firms arising from changes in dividend tax rate, some authors (Holmen et al., 2008, pp. 1860-1869; Perez-Gonzales, 2003) recognize the role of majority owners in determining the dividend policy. They conclude that after the tax reforms companies usually adjust their dividend policy according to tax preferences of their major shareholders. Favoring the majority owner to minority shareholders is the main agency problem. Although the dividend tax is considered to be a secondary factor in determining dividend policy, it has a leading role in shaping corporate share structure. At the macroeconomic level the taxation of dividends is a major obstacle to the formation of pyramid groups of intercompany participation in ownership, which will detriment competition and favor the rich social stratum (Morck, cited in Poterba, 2004, pp. 135-179).

The existence of tax clientele could affect dividend policy in several ways.

On the one hand, higher tax rates on cash dividends versus those on capital gains lead to lower demand for dividends from investors, which encourages corporations to use to a greater extent the redemption of shares.

On the other hand, the tendency to reduce taxes on dividends in the US and Europe to levels comparable with taxes on capital gains could lead to increased demand for dividend from investors and provide an incentive for companies to payout cash dividends.

The existence of the effect of tax clientele increases companies' value for a particular group of investors, by conducting

⁶ Under the Jobs and Growth Tax Relief Reconciliation Act (JGRRRA), adopted in 2003 by the US Congress, the maximum tax burden on cash dividends decreased from 35% to 15%, and on long-term capital gains - from 20% to 15%.

appropriate dividend policy that satisfies investors' preferences better than other companies.

For example, firms from emerging industries that typically pay no or low dividends will attract customers who prefer capital gains over dividends – for example, wealthy investors, those who will be forced to pay high taxes on dividends and that do not need dividends to finance current consumption. Conversely, companies that pay significant cash dividends due to reaching the maturity stage of their life cycle or the lack of investment opportunities, etc., will attract customers (institutional investors, pensioners, investors with low tax rates on dividends) who prefer high dividends.

An important consequence of the effect of tax clientele for the managers of the companies is that the dividend policy of the company must be clearly defined and consistently applied. The aim is to meet the expectations of its shareholders, who rarely welcome unexpected changes. Thus corporations must adapt to the needs only of their own clientele, according to investors' financial needs and tax status.

Allen, Bernardo and Welch⁷ claimed the effects of clientele are one of the reasons for the existence of dividend policy. They argue that many institutional investors, such as pension funds, prefer to invest in dividend-bearing shares because they have minimal tax burdens on dividends as opposed to individual investors. Similarly, the "quality" companies through the payment of dividends will seek to attract institutional clients who as professional investors are better informed by minority shareholders and can more accurately assess the value of a share. The researchers mentioned also the asymmetry of information they observed in practice and the role of various shareholders and governing bodies in shaping the dividend

policy. Thus they offer a model that connects the model of the tax effects with the agents' theory and signaling theory.

Frankfurter and Wood (2003, p. 86) consider that the fundamental tax system affects dividend policy of companies. They claim that empirical analyses support to a larger extent tax-adjusted models than tax-avoidance ones. Under tax-adjusted models high dividend income that is associated with significant tax liabilities is inherent to the shares the market price of which secure higher expected return. They confirm the thesis that a rational shareholder expects higher returns from stocks paying dividends to offset the tax expense.

As one of the first theories that justifies the existence and importance of the dividend policy, the hypothesis of tax effects is characterized by a number of deficiencies. It received controversial support from the scientific community, which shows its limitations in the detection of "dividend puzzle". The tax effect on dividends is regarded as the most economically rational exogenous factor, though it cannot be proven as a significant determinant of corporate dividend policy. Largely, this is due to the influence of other determinants of dividend policy, such as information asymmetry, the relationship between agents (managers, shareholders and creditors) and other factors, the subject of research in the following theoretical models.

6. Conclusion and Further Research

The emergence of capital markets in developing countries is considered a factor that promotes market economy and supports the availability of financing for companies. Investors' confidence is based on expected future incomes. Dividend policy of public companies influences the decisions of shareholders. The last decade of twentieth

⁶ Allen, F., A. Bernardo, I. Welch, "A Theory of Dividends Based on Tax Clienteles", *Journal of Finance*, 55(6), 2000, p. 2531.

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century and the first of the current one support the perception that dividend policy is losing its importance due to the tremendous increase in share prices. But recent financial crisis and declining investment activities have brought about the rebirth of the interest of investors in dividends. The conclusion from the discussed theories is that there is no final solution to the "dividend puzzle" neither in theory nor in practice.

The majority of analyses concerning the dividend payment policies are focused on North American firms. It might be interesting to see if the findings of the authors would hold true on the European or Asian market. America is a homogenous market and despite its diversity it remains pretty consistent. Even Canada's market situation is easily comparable to the US market. Europe on the other hand is pretty heterogeneous in all aspects. Language, culture and tradition will offer a different perspective. What in New York is considered a large company is easily comparable to one in California. However the same doesn't hold true for Europe.

There are many valid concerns that might arise such as the availability and the difficulty of collecting data, considering the different languages, regulations, taxation systems, procedures, executions and information coverage. Another problem might be the comparison *ceteris paribus* – a company of a certain size in Luxemburg might be considered big, whereas in France it would be labeled a small one. Even analyzing collected data might prove challenging. Despite all the difficulties, results from the Bulgarian stock market promise to be quite intriguing.

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