

Charles University in Prague

Faculty of Social Sciences
Institute of Economic Studies



BACHELOR THESIS

Why do firms pay dividends?

Author: **Jaroslav Šnajdr**

Supervisor: **PhDr. Mres. Jan Zápál**

Academic Year: **2008/2009**

Declaration of Authorship

Hereby I declare that I compiled this thesis independently, using only the listed resources and literature.

Prague, May 24, 2009

Signature

Acknowledgments

The author would like to thank his consultant, Jan Zápál, for very detailed feedbacks, interesting comments and valuable discussions.

Abstract

This thesis focuses on dividend policy of a firm, specifically on the relevance of dividend policy and the relationship between dividends and share repurchases. A brief summary of the perfect capital market model is followed by the examination of theoretical and empirical research on dividend policy theories. The thesis concentrates on three major theories including clientele theory, signaling theory and agency theory, because they incorporate the most important frictions on the market. Despite the existence of vast literature, questions of whether the dividend policy affects the value of a firm or why firms prefer dividends over share repurchases have not been answered yet. Also, the thesis is not finding definite answers but it provides thorough analysis and reveals new possibilities for further research.

JEL Classification G32; G35

Keywords dividend puzzle, clientele, signaling, agency

Author's e-mail snajdr.jaroslav@yahoo.com

Supervisor's e-mail j.zapal@gmail.com

Abstrakt

Bakalářská práce se zaměřuje na dividendovou politiku firem, konkrétně na vztah mezi dividendami a zpětným výkupem akcií, a také na otázku relevance dividendové politiky. Krátké shrnutí modelu dokonalého kapitálového trhu je následováno průzkumem teoretického a empirického výzkumu teorií dividendových politik. Práce se koncentruje na tři hlavní teorie, mezi které patří teorie klientel, teorie signálu a teorie zabývající se vztahy principála a agenta. Navzdory existence rozsáhlé literatury, otázky, zda-li dividendová politika ovlivňuje hodnotu společnosti a proč firmy preferují dividendy před výkupem akcií, nebyly zodpovězeny. Tato práce také nenachází konečnou odpověď, ale poskytuje detailní analýzu a ukazuje nové možnosti pro další výzkum.

Klasifikace JEL G32; G35

Klíčová slova dividend puzzle, clientele, signaling, agency

E-mail autora snajdr.jaroslav@yahoo.com

E-mail vedoucího práce j.zapal@gmail.com

Contents

List of Tables	vii
List of Figures	vii
1 Introduction	1
2 Tax differentials	4
2.1 Introduction	4
2.2 Clientele theory	5
2.3 Supporting evidence	6
2.4 Contradicting evidence	9
2.5 Theory pitfalls	10
2.6 Summary	13
3 Asymmetric information	15
3.1 Introduction	15
3.2 Signaling theory	16
3.3 Foundation of the theory	19
3.4 Share repurchases	21
3.5 Multiple signaling models	24
3.6 Empirical evidence	26
4 Agency costs	30
4.1 Introduction	30
4.2 Shareholders and debt holders - theory	31
4.3 Shareholders and debt holders - empirical evidence	33
4.4 Managers and shareholders - theory	34
4.5 Managers and shareholders - empirical evidence	38
4.6 Dividends or share repurchases?	40
5 Conclusion	42

Contents	vi
<hr/>	
Bibliography	45
A Derivation of multiple signal	I
B Bachelor Thesis Proposal	III

List of Tables

2.1	Tax rates in 2008	4
2.2	Data arranged in groups according to the Value of D/P	8

List of Figures

2.1	Regret aversion	12
4.1	Agency costs - partial ownership	36

Chapter 1

Introduction

Corporate managers make two main decisions. Investment decision, that forms the left-hand side of a balance sheet and financing decision, the right-hand side of a balance sheet. Financing decision primarily determines the capital structure of a corporation, but it also consists of another type of decision - the dividend policy one. The dividend policy sets amount of retained earnings, amount of earnings paid as a dividend and it also influences the capital structure of a firm. Managers should maximize the wealth of their shareholders so they should set their dividend payments according to this objective. Question is, whether and how can the dividend policy affect the value of a firm.

First forms of dividends emerged in the sixteenth century in sailing companies. Very soon they became very important part of the market. Dividend payout ratio¹ grew from about 8% to about 70% in 1920s and even more after the 1929 market crash. In recent decades, the payout level has remained stable ranging from about 45% to 70%.² Percentage of dividend paying firms used to be about 60% in 1970 but it declined sharply to about 30% in 2000.³ In the Czech Republic, out of 24 firms included in PX-GLOB index 14 paid a dividend in 2007 or later. In general, dividends are very stable in nominal terms over time, they do not react to the volatility of earnings, which suggests that managers set certain level of dividends and they are reluctant to change it.

Share repurchases, as an alternative method of cash redistribution, were not economically significant until 1980's, when their importance started to grow up and in 1992, share repurchases reached 22,469 millions dollars, while dividends

¹ Percentage of net income of a corporation paid as a dividend.

² US data, based on Lease et al. 2000.

³ US listed firms, based on Fama & French 2001.

accounted for 69,932 millions.⁴ Share repurchases have been growing rapidly in recent years and their importance on the market seems to catch up with dividends.⁵

Because both investors and companies pay attention to dividends, theoretical economists began to study the impact of dividends on the market behaviour. A crucial contribution was made by two Nobel laureates, Franco Modigliani and Merton Miller, in their 1961 paper. They developed the perfect capital market model using several assumptions:

- (i) No tax differentials exist
- (ii) All information are free and accessible to all traders
- (iii) Fully enforceable contracts and no agency costs
- (iv) All investors and corporations are price takers
- (v) No transaction costs, brokerage fees, flotation costs

When a corporation has some funds in excess of what is necessary for its investments, it has basically three options what to do with these funds - a company can keep them, it can pay a dividend or it can repurchase its own shares. Miller & Modigliani showed the decision of a firm has no impact on wealth of its shareholders.

A firm with some excess funds is valued on the market and the fair price per share is set. If a company decides to keep its funds, price per share will remain the same, there is no reason for any changes in the market valuation of a company. When a firm decides to pay dividends, shareholders receive a dividend payment and the value of a firm decreases because company loses money. The price of shares has to decrease and it decreases exactly by the amount of the dividend paid. So the new price per share plus the dividend are exactly equal to the original price per share.⁶ Shareholders do not gain or lose anything so this policy of a firm has no impact on wealth of its shareholders.

The third option is to repurchase company's own shares. A shareholder has two options, he can either keep his shares or he can sell them and receive money. When a company is buying its own shares, the number of shares outstanding

⁴ Lease et al. 2000.

⁵ Precise statistics of dividends versus share repurchases in last years will be discussed in the Chapter 5.

⁶ This is true only when taxes are equal to zero. Positive tax rate does not change the results of the analysis.

is reduced so each share now represents bigger fraction of a company. But a company has to pay for its shares, so it again loses money and its value decreases. If a shareholder keeps his shares, he now owns bigger fraction of a less valuable firm. These effects exactly offset each other. So at the end, there is no difference if a shareholder sells his shares or keeps them and there is no difference if a company decides to repurchase or not.

In any case, dividend policy of a company is irrelevant, meaning that it has no impact on the value of a firm or on the wealth of its shareholders. Although the Miller & Modigliani logic was generally accepted it was obvious that the theory does not reflect reality. In a real world, managers pay attention to the dividend policy, dividends are not random over time and they are far more frequent than share repurchases. The discrepancy between the theory and reality was the reason why new dividend policy theories emerged. These new theories try to bring the theory closer to the reality by relaxing some of the assumptions made by Miller & Modigliani. By doing so, economists hope to obtain results that better reflect the reality.

The objective of this thesis is to identify the main factors that could explain the dominant role of dividends. Using all major theories and extensive empirical evidence that appeared in the literature after the publication of Miller & Modigliani 1961, we will try to answer the question of why firms prefer dividends over share repurchases and how such dividend policy affects the value of a firm.

The thesis is structured as follows: Chapter 2 will discuss taxes as the first big friction at the market. Most of this chapter is devoted to the tax-induced clientele theory which was acknowledged by Miller and Modigliani but was not considered to cause a departure from the irrelevance proposition of the dividend policy. Because some behavioural aspects can have a strong impact on the clientele theory and because behavioural models do not constitute a coherent theory yet, they will be discussed as a part of this chapter as well.

Chapter 3 will relax the assumption of free and accessible information to all traders. We will discuss the existence of various signaling models from the first basic ones to the multiple signaling models developed later.

Chapter 4 examines the assumption of no agency costs. Two particular agency relationships - shareholders versus debt holders and shareholders versus managers - will be discussed, the later will be then used in developing the life-cycle theory of dividends.

Chapter 5 concludes and discusses the results of the particular theories.

Chapter 2

Tax differentials

2.1 Introduction

The tax differentials are the first friction which makes the market imperfect. With same tax rates, there is no difference between a dividend or a share repurchase. A shareholder has to pay a tax in either way of redistribution. In the real world, however, we have to take into account the existence of differences in various tax rates.

Most of the time, a company pays dividend from its earnings. These earnings are taxed at a corporate tax rate and the rest can be then paid as a dividend or it can be used to repurchase company's shares. While dividends are subject to income tax (or dividend tax), share repurchases are subject to capital gains tax, which is generally lower than dividend tax, as it can be seen in Table 2.1.

Table 2.1: Different tax rates in 2008

Country	Capital gains tax	Tax on dividend	Corporate tax
Czech Republic	0% ¹	15%	21%
France	18%	48.7%	34.4%
Germany	0% ²	26.4%	30.2%
Netherlands	0%	25%	25.5%
Spain	18%	35%	30%
United Kingdom	20%	32.5%	28%
United States	15% ³	17.3%	39.3%

Source: OECD Tax Database and Deloitte Tax Country Guides

Lower capital gains tax influences after-tax return of the shareholders and thus should cause shareholders to prefer share repurchases. But this does not reflect the reality. Even though share repurchases have become more important in recent decades, dividends remain a major source of redistribution of cash flow from a firm to its shareholders. It seems to be irrational that most of the shareholders still demand dividends regardless their tax disadvantage.

2.2 Clientele theory

Every corporation tries to attract as many investors as possible, because more investors willing to invest in a company means easier access to cash through new issues of shares. Investors are interested in expected return on their portfolio of shares. The aggregate return can be divided into dividends and capital gains. Most individuals are taxed on dividends more heavily than on capital gains. And because shareholders want to minimize their tax burden, they should demand dividends or share repurchases accordingly to their different tax rates. This fact would suggest that individuals in low income tax brackets should invest in high dividend yield stocks and individuals in high income tax brackets should invest in low dividend yield stocks. This hypothesis, that different dividend policies attract different groups of investors, is called the dividend clientele theory or the tax-induced clientele effect.

The theory was first discussed by Miller & Modigliani 1961. When they relaxed the assumptions of the frictionless market they admitted that imperfections on the market could influence preferences of the shareholders. They explicitly mentioned transaction costs and different tax conditions of different investors. They also noted that the characteristics such as age or preference for a specific frequency of payouts may cause some investors being attracted by specific firms and form themselves into a clientele. Miller & Modigliani thus recognized the existence of clientele effect but they noted that this existence has no impact on the value of a corporation. Next sections will try to find some evidence of the existence of clientele effects and the last section of this chapter will discuss the consequences of clientele for the firms. One note should be mentioned now, Miller & Modigliani recognized the existence of several kinds

¹ On long term capital gains over 6 months of holding period.

² There is a change to 25% tax rate this year.

³ Or only 5% for the lowest income bracket. Both tax rates are long term, over 1 year of holding period.

of clientele effects. In the whole thesis, the expression “clientele effect” will be used as a tax-induced clientele effect, thus clientele caused by different tax rates, unless stated otherwise.

2.3 Supporting evidence

From the theoretical point of view, it was Elton & Gruber 1970 who provided the most influential proof of the validity of clientele effect. They used an indirect method by examining ex-dividend day price drop. According to Miller & Modigliani 1961 (and large part of other literature) price of a share should fall by the amount of the dividend on the ex-dividend day. But this constitutes a disadvantage for ordinary shareholders with income tax rate greater than zero. These shareholders have to pay a tax on their dividend and thus they would lose money if the price of a share fell by the whole amount of a dividend. Elton & Gruber therefore hypothesized that the ex-dividend day price drop should be equal to a dividend times $(1 - \text{taxation})$.

Let us consider a situation where a stockholder decides to sell his share before the ex-dividend day. He would receive:

$$P_B - t_c(P_B - P_c) \quad (2.1)$$

P_B - price of a share before the ex-dividend day

P_c - original price of a stock

t_c - capital gains tax rate

If a stockholder sells after the ex-dividend day, his profit would be:

$$P_A - t_c(P_A - P_c) + D(1 - t_o) \quad (2.2)$$

P_A - price of a share on the ex-dividend day

D - dividend received

t_o - income tax rate

Shareholders want to maximize their wealth, so they choose the first or the second option according to their tax rates. For an indifferent (marginal)

shareholder, we obtain:

$$P_B - t_c(P_B - P_c) = P_A - t_c(P_A - P_c) + D(1 - t_o) \quad (2.3)$$

$$\frac{P_B - P_A}{D} = \frac{1 - t_o}{1 - t_c} \quad (2.4)$$

It can be seen that with non zero but equal tax rates (the assumption of the perfect capital market), the price drop would be still exactly equal to the amount of a dividend.

In order to test the clientele hypothesis, Elton & Gruber hypothesized two variables that have impact on the choice of shareholders to invest in a particular company. First one is the dividend yield.¹ The higher the dividend yield is, the higher the dividend and the lower the capital gain. Higher dividend yield should attract shareholders in low income tax brackets and vice versa. The second variable is the payout ratio. Firms with a high payout ratio will not probably, *ceteris paribus*, grow as fast as the firms with a low payout ratio because these have more funds for investments. A higher payout ratio means a higher dividend and a lower capital gain and such firms should attract investors in low income tax brackets.

Firms were grouped according to their dividend yield. For each group, $\frac{P_B - P_A}{D}$ mean was calculated and from equation 2.3 corresponding tax brackets were obtained.² In the Table 2.2 we can clearly observe declining tax brackets³ confirming the theory that individuals with higher taxes gravitate towards the firms with lower dividends. Similar results were obtained using the second variable, the payout ratio.

Among other studies that focused on ex-dividend day stock price behaviour, Campbell & Beranek 1955 can be mentioned. Their examination of the ex-dividend day price drop came to the similar conclusions as Elton & Gruber. The tax paying investors find it advantageous selling before the ex-dividend day if the price drop equals the amount of the dividend or is close to it. The tax-exempt investors, on the other hand, prefer buying before the ex-dividend day.

Another indirect and rather empirical evidence of the clientele theory was provided by many studies, including the one of Lee et al. 2006. The authors of

¹ Dividend yield is the annual dividend per share divided by the price per share.

² To compute tax rates, the authors used the condition $t_c = \min\{25\%, \frac{1}{2}t_o\}$.

³ Except for last two groups, where we can in fact observe preference for dividends. The authors believe this can be caused by the tax system where corporations pay lower tax on dividends from other corporation than on capital gains.

Table 2.2: Data arranged in groups according to the Value of D/P

Groups	D/P <i>mean</i>	$\frac{P_B - P_A}{D}$ <i>mean</i>	Implied Income Tax Bracket
1	0.0124	0.6690	0.4974
2	0.0216	0.4873	0.6145
3	0.0276	0.5447	0.5915
4	0.0328	0.6246	0.5315
5	0.0376	0.7953	0.3398
6	0.0416	0.8679	0.2334
7	0.0452	0.9209	0.1465
8	0.0496	0.9054	0.1747
9	0.0552	1.0123	indeterminate
10	0.0708	1.1755	indeterminate

Source: Elton & Gruber, 1970, pg. 72

this study used data from Taiwan during the period 1995-2003. Zero capital gains tax and the prohibition of share repurchases till 2000 both represent unique environment for research. When firms wanted to redistribute their cash they had to pay dividends and shareholders did not pay any capital gains tax if they decided to sell shares. That means there was a bigger disadvantage of dividends over capital gains. Paper showed that shareholders not only arrange themselves into groups according to the clientele hypothesis, they also react to changes in a dividend policy. High income tax bracket shareholders tend to sell firms that are going to increase the dividend and vice versa. After 2000, when share repurchases were legalized, firms with high income tax bracket shareholders decreased or stopped their dividend and started share repurchases instead. Thus acting in correspondence with the clientele hypothesis.

Scholz 1992, on the other hand, provided the direct evidence of the clientele hypothesis because he used data of individual portfolios from the 1983 Survey of Consumer Finances where consumers directly stated their tax situation. Regressing the dividend yield on various characteristics including income tax rate of the shareholders, he obtained negative and significant coefficient in accord with the clientele hypothesis.

2.4 Contradicting evidence

Many authors challenged Elton and Gruber's finding of the ex-dividend day price drop. Among others, Kalay 1982a seems to provide the most influential arguments. Kalay started with the original methodology of Elton and Gruber but he also incorporated transaction costs. If the ex-dividend day price drop of a share is assumed to be smaller than the dividend plus transaction costs, investors could buy this share before the ex-dividend day and sell it after the ex-dividend day. Such an investor would obtain:

$$(1 - \tau)(-P_B + D + P_A - tc) > 0 \quad (2.5)$$

tc - transaction costs

τ - tax on a short term capital gains

If the ex-dividend day price drop of a share is assumed to be larger than the dividend plus transaction costs, investors could sell this share before the ex-dividend day and buy it afterwards. In the sense of opportunity costs, the profit would be:

$$(1 - \tau)(P_B - P_A - D - tc) > 0 \quad (2.6)$$

Potential profit depends heavily on transaction costs. Brokerage firms or other dealers with very low transaction costs have a possibility to obtain certain profit and thus eliminate the ex-dividend premium in a risk-free transaction. We can derive a condition for no possible profit by reverting the inequality in equations 2.5 and 2.6. We then obtain a condition that prevent the possibility of an arbitrage:

$$1 - \frac{tc}{D} \leq \frac{P_B - P_A}{D} \leq 1 + \frac{tc}{D} \quad (2.7)$$

Transaction costs are relatively higher on low yield dividend stocks and they can make the arbitrage unprofitable. For high yield dividend stocks, transaction costs represent a smaller obstacle and thus make the arbitrage more profitable. So the statistic $\frac{P_B - P_A}{D}$ will be close to 1 for high dividend yield stocks, because dealers will reduce the ex-dividend day premium and lower than 1 for low dividend yield stocks. This is the same result as Elton and Gruber had obtained, but with completely different arguments. Kalay thus concludes that

“the marginal tax rates of stockholders cannot be inferred, in general, from the relative price drop. Therefore, the documented ex-dividend day behaviour of stock prices is not necessarily evidence of a tax effect or a clientele effect.” (Kalay 1982a, pg. 1068)

There are also several empirical studies that did not confirm the clientele hypothesis. Lewellen et al. 1978 examined data provided by a large retail brokerage house from 1964 to 1970. Using questionnaire surveys, shareholders were divided into groups according to their tax situation, sex, age and other characteristics. Stocks were grouped according to their dividend yield. Lewellen et al. were able to find some significant relationships, for example between a dividend yield and owner’s age where younger investors preferred low dividend yield stocks and vice versa, suggesting some kind of life cycle effect.⁴ However, the authors were not able to find any relationship between the dividend yield and tax situation of the shareholders. The study thus provided some direct evidence of non-tax-induced clientele effects. Booth & Johnston 1984 extended the analysis of clientele effects from the US to Canada using a similar approach as Elton and Gruber. Their data provided very little evidence of clientele effects and their ex-dividend day price drop seemed to be independent on dividend yield of the stock.

2.5 Theory pitfalls

Theory of clientele effects seems to partially reflect behaviour of the market. Some studies showed rather strong impact of taxes on clientele, others did not. To find out why some authors are so sceptic about the clientele effect, reasons and incentives of shareholders to behave according to the theory should be discussed.

Individual shareholders are most of the time taxed more heavily on dividends, but some low-income shareholders may have their personal income tax even lower than a capital gains tax. Together with corporations, that are often less taxed on dividends than on capital gains, they should form one group of investors that would strictly prefer high dividend yield stocks. Other individuals with higher income tax should form a second group with a strong preference for low dividend yield stocks. But this does not reflect the reality. For example institutions do not tend only to the firms with high dividends. Tax-exempt

⁴ Documented in more detail in Pettit 1977.

investors do not buy all high dividend yield stocks in the economy. One reason stated by Allen et al. 2000⁵ is the problem of diversification. Even though firms will pay some dividend tax, they prefer doing so because they can better diversify and decrease risk of their portfolio, similarly for individual investors. The problem of a diversification can thus cause not only clientele effects to be less significant but maybe totally suppressed.

Black & Scholes 1974 described two other effects that prevent the clientele theory from working properly. Firstly, they wrote about the *supply effect*. They argued that firms will adapt to a different demand for dividends, some will pay high dividends, some will pay low. After some time, market will reach an equilibrium where no corporation can affect its share price by changing its dividend policy. If one company decides to increase/decrease its dividend, other will do the opposite and there is no effect on a price of shares. However this supply effect assumes all firms and all shareholders to be identical. Allen et al. 2000 disclaimed this argument by showing that a specific group of shareholders (institutions) can have a positive effect on specific firms (high quality firms).

The second effect, uncertainty effect, states: “Investors are ignorant of the direction and magnitude of the effects of dividend yield on portfolio returns, so they may decide to ignore yield in making portfolio decisions.” (Black & Scholes 1974, pg.32) Black and Scholes argue that shareholders have no way of knowing the effect of the dividend policy on their portfolio expected return. And because they do not know the consequences of dividend policy changes, they do not react to them. Corporations thus do not care about their dividend policy, they do not try to attract some investors by paying or not paying the dividend.

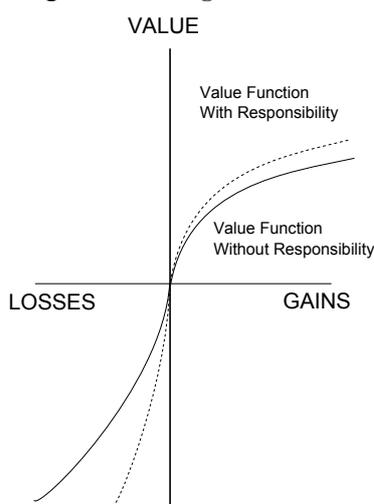
Apart from taxes, individual investors may be also heavily influenced by behavioural reasons. Thaler & Shefrin 1981 published their theory of self-control which was later extended to dividends by Shefrin & Statman 1984. According to these theories, we can imagine any shareholder as two individuals. A *planner*, whose responsibility is to prevent a second individual, a *doer*, from temptation to consume more than he should. A planner represents long-run life preferences while a doer represents short run selfish preferences. These two sets of preferences can be, and usually are, in contradiction at one particular moment in time. Shareholder would like to consume as much as possible right now, but he also knows he has to keep his wealth for the future. This situation is similar to a principal-agent problem. Principal, here planner, has to control an agent, here doer. As a self-control is quite complicated, because a

⁵ Also by others including Black & Scholes 1974, Denis & Osobov 2008.

shareholder would have to control himself, there is another way how to ensure that a doer will not plunder his wealth. Shareholder can limit possibilities of a doer. He can impose restrictions and thus bound doer's opportunities to make any damage and dividends can play a crucial role. A shareholder can buy some shares with a dividend yield and he can then decide to consume only the dividends he will obtain. A doer can not touch the rest of shareholder's wealth and thus using dividends any shareholder can achieve a much better level of self-control.

Further behavioural reason why individuals prefer dividends can be regret aversion. Let us consider a shareholder that spends only dividends he receives. So if he obtains 10\$ he will spend 10\$. If afterwards the price of shares will increase, he does not regret so much that he did not rather invest his 10\$ to obtain more shares. His rule is to spend all his dividends and because that is exactly what he did, he does not regret his action. On the contrary, second shareholder does not receive any dividends and he decides to sell some of his shares to obtain again 10\$. The price of shares will increase afterwards and this shareholder will not only loose some money, he will also regret that he broke his rule. In this situation, the shareholder is responsible for his loss because he made a bad decision. Shefrin & Statman stated that in the case of a loss, absolute value of this loss is bigger due to regret. This feature of the utility function, depicted on Figure 2.1, can cause that individuals rather use dividends, because they do not feel the responsibility for the outcome.

Figure 2.1: Regret aversion



Source: Shefrin & Statman 1984, pg. 269

The existence of other forms of clientele may be another reason why individ-

ual shareholders can act against the tax-induced clientele theory. Pettit 1977 or Lewellen et al. 1978 documented age-induced clientele, marital status-induced clientele or family size-induced clientele. These other types of clienteles may act in the same direction as tax-induced clientele but not necessarily. Therefore real impact of taxes on individual shareholders is not clear and it can be one of the reasons why the evidence of the tax-induced clientele is mixed.

Finally the situation of a tax-exempt institution as an investor should be considered. Although some authors state that the tax-exempt investors should prefer high dividend yield stocks, these investors should be indifferent between taxes or share repurchases, they do not pay taxes on any method of cash redistribution. There are probably some non-tax reasons why tax-exempt investors may prefer dividends. Dividends are regular and immediately liquid whereas to obtain cash by selling shares, institutions would have to execute some transactions that are connected with transaction costs. Different yields on stocks can also increase tax-exempt preference for dividends. Brennan 1970 argued that high dividend yield stocks provide a higher pre-tax return to compensate shareholders for a disadvantage of heavily taxed dividends. His model is based on the capital asset pricing model and can be expressed as:

$$E(r_i - r_f) = \alpha_1 + \alpha_2\beta_i + \alpha_3(d_i - r_f)$$

where r_i is the rate of return on stock i , r_f is a risk free rate, β_i is the systematic risk of the stock and d_i is the dividend yield of the stock. Significantly positive α_3 coefficient would provide an evidence of higher pre-tax return on dividend paying stocks. Although the evidence is mixed, the existence of higher pre-tax return would clearly imply a strong incentive for tax-exempt investors to prefer high dividend yield stocks. That is because their higher pre-tax return would mean an additional bonus.

2.6 Summary

If we accept that the tax or other-induced clientele theory holds, that is shareholders form themselves into groups according to their tax rates, it is nothing against Miller & Modigliani irrelevance propositions. They admitted that clientele can exist, but it has no impact on corporations. Every firm paying dividends loses its value, because of the tax. When a company pays very high dividends, its shareholders have very low income tax rate. And when a com-

pany pays very low dividend, shareholders have high income tax rate. Thus the impact of higher (lower) dividend is offset by lower (higher) tax rate and the loss in the value of a firm is the same for all possible positive amounts of the dividend. Most of the authors focused on evidence of clientele effects but not on consequences this existence can have on the value of a firm.

One implication that can be derived from the clientele theory is that managers of a corporation may not be willing to change their dividend policy. Even when managers would try to please their shareholders by lowering the tax burden, they could actually hurt them. If managers, for example, decide to substitute dividends for share repurchases, they could force their dividend preferring shareholders to sell company's shares and find a new firm that satisfies their dividend policy requirements. This fact is consistent with the dividend smoothing phenomenon which indicates very slow and mild changes in a dividend policy in time.⁶ But again, in the theory this has no impact on the value of a corporation. Clientele theory does not imply that different shareholders can cause increase or decrease in the value of company's shares. All shareholders should value the firm in the same way.

However Allen et al. (2000) showed that this may not be entirely true. Corporations paying high dividends attract low-taxed shareholders, which are mostly other corporations or tax-exempt institutions rather than individual investors. Two important consequences of such an effect were identified by the authors. Firstly, institutions can easily detect the quality of a firm, because they can obtain more information than individual investors. High quality firms try to attract institutions, because institutions will reveal the true value of such firms and the market will then reflect this new information and increase the valuation of these companies. Firms thus use dividends as a signal,⁷ they want to differentiate from the others. Secondly, institutions can also easily control management of the corporation. They can ensure that the firm will stay of high quality, they can vote with more information and they can change a bad management. Institutions can also help the firm to mitigate agency costs by providing better monitoring of the managers.⁸ These two effects of institutional investors can actually increase the value of a firm. So if the tax-induced clientele exists, firms dividend policy can have some impact on the value of a firm, which is in contradiction with original Miller & Modigliani proposition.

⁶ Described for example by Allen et al. 2000, Chetty & Saez 2006, Baker et al. 2002 and others.

⁷ Signaling theory itself will be discussed in the Chapter 3.

⁸ Agency theory itself will be discussed in the Chapter 4.

Chapter 3

Asymmetric information

3.1 Introduction

“All traders have equal and costless access to information about the ruling price and about all other relevant characteristics of shares.” (Miller & Modigliani 1961, pg. 412) states one of the assumptions of the frictionless market. However, in the reality it is very unlikely that outside investors have the same information as insiders, who have better access to various data about current and future prospects of a corporation. It would be very costly for an individual investor to obtain all possible information about all companies he invested in.

Companies can invest in several projects that generate different cash flows. These cash flows depend on the prospects of a project, but also on many other variables. Current market situation, random shocks in the economy, unexpected price drops in strategic commodity, performance of competitors and other factors influence projects of a firm and the generated cash flow. Even though a market can reflect some of these external variables into the valuation of a company, the valuation may not be precise. When managers of the company believe that their company is undervalued by the market, they are tempted to persuade the market about the true value of the company. Their desire increases substantially in situations, when company needs to raise some additional funds from the market. Managers face the question of how to convey the information of firm's prospects. They may of course use public audit and report their situation in financial and various other statements, however this may not be entirely possible in some situations.

Let us consider a pharmaceutical firm, whose management believes that their new developing drug will be highly successful on the market and will

cause substantial increase in the market value of the firm. If, for example this firm needs additional funds to finish the development of its drug, it is necessary to persuade the market that the value of the firm is higher, than generally believed. Management of the firm can publicly state the future success of this drug. However, there can be another firm on the market with a project that is not likely to be successful. This “bad” firm can imitate the action of a good firm, it can also publicly state the future success, even though it can be a lie. This signal is not credible. On the other hand, representatives of a good firm cannot reveal all necessary information of their research and development of this new drug, because it would cause a loss of their advantage over the bad firm. As a result, managers would want to use a signal, that cannot be imitated by the other firms. And we finally get to dividends, because dividends represent one such possible signal.

3.2 Signaling theory

The signaling theory is a widely used concept not only in the dividend puzzle, but also in other theoretical problems. A basic principle of all models is the same. Insiders, who have private information about current and future prospects of a firm, want to convey this information to the market. The crucial thing is that this signal has to be credible, which means that firms with bad projects do not want to or cannot imitate the action of better firms, because the costs of this signal are prohibitively high. When the signal is credible, the market will reach a separating (or signaling) equilibrium. In this situation, market can separate between a good firm and a bad firm and can value them properly. If the signal is not credible or if a good firm does not use any signal, market is in a pooling equilibrium, where all companies are valued in the same way, because outside investors cannot say, which company is good or bad.

Most important features of the theory can be derived by constructing a simple model with dividends as a signal. Let's consider only two firms on the market. Both firms have a project that will generate the value of a firm V_S in the case of success and a value V_U when it is unsuccessful. The probability of this project to be successful equals ρ_g for a good firm and ρ_b for a bad firm. The probability of the success is higher for a good firm than for a bad firm, so $\rho_g > \rho_b$. Both firms need amount of cash k to finish their projects and both have some retained earnings l from the previous projects, $l < k$. Thus firms need to raise additional amount of cash $k - l$ to finish their projects.

Assume they will decide to sell new shares to obtain these funds. Because market cannot distinguish between these two firms, it will value them in the same way. To obtain additional cash, a firm has to give up its portion $\frac{k-l}{V}$, where V is a firm's market value. Firms can either raise the cash needed at the market valuation, or they can decide to signal to the market their true value. Obviously, only a good firm has an incentive to signal to the market its true value, because it is undervalued. A bad firm is satisfied because it is overvalued. A good firm can decide to use dividends as a signal. It will use some cash to pay a dividend and then raise the required funds on the market. But this time, market will recognize the true value of this firm and the price per share will increase. This will allow a good firm to sell less shares, thus to give up a smaller part of the company compared to the non dividend case.

We will start with a general equation of the value of a firm, from the shareholders's point of view, same for both companies:¹

$$(1-t)D + \left(1 - \frac{k-n}{\pi_i V_S + (1-\pi_i)V_U}\right) (\rho V_S + (1-\rho)V_U)$$

t - a tax imposed on dividends

D - amount of a dividend paid by a firm

n - amount of earnings left after paying dividends, obviously $D + n = l$

π_i - a probability assigned by the market. Subscript i equal to one represents a situation with a signal. When equal to zero a firm does not use any signal.

The equation says that the value of a firm equals the dividend payment plus the fraction of a firm left after obtaining external funds times the true value of a firm. At the beginning, the market is in a pooling equilibrium. In this situation, the probability assigned by the market is equal to $\pi = \rho_g \cdot \lambda + \rho_b \cdot (1-\lambda)$ where λ is a share of good firms. In our case with only two companies, λ is equal to one half. A good firm is not satisfied with its valuation and it will try to move to a separating equilibrium, where it can obtain higher price for its shares. To establish a separating equilibrium, two conditions have to be met:

(i) A good firm has to be better off using a signal

(ii) A bad firm has to be better off not using a signal

¹ The problem of discounting is neglected because it does not change anything on the results of the model.

For a good firm paying dividends, assuming for simplicity maximum dividend $D = l$, shareholders would obtain:

$$(1 - t)l + \left(1 - \frac{k}{\pi_1 V_S + (1 - \pi_1) V_U}\right) (\rho_g V_S + (1 - \rho_g) V_U) \quad (3.1)$$

which has to be higher than without any dividend:

$$\left(1 - \frac{k - l}{\pi_0 V_S + (1 - \pi_0) V_U}\right) (\rho_g V_S + (1 - \rho_g) V_U) \quad (3.2)$$

If a good firm pays a dividend, the market will accept the signal and will change its valuation of a firm. Thus the market valuation will reflect the true valuation of the company. In equation 3.1 we will obtain $\pi_1 = \rho_g$ and the expression will simplify. After a small adjustment, we will obtain a final condition of a separating equilibrium for a good firm:

$$k - l(1 - t) < (k - l) \frac{\rho_g V_S + (1 - \rho_g) V_U}{\pi_0 V_S + (1 - \pi_0) V_U} \quad (3.3)$$

For this condition to be met, we need the fraction on the right side to be big enough. This means that if the true value of a company is substantially higher than the market value, managers will have a strong incentive to signal using dividends. We can also see that under some conditions, a tax rate can be prohibitive. If the dividend is very high and a tax rate is very high as well, shareholders would lose more money on paying taxes than they would gain on a higher price per share.

If a good firm tries to get to a separating equilibrium, a bad firm will examine whether it can imitate its action. Equations similar to 3.1 and 3.2 hold also for a bad firm. We just have to reverse the inequality and change the subscript of ρ to obtain ρ_b . For a bad firm in equation 3.2 we will obtain $\pi_0 = \rho_b$. Again after a small adjustment, the second condition will look like:

$$k \frac{\rho_b V_S + (1 - \rho_b) V_U}{\pi_1 V_S + (1 - \pi_1) V_U} - l(1 - t) > k - l \quad (3.4)$$

A fraction is smaller than one and thus for this condition to be met, we need that $l(1 - t)$ is substantially smaller than l . Here we clearly see that taxes play crucial role in this condition. It can be demonstrated that without taxes, this condition cannot be met. For this we need to use a condition $k \leq \rho_b V_S + (1 - \rho_b) V_U$ which is a condition for a project to be profitable for a

firm. Applying this and putting taxes equal to zero, we will obtain:

$$\frac{(\rho_b V_S + (1 - \rho_b) V_U)^2}{\pi_1 V_S + (1 - \pi_1) V_U} - l > \rho_b V_S + (1 - \rho_b) V_U - l$$

$$\frac{\rho_b V_S + (1 - \rho_b) V_U}{\pi_1 V_S + (1 - \pi_1) V_U} > 1$$

This condition cannot be met, because in this case ρ_b is substantially smaller than $\pi_1 = \rho_g$.

In this model, the costs caused by taxes represent a necessary condition in establishing a separating equilibrium. They ensure that a bad firm will not try to imitate the signal of a good firm, because paying dividends is too costly. On the other hand, very high level of tax rate together with very high dividend could cause problems to the first condition of a separating equilibrium. Even though the taxes represent in many models costs that prevent a bad firm from behaving as a good firm, some models incorporated other costs, we will describe them in the next sections. This model also implies why do firms pay dividends rather than repurchase shares. Firms do not want to avoid high taxes, they want to pay these costs to be able to improve a valuation of their company. However some models also provide a rational for signaling with share repurchases.

3.3 Foundation of the theory

Bhattacharya 1979, John & Williams 1985 and Miller & Rock 1985 are considered to be the thirst authors that introduced the signaling theory into the dividend puzzle. They provided main theoretical fundamentals that later allowed further development of the theory.

Bhattacharya was the first one who extended the signaling model of Nobel price winner Michael Spence from 1974. In his paper Bhattacharya refused that any accountant reports can be a reliable source of information, mainly because of the moral hazard. To signal the quality of a firm, management commits to a certain level of dividend payment. Expected dividend in the simple two period

model can be expressed as:

$$E(D) = \frac{1}{1+r} \left[V(D) + (1-t)D + \int_D^{X_1} (X-D)f(X)dX + \int_{x_0}^D (1+\beta)(X-D)f(X)dX \right]$$

where $V(D)$ is a liquidation value of a company, t represents taxes, D is dividend, X is an uncertain stream of cash flow ranging from X_0 to X_1 , $f(X)$ is a distribution function of X , r is an interest rate and β represents transaction costs connected with external financing. When the real cash flow is higher or equal to the committed dividend, company just pays more money or it pays exactly the amount of D . But when the real cash flow is below the committed dividend, then company needs to raise a cash to pay high dividend and it incurs transaction costs connected with outside financing. Thus a firm with bad projects continuously suffers from these transaction costs and is not willing to pay large dividends. According to this model, high dividends represent a credible signal also because of the tax costs but mainly because of the transaction costs that play a crucial role.

Several authors criticised this model, especially the assumption of “a commitment to a certain level of a dividend”. In a long term, high dividends really represent a credible signal, but just a commitment that a firm will pay these dividends is not enough. Because firms are not obliged to maintain the level of their dividend, a bad firm can easily commit to pay large dividends, it can even pay high dividend one year to persuade the market but it can easily decrease its dividend afterwards. So the commitment signal cannot be considered as a credible one and the market would probably not pay any attention to this commitment.

Miller & Rock developed also the two period model in which firms invest in their projects and obtain earnings that are unobservable. These earnings are used to pay dividends and to invest into the new projects. But the investments are again unobservable by the outsiders. To signal to the market the true value of a firm, management pays large dividends and cuts their investments, thus the firm departs from Fisherian criterion for optimum investments saying that a firm should invest in its projects until the marginal internal rate of return equals the risk-adjusted rate of return on securities. Dividends have to be sufficiently large to prevent a firm with worse projects to cut its investments. Neither

taxes, nor transaction costs are incorporated in this model. It is the cost of underinvestment that makes the signal credible. However this model does not explain, why should a firm pay dividends rather than repurchase shares. A firm would be able to achieve similar signal by repurchasing its own shares. This model thus represents a further step in the signaling theory, but does not represent a significant progress in solving the dividend puzzle.

Finally, John & Williams 1985 elaborated more complex model with taxation costs that make dividend signaling credible. They introduced liquidity demand of shareholders, which represents need of shareholders for a cash income from a firm. This cash can be obtained either by receiving a dividend or by selling shares to new investors. When a firm is undervalued, its shareholders have to sell more shares to meet their liquidity demand and they suffer from a dilution of ownership. Thus even though a firm does not necessarily need to raise new cash by selling shares, it still signals to the market its true value. Shareholders can then sell their shares for a higher price and more importantly, they can keep bigger fraction of a firm and in the case of a good firm, this higher fraction will compensate shareholders for the taxes they had to pay on dividends. The model further implies that an optimal dividend increases with more favourable inside information and it decreases with taxes. The authors also explained why a firm can pay dividends and sell new shares at the same time. They also admitted the existence of clientele effects caused by the differences in a liquidity demand. For example senior citizens or widows have higher liquidity demand and thus they will incline to the firms with higher dividend.

3.4 Share repurchases

Theories based on signaling mainly try to explain empirically documented announcement effects. But not only dividends cause changes in a share price, share repurchases have the same effect. Various authors developed signaling models where insiders use share repurchases to convey the necessary information. A firm can repurchase shares in various ways. Open market repurchases are the most common way how to repurchase. A firm can, but does not have to, announce the amount of shares it is going to buy at a market price. Open market repurchases can last several months or even years. However open market repurchases can hardly be used as a credible signal. Because firms are not obliged to announce the repurchase and because this repurchase can last several

years, this signal is not easily observable and it can be also imitated. Second type is the tender offer repurchase. This time, a firm sets a number of shares it is going to buy at a tender price, which is typically higher than the market price, and a duration of the repurchase, usually three weeks or one month. Because firm has to announce all these information, this type of repurchase is mostly considered to be appropriate to act as a credible signal. Several other types emerged in recent years including Dutch-auction repurchases, transferable put-rights distributions or targeted stock repurchases. These alternative types of share repurchases are not very discussed in the theory, probably because they are not very frequent.

Vermaelen 1984 developed a model where he combined the signaling theory with agency problems. Vermaelen assumed a firm to use only share repurchases as a signal, specifically a tender offer share repurchases. Tender offer represents a credible signal, because a firm pays higher price for its shares, thus a firm incurs costs equal to $(P_T - P)N$, where P_T is a tender price per share, P is a market price per share and N is a number of shares repurchased. These costs together with capital gains tax paid by shareholders may be sufficient to prevent a bad firm from imitating the signal and thus tender offer repurchases can act as a credible signal in a similar way as dividends can.

Ofer & Thakor 1987 elaborated the model where a firm can use both share repurchases or dividends, because they are considered as substitutes. Share repurchases are even considered to convey more information than dividends. This assumption is based on empirical observation that share repurchases elicit bigger response of a price per share than dividends. However authors do not provide any study that would confirm this empirically. Dividend signaling part of the model resembles that of Bhattacharya, because of the transaction costs that make a signal credible. Share repurchases signaling is inspired by Vermaelen 1984 but differs in cost structure of the signal. Share repurchases are costly in two ways. Firstly, they may require external financing, which is more costly than internal one. Thus again transaction or flotation costs play important role. Secondly, managers are assumed to hold some fraction of a firm that should motivate them to maximize the value of their firm. Managers are further risk averse and they cannot trade their own shares during a tender offer repurchase. When a firm pays dividend, all shareholders, including managers receive the cash which can be easily reinvested. However when a firm decides to repurchase, a manager cannot trade its shares and is left with larger holding in his firm. With dividends, managers can diversify their portfolio by reinvest-

ing but with share repurchases, their portfolio is not diversified and they are exposed to more risk.

Several implications can be made from a model based on these assumptions. When an undervaluation of a firm is not very large, a firm will prefer signaling with dividends, because they represent only transaction costs and because managers want dividends. However when the true value of a firm is much higher than the market believes, company would have to pay very high dividend with extensive external financing, which is very costly. In this situation, a manager can decide to use share repurchases to signal. Because tender offer share repurchase is assumed to be more efficient than dividends, a manager does not have to spend so much money on the signal. Manager thus saves some money and enhances the value of a firm. However a manager is exposed to bigger risk, because he holds larger fraction of a firm. But firstly, he knows that the firm is valuable and secondly, he saved money and made a firm even more valuable with share repurchases than with dividends. Both these effects offset the increase in manager's risk exposure. Unfortunately, as far as the author of this text knows, no empirical evidence of this prediction exists.

Brennan & Thakor 1990 also discussed when a firm should signal via dividends and when via share repurchases. However Brennan & Thakor did not incorporate utility function of managers and they also modified a setting with asymmetric information. In all previous models there was asymmetric information between insiders and outsiders. In this model, there is asymmetric information among shareholders of the same firm. Some shareholders are informed and some are uninformed. When a firm pays a dividend all shareholders receive the same amount, but when a firm repurchases its shares, only informed investors know whether to sell or not and their action adversely affects uninformed investors. Costs of obtaining the information are assumed to be fixed for all shareholders. Large shareholders have stronger incentive to become informed than very small investors. This incentive increases with the amount of cash that is going to be disbursed. Thus for the small amount of cash, shareholders will prefer a firm to pay dividends, because it is not worth to become an informed investor. For large cash disbursement, shareholders will have stronger incentive to become informed and they will prefer share repurchases, because then they can choose whether to sell or not. However this model is a little bit in contradiction with the clientele theory, especially with Allen et al. 2000. Large investors are often other institutions and because of favourable tax treatment of dividends from other institutions, these large shareholders may prefer

dividends after all.

Other authors also discussed the problem of adverse selection. When costs of obtaining information are prohibitively high, firms can prefer dividends for almost all amount of cash that is going to be paid to the shareholders. On the other hand, share repurchases have already mentioned advantage of bigger response of a share price and also one more practical fact. Share repurchases are more flexible in time. While dividends are usually paid quarterly or annually, share repurchases can be made in any moment in time, they take only several weeks and they give a firm better ability to increase its value when it is necessary.

3.5 Multiple signaling models

So far, we have investigated models using only dividends or only share repurchases or both. With more ways to signal, a firm can take advantage of multiple signaling. Most cited multiple signaling model was developed by Ambarish et al. 1987. Their model extends that of John & Williams 1985 by allowing a firm to use dividends, share repurchases or investments as a signal.

Corporate managers act to maximize wealth of their shareholders W which has a form of:

$$W = \left[(1 - t)D + p_e M + \frac{Q - M}{Q + N} F(I) \right]$$

t - tax on dividends

D - dividend payment

p_e - price of a share after the ex-dividend day

M - number of shares sold by a shareholder

Q - total number of outstanding shares

N - number of new shares issued by a firm

$F(I)$ - present value of future cash flow, depends on investment I

First part of the equation actually represents supply of cash for a shareholder that has to meet his demand.

$$L(D, P) = (1 - t)D + p_e M$$

where the liquidity demand depends on a dividend and a pricing function P .

Pricing function determines, how the market values the firm. Incorporating further relationships, we can derive following equation, where C represents firm's cash:²

$$W[D, I, P(D, I)] = L[D, P(D, I)] + \frac{P(D, I) - L[D, P(D, I)]}{P(D, I) + tD + I - C} F(I)$$

The equation represents wealth of shareholders and clearly depends on dividend and investment. To reach a separating equilibrium, two conditions defined in previous sections have to be met. But here Ambarish et al. state that these conditions can be met with infinite number of combinations of dividend and investment. Among all these equilibria, there exists an efficient equilibrium that minimizes the dissipative costs of a signal. Thus a firm can use more signals than just a dividend or a share repurchase and it does so, because it allows to convey the same information with lower costs.

Ambarish et al. further continued their analysis, they defined a future cash flow function as $F_j(I) = \alpha_j + \beta_j G(I)$ where subscript j stands for a good or a bad firm and G is a "technology" function of investment. For different values of coefficients α_j and β_j , a firm should use different combination of dividends or investments to signal. Exact conditions and exact combinations of signals should be probably considered only as a theoretical exercise, because for shareholders to understand all these information, they would have to know the exact values of coefficients α_j and β_j . Precise knowledge of the technology function seems as a quite restrictive assumption as it would be probably much easier for shareholders to obtain information directly about the future profitability rather than a form of a technology function. But the message of Ambarish et al. 1987 is that companies can use more than just one signal and this combination can be more effective and less costly, which was later confirmed by several empirical studies discussed in the following section.

Another multiple signal model was presented by John & Lang 1991. The crucial point of this paper is that dividends do not have to mean necessarily "good news" as all previous studies implied. John & Lang took into consideration insider trading, because if managers have some private information, they can use it to trade on their own. Thus insider trading represents another form of a signal that can compete with dividends. According to their theory, the market views both signals complementary and thus only dividends cannot convey so much information. Two important implications were made.

² Derivation can be seen in Appendix A.

- Unexpected increase in dividends together with insiders stock buying should convey very good information about the firm and should cause increase in a price of company's shares.
- On the other hand increase in dividends accompanied by insiders stock selling suggests that company has not many projects to invest, that is why it is paying a dividend and this should not cause an increase but rather a decrease in the value of a firm.

3.6 Empirical evidence

Empirical evidence of the signaling theory is extensive. We will therefore consider firstly the “short term” evidence, thus we will examine movements of a share price immediately after the announcement of an unexpected dividend payment. Then we will explore whether the dividend can convey information from a “long term” perspective, thus whether the market changes its expectations and whether the dividend payments can predict future performance of companies.

Pettit 1972 examined the dividend announcement impact on a share price. He used the “market model” which says that a security return consists of two factors. First, the movement of a market that is common to all securities and second, the unique factor that causes a movement of only one particular security. His model had form:

$$R_{it} = \alpha_i + \beta_i R_{mt} + u_{it}$$

where R_{it} , R_{mt} is the return on a security and the return on the market respectively, u_{it} is a disturbance term satisfying all assumptions of a linear regression model. Pettit then estimated a model using monthly or daily data of 625 firms listed on New York Stock Exchange during the period from 1964 to 1968. However, he used data at least 12 months before the announcement date to obtain coefficients that are not affect by some information that can go public prior the announcement of a dividend. Using these coefficients, he then estimated the model:

$$\delta_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

where δ_{it} measures the difference between the actual return and expected return. Using daily or monthly data, Pettit found that the announcement of dividend increase is followed by a significant increase in the price of a share and dividend decrease is followed by a significant decrease in the price of a share.

Almost all empirical studies interested in announcement effects, including those of Aharony & Swary 1980, Asquith & Mullins 1983 or Michaely et al. 1995, confirmed these results. Increase in dividend payment causes about 0.4% excess return, dividend decrease causes about -1.3% excess return. Higher numbers are obtained considering only large changes in dividend policy. Initiations of dividends cause excess return of about 3%, dividend omissions cause -7% excess return. All these results are significantly different from zero on at least 5% significance level.

Ofer & Siegel 1987 focused on the long term perspective of dividends, specifically the question of whether a dividend payment changes expectations of the market about a firm. Ofer & Siegel collected data from all major brokerage firms about forecasts of earnings for more than 2000 firms listed on New York Stock Exchange during the period 1976 - 1984. Their study showed that unexpected change in dividend policy affects analysts in a sense that they change their forecasts of earnings and thus it seems that dividends do change market expectations about the future profitability of a firm.

Although the evidence of announcement effect and change in market expectations seems pretty conclusive, the evidence of the ability of dividends to predict future earnings is at least mixed. Watts 1973 performed several empirical tests on the relationship among dividends and earnings. He regressed earnings on lagged dividends and lagged earnings and he found that even though the coefficient of one year lagged dividend payment was positive on average, it was not positive for all firms and it was only marginally significant. Similar results were obtained in regression using changes in dividends rather than the amount of a dividend. Thus even though there seems to be a positive relationship between future earnings and current dividend (or current dividend change), this relationship is not very strong, suggesting that dividends alone convey only small amount of information.

Benartzi et al. 1997 performed similar study using lagged earning and dividends. Results showed, that increase in dividends in time 0 is preceded by significant increase in earnings in time -1 and 0. However increase in dividends is not followed by increase in earnings. Thus if dividends signal any information to the market, it signals information about the past, not about the future.

Together with studies confirming market reactions to dividend changes or even reactions of financial analysts to dividend changes, we probably observe some irrationality on the market, because according to this study, dividends cannot predict future earnings.

Dyl & Weigand 1998 also did not find the evidence for higher earnings after the announcement of a dividend, but they hypothesized that a firm does not signal higher earnings but lower risk and their analysis confirmed their hypothesis. An average value of daily return variance dropped from 0.001329 to 0.001138 after the initiation of a dividend.

There exists also several studies partly confirming that future earnings could be related to dividends. Healy & Palepu 1988 examined the most radical changes in dividend policy, dividend initiations and omissions. They found, that while a dividend initiations are followed by an increase in earnings that seems to be permanent, a dividend omissions are result of a decline in earnings in the previous year and these earnings quickly recover after the omission. Lipson et al. 1998 compared similar firms that went public at the same time. Some firms initiated dividends while others did not. For initiating firms, an increase in earnings and earnings surprises were more favourable than for non initiating firms. Lipson et al. concluded that dividends can signal the differences among comparable firms.

It can be clearly seen the empirical evidence suggests that the relationship among dividends and future earnings is at best very weak. So far, all studies took into consideration only dividends. When describing multiple signal model, it was shown that dividends alone represent rather too costly signal and thus firms combine dividends with other forms of signaling to achieve more efficient signals. Two important studies provided an empirical evidence on multiple signaling. Already mentioned John & Lang 1991 with their combination of dividend and insider trading also provided empirical evidence of their model and they found that insider trading before the announcement of dividends has significant explanatory power and thus the combination of both signals provides the market with more information than dividends do alone.

Further evidence on multiple signaling was provided by Lang & Litzenberger 1989. Authors of the study divided firms into two groups according to their Tobin's Q.³ It was shown that for firms with Q lower than one, announcement effect of dividends is significantly different from those with Q higher than one.

³ Tobin's Q is the measure of marginal efficiency of capital. Firms with Q lower than 1 are overinvesting and vice versa. For more details see for example Romer 2000.

Increase in price per share is bigger for firms with Q lower than one, which is consistent with the theory proposed by Ambarish et al. 1987. However this study does not provide any evidence on changes in earnings. Furthermore, results of this study can be explained also by the agency theory discussed in the next chapter.

Another, rather indirect evidence is provided by surveys among high managers of the firms. Several surveys were performed in United States over last decades and in majority of them, managers responded that signaling power of dividends plays an important role in the decision making process. Other factors like past earnings, previous amount of dividend payment and others are also mentioned.

Overall, the evidence of dividend signaling is far from conclusive. Particularly puzzling fact is, that analysts use dividends to change their predictions of earnings but we cannot find any strong empirical evidence of the relationship among dividends and future earnings. So although the signaling theory is sometimes considered as the best theory of the dividend puzzle, it cannot be considered as an ultimate one.

Chapter 4

Agency costs

4.1 Introduction

Up to now, a corporation was considered as a black box, where various investors put money and receive dividends or higher price for a share. A corporation in fact consists of various groups of agents. Lease et al. 2000 divide them into two groups. Suppliers of capital represent shareholders, bondholders and holders of other securities. Suppliers of labour comprise of employees, including managers that can be in fact in both groups. Shareholders are the owners of a firm and their influence in a company is the biggest one. However their decisions affect also other types of investors. This situation is, according to Lease et al. 2000, called an agency relationship. Another definition of agency relationship was provided by Jensen & Meckling: “We define agency relationship as a contract under which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent.” (Jensen & Meckling, 1976, pg 308)

Only one group of investors has a decision power, but all investors are influenced by this decision. Different groups of investors can have different preferences in different times. To prevent decision makers from acting only in their selfish interest, both groups have to negotiate a contract. Here we relax the assumption of Miller & Modigliani, namely that these contracts are complete and fully enforceable. Every corporation consists of many contracts and thus there are many agency relationships. Because we deal with dividends, we will focus only on agency relationships that can affect the dividend policy.

4.2 Shareholders and debt holders - theory

Shareholders and debt holders represent investors of a company. Although both invested their money in a company, their position is not the same. While shareholders have the decision power, bond holders influence is much smaller. Cash flows of a firm are shared by both groups, shareholders receive dividends and price of a share when they decide to sell, debt holders receive interest payments and the face value of a debt. Shareholders are residual claimants, which means that in the case of a liquidation or bankruptcy of a firm, they receive what is left after the bond holders were paid. This situation implies that shareholders are interested in upside potential of a firm and bond holders are interested in down side potential. This asymmetry can have impact on the operation of a firm in various situations.

Agency problems between shareholders and debt holders can arise when new projects of a firm are considered. Debt holders prefer safe projects that can guarantee the payment equal to the face value of a debt. Shareholders on the other hand prefer risky projects that promise very high payoffs even though the probability of the success can be very low. This situation is called risk shifting. Shareholders are willing to undertake excessive risk, because they do not care about the lower side of a project. But because bond holders are not naive, they anticipate risk shifting of shareholders and they can require higher return on their debt or they can negotiate a better contract.

Besides different preferences for new projects, dividend policy is also perceived in an opposing manner by shareholders and bond holders. When a firm decides to pay dividend, shareholders receive this payment, debt holders do not receive anything and the value of a company falls by the amount of this dividend. Because the value of a company falls, a debt can become more risky, because in the case of bankruptcy, a firm could not able to pay all its debts. Because the debt is now more risky, its value decreases and so while the dividend is received only by shareholders, the costs of the dividend are incurred also by the debt holders. As a result, from the shareholders' point of view, a dividend should be as large as possible because it causes the transfer of wealth from debt holders to shareholders. On the contrary, debt holders would like a dividend to be zero, because then there is a better chance that their claims will be fully paid.

Myers 1977 and Jensen & Meckling 1976 discussed situations where shareholders can try to seize wealth from debt holders. Shareholders can decrease

investments and pay excessive dividends, such dividend is called investment financed dividend. Or they can issue new debt and use new funds again to pay debt financed dividend. In fact, in the situation when a firm is going bankrupt, shareholders can decide to pay whole firm as a dividend, thus leaving debt holders totally without any funds. In a preceding example, shareholders wanted to expropriate funds because they knew that the company was in a bad shape. So the incentive for shareholders to pay excessive dividend increases with the risk of a firm. And because firm's risk increases with the amount of the debt, all else being equal, the incentive of shareholders to pay excessive dividend increases with the firm's leverage.

Because debt holders know they can be easily expropriated, they want to limit the power of shareholders over their money. That is why they impose some restrictions on shareholders by including bond covenants into contracts with shareholders. Bond covenant is a contractual arrangement in a bond indenture.¹

Kalay 1982b provided interesting study where he examined different constraints on dividend payments for 150 randomly chosen firms from 1956 to 1975. Kalay divided dividend constraints into direct and indirect. Indirect constraints represent obligations to maintain a certain level of for example net working capital, minimum ratio of assets to liabilities etc.

Direct constraints can be expressed in the form:

$$D_t \leq \max \left\{ 0, \sum_{j=0}^T S_j + \sum_{j=0}^T \alpha NE_j + F - \sum_{j=0}^{T-1} D_j \right\}$$

j - stands for bond's issue date if $j = 0$ and debt's maturity date for $j = T$

D_j - dividend at time j

S_j - additional funds raised by selling new stocks at time j

NE_j - net earnings at time j

α - fraction of net earnings that can be used to pay a dividend

F - initial funds that can be used to pay a dividend

From this equation we can make several conclusions. Firstly, it does not clearly distinguish between share repurchases or dividends, because S_j can be negative when company decides to repurchase its shares. It can be also seen,

¹ Bond indenture is a legal document representing an agreement between the issuer of a bond and his bondholders. Besides bond covenants it usually specifies interest rate, maturity date, convertibility and other features of a bond.

that the constraint is cumulative. Which means that if company does not pay dividend this year, it can keep the funds and pay the dividend next year. So if shareholders do not pay maximum possible dividend, they keep some money inside the company. Lastly, we can see that direct constraint limits only debt and investment financed dividend. Company can sell unlimited number of shares and thus increase S_j . These funds can be then easily used to pay a dividend without any restriction.

Out of 150 firms examined in Kalay's study, 128 had dividend direct constraint. For these firms, Kalay found that the average value of α was equal to 0.95 and was not lower than 0.5. This means that shareholders can pay very large fraction of net earnings as dividends. For the constant F , Kalay found that it was generally slightly higher than net annual earnings. We would expect shareholders to pay the maximum dividend possible, for the reasons stated above. However Kalay showed that shareholders keep some money inside the company, F is not equal to zero and not all net earnings are paid out. This situation would mean transfer of wealth from shareholders to debt holders, if we assume that debt holders also expected the maximum dividend. It is a puzzling fact, why would not shareholders pay the highest possible dividend.

One reason may be, that shareholders want their company to have some funds for the case when it is necessary to invest quickly in some project. Obtaining external funds can take some time and it is generally more expensive than internal funds. Another reason is that keeping some funds in the company provides managers with more flexibility for future dividends. Even when earnings decline, management can still pay large dividend and it can thus avoid dividend cuts that are perceived as a bad news by the market.² Or, as Allen & Michaely noted, it can be simply because shareholders will need to raise new debts in the future so they cannot and they do not want to expropriate funds from debt holders.

4.3 Shareholders and debt holders - empirical evidence

Empirical testing of this particular agency relationship is quite complicated. As we already noted, a firm's debt should become more risky and therefore less

² This reason was also supported in John & Kalay 1982 where the authors argued that not only shareholders but also debt holders find it optimal for a firm to have some flexibility in its dividend policy.

valuable with dividend payment, according to the agency theory. On the other hand, in previous chapter about asymmetric information, we argued that with dividend payment a company conveys information about good future prospects, so the value of a firm, and also of a debt, should increase. Thus we have two opposing effects and it depends which one is stronger.

Handjinicolaou & Kalay 1984 examined reactions of the debt holders to dividend changes. They found that dividend increase does not affect the value of a debt while dividend decrease negatively affects the value of a debt. These findings are rather consistent with signaling theory than with agency theory. Evidence also suggests that positive effect of dividend increase is shared only by shareholders while negative effect of dividend decrease is shared also by debt holders.

Dhillon & Johnson 1994 provided evidence which is in contradiction with Handjinicolaou & Kalay 1984. They did not consider dividend increases or cuts but only dividend initiations and dividend omissions. They found negative significant reaction of bonds to dividend initiations and positive significant bond reactions to dividend omissions.

DeAngelo & DeAngelo 1990 provided different study. They focused on companies in financial distress and their changes of dividend policy in connection with debt covenants. It was found that more than half of the firms in the sample decreased dividends because of binding debt covenants. On the other hand, the rest of the companies decreased their dividends voluntarily. More convincing evidence was again made by considering only dividend omissions rather than dividend cuts, because voluntary dividend omissions were far less frequent than voluntary dividend cuts. But here we have to be careful with interpreting such evidence. Empirical studies mentioned in previous chapter documented that the market negative reaction to dividend omissions is much stronger than to dividend cuts, so the reluctance of managers to omit the dividend seems quite natural.

4.4 Managers and shareholders - theory

Second and probably more important agency relationship can be detected between managers and shareholders. A manager is an agent of shareholders, so he should act as to maximize the utility of his shareholders. However a manager has its own utility function and his interests does not necessarily have to be in line with those of shareholders.

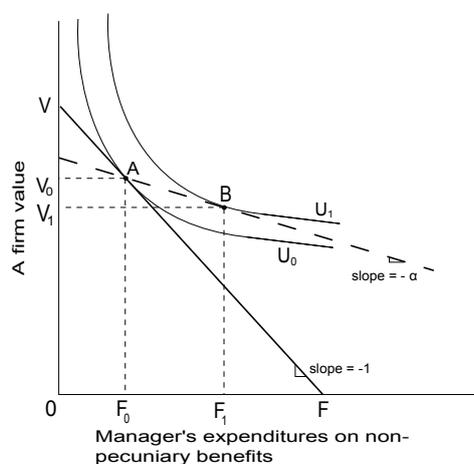
Let us consider a situation, where a manager is the only owner of a firm and so he does not have to care about some shareholders. Utility function of a manager consists of pecuniary benefits and also non-pecuniary benefits, like the amount of charitable contributions, image of his office, the attractiveness of his employees and other perquisites. These non-pecuniary benefits can be rather costly and a manager has to decide whether to consume pecuniary benefits or non-pecuniary benefits. For one dollar of non-pecuniary benefits, the owner of a company loses one dollar of pecuniary benefits. That is why the line VF on the Figure 4.1 has a slope -1 . In the optimum, the marginal utility from non-pecuniary benefits must equal the marginal utility from pecuniary benefits. Our manager is at point A , where the indifference curve U_0 of his utility function touches the line VF . He consumes F_0 perquisites and the value of his company is V_0 . But when a manager sells some part of his company, let us say $1 - \alpha$ fraction of it to outside investors, he suddenly does not bear all the costs of the non-pecuniary benefits but he still consumes all the perquisites. Selling a part of his company causes the line VF to turn and to have a new slope equal to $-\alpha$. Now when a manager uses one dollar for non-pecuniary benefits, the cost in pecuniary benefits will be only one dollar times alpha, his share in the company. Clearly, this must lead to more non-pecuniary benefits pursued by a manager. A manager would like to shift from the point A to the point B and consume F_1 of non-pecuniary benefits.³ From this simple analysis, it is also obvious that the lower the fraction owned by a manager, the higher the desire of managers for more perquisites.

Besides non-pecuniary benefits, Easterbrook 1984 mentioned risk aversion of managers as an additional source of agency costs. Managers are heavily tied with their firm, they cannot diversify as easily as shareholders can. If the firm goes bankrupt or simply does poorly, a manager loses everything. That is why managers are more risk averse than shareholders.

Risk aversion affects managers in two ways. First one is different preference for projects, similar relationship as with debt holders and shareholders. Managers prefer safe projects even though they can have lower expected return. Additionally, when a new project is undertaken, a manager does not receive the full amount of cash he is able to earn. When he owns whole company and he has a successful project, he takes all earnings alone. But when he owns only a

³ Point B is of course not sustainable, a manager cannot move to this point because he has to be on the line VF , which is his constraint. Thus point B is just imaginary equilibrium, where the manager would like to be.

Figure 4.1: Agency costs - partial ownership



Source: Jensen & Meckling 1976, pg. 316

part of his company, he has to devote some earnings to outside investors. This fact decreases incentives of managers to undertake projects that can require too much effort.

Secondly, managers can influence the risk of a firm by changing its capital structure. Lower debt to equity ratio generally causes company to be safer, which is a desire of a manager. For this reason, a manager does not like dividends, he would like to keep the money in the company thus making it safer. Clearly, all this is exactly the opposite of what shareholders want - high dividends and very risky projects.

One possibility to solve the agency relationship between shareholders and managers could be monitoring. However when the ownership is dispersed we deal with a free rider problem of shareholders. If one shareholder would like to monitor his manager, he would gain only small part of additional value while paying all the costs of monitoring. So unless there is only one or very small number of large shareholders, monitoring is not undertaken on a necessary level.⁴

Easterbrook 1984 suggested that dividends can solve all the problems discussed above - non-pecuniary benefits, possibility of monitoring, risk aversion of managers and their preference for mediocre projects. Dividend payment causes the company to get rid of its funds. As a consequence, to undertake

⁴ This is what we noted in Chapter 2 where we discussed an argument of Allen et al. 2000 that paying large dividend attracts large institutional investors that are able to undertake enough monitoring.

new projects a company will have to raise required funds by issuing new securities. When a firm goes to the market, it usually takes advantage of some investment bank or other financial institution. Such an institution requires lot of information about the company and it scrutinizes financial situation of a company. By doing so, it actually provides monitoring of a manager for shareholders. Of course the financial institution does not do it for free, but now all the shareholders pay for it and all receive the benefits of such monitoring, so the free rider problem is eliminated. So as a consequence, managers that are more often under the scrutiny of the market are more likely to please their shareholders than managers that use only internal funds.

By paying dividends, a company also decreases its value of equity and thus increases the value of a debt to equity ratio. In fact, it is not the debt to equity ratio but the change in debt to equity ratio that harms shareholders. When a firm uses a debt to obtain new funds, certain interest rate for debt holders is set. When a project is successful and the value of equity increases, debt becomes less risky and the interest rate is now too high, the wealth is transferred to debt holders. By paying out some cash as a dividend, a debt becomes more risky and the interest rate is again as it should be.

Another advantage of obtaining new funds on the market is that new investors can decide whether to invest in the company or not, so when a manager wants to raise new funds for a project that can be safe but has low expected return, investors will not be willing to invest in the company or they will set a low price for the shares. So if a manager wants the maximum possible price for his company, he has to undertake the best projects he has. Closely related is the problem of perquisites. New investors does not suffer from the free rider problem, each of them can decide whether to invest and if they see that a manager consumes too much perquisites, they will not pay very high price. So again, if the manager wants the maximum price possible, he has to limit his non-pecuniary benefits. Thus new investors are able to lower the agency costs while old investors are not, another reason to force a manager to go to the market as often as possible.

Theory about non-pecuniary benefits of managers was further extended by Jensen 1986. A firm suffers when a manager has a substantial amount of free cash flow, defined as: "Free cash flow is cash flow in excess of that required to fund all projects that have positive net present values." (Jensen 1986, pg. 323) With lot of funds, manager can invest in bad projects, spend the money on perquisites or he can pay dividends. Thus forcing a manager to pay dividends

decreases a chance of wasting money by a manager. Jensen also explained why some firms can pay a dividend and issue new debt at the same time. By issuing new debt and thus increasing debt-to-equity ratio a manager is forced to pay regular debt service payments, which again leaves him with less funds to be wasted.

But we cannot say that new debt or high dividend payments are always the best choice. When a company has a lot of very good projects it should directly invest in these projects and not pay dividends and go to the market to raise new funds. This is generally true for young fast growing companies and so the life-cycle theory was proposed.⁵ This theory says that young companies have generally lot of investment opportunities and low level of earnings. These firms do not pay dividends and they rather use all internal funds to invest. Later however, projects of a firm generate lot of cash flow and a firm does not have many new projects to invest. A manager is left with lot of funds that can be easily wasted. So to mitigate the agency costs, shareholders force a manager to disburse this cash as a dividend in later years of a firm's life.

4.5 Managers and shareholders - empirical evidence

Jensen's free cash flow hypothesis was examined by several empirical studies. Agrawal & Jayaraman 1994 investigated two features of the Jensen's theory. As was already noted, to mitigate agency costs of free cash flow a firm can disburse its cash by paying dividend or it can issue new debt, because regular interest payments impose strict constraint on the behaviour of a manager. Thus dividends and debt can be used as substitute mechanisms for reducing agency costs. Agrawal & Jayaraman examined two groups of firms, all-equity firms and levered firms with similar features. Because levered firms already use debt to reduce agency costs, the hypothesis is that all-equity firms should pay higher dividends because they use only one mechanism to reduce agency costs. It was found that the median payout ratio for all-equity firms is 90% higher than for levered firms. These results thus suggest that dividend payment and debt are used as substitute mechanisms to reduce the agency costs.

Second relationship examined by Agrawal & Jayaraman was between div-

⁵ Firstly mentioned by Jensen 1986 and later discussed by DeAngelo & DeAngelo 2006 or Fama & French 2001.

idend and managerial ownership. Desire of managers to consume lot of non-pecuniary benefits decreases with its share in the company. As a sole owner, he consumes only small amount of non-pecuniary benefits, when he owns only a tiny fraction of his company, he will probably waste much more money on perquisites and that is why the shareholders should force such a manager to pay larger dividend. So the second hypothesis made by Agrawal & Jayaraman was that the managerial ownership and the amount of dividend should be negatively related. In their analysis, they used only all-equity firms because without a debt, as an additional mechanism to control agency costs, the relationship between dividends and ownership should be stronger. Firms were divided into two groups, according to the ownership of a manager and it was found that while the average payout ratio for firms with low ownership was 40.8%, the average payout ratio for firms with high ownership was only 24.8%, significantly different from the first group on 5% significance level. So clearly, both hypotheses were confirmed by the data and thus the study provides supporting evidence for Jensen's theory.

Relationships among debt, ownership and dividend policy were the focal point of many empirical studies. Jensen et al. 1992 tested three simultaneous equation of dividend policy, ownership structure and debt policy. Their results revealed negative relationship between ownership and dividend policy (or debt policy) and thus supported agency costs explanation for dividends. Crutchley & Hansen 1989 provided similar supporting evidence of agency theory. On the other hand, Chaplinsky & Niehaus 1993 found very little evidence for the relationship between financial leverage and managerial ownership. Unfortunately, dividend policy, as a way of reducing agency costs, was not included in this study.

Bernheim & Wantz 1995 provided study, where they compared signaling theory and agency theory of dividends. These theories are closely related and it is difficult to distinguish between them. Signaling theory says that dividend conveys good information to the market. Agency theory says that dividend is the good news, because it reduces wasting of a manager. In both cases, price of a share should increase with the announcement of a new dividend. To differentiate between these two theories, Bernheim & Wantz decided to test price responses of shares under different tax rates on dividends. According to signaling theory, higher tax should cause bigger price response of a share, because signal is more costly and thus more credible. Agency theory implies that dividends are paid to reduce agency costs. But with higher taxes, the

benefit of reducing agency costs is lower because of the tax loss. So according to agency theory, reaction of a share price to a new dividend should be lower under higher taxes. Results revealed, that price response of a share per one dollar of a dividend is significantly higher with high tax rate than with low tax rate on dividends. Study thus gives evidence in favour of the signaling theory and against the agency theory.

Empirical evidence of life-cycle theory was provided either indirectly, or directly. Indirect studies were not directly looking for life-cycle evidence, but their results can be interpreted using this theory. We can cite for example study of Fama & French 2001. It was found that proportion of dividend payers on US stock exchanges declined from 66.5% in 1978 to 20.8% in 1999. But as the authors noted, the characteristics of listed firms changed radically. Companies became small, with low earnings and large investment opportunities and exactly these firms should not pay dividends according to life cycle theory. Grullon et al. 2002 described their maturity hypothesis which is just reformulated life-cycle theory and they also documented that mature firms pay higher dividend than younger firms.

Direct evidence was provided by DeAngelo et al. 2006. Authors used the ratio of retained earnings to total equity (RE/TE) as a proxy for a stage of life for different firms. When a company is young, it needs a lot of capital for its investment and its RE/TE is very low. Mature firms, on the other hand have lot of earnings and not many projects, so their RE/TE ratio should be higher. For publicly traded industrial firms between 1972-2002, the study suggests strong positive relationship between RE/TE ratio and probability of paying a dividend. For an average firm of New York Stock Exchange, the probability of paying a dividend increases from about 50% to 80% with RE/TE ratio increasing from 10% to 90%. Similar results are obtained for dividend initiations.

4.6 Dividends or share repurchases?

It has to be mentioned, that although we spoke only about dividends, there is no reason why should firms choose dividends over share repurchases. In the agency relationship between shareholders and debt holders, a company wants to transfer its funds between the two groups of investors. But there is no difference if company pays a dividend or repurchase its shares. Paying a dividend (and thus reducing price of a share) or repurchasing shares of a

company (and thus reducing the number of outstanding shares) have the same impact on the capital structure of a firm. The value of equity is reduced and debt becomes more risky in both situations. Thus the first agency relationship discussed in this chapter does not give any arguments why should firms prefer dividends.

In the second agency relationship, between managers and shareholders, the situation is similar. Shareholders want to limit the power of managers over the free cash flow. But how this free cash flow is disbursed makes no difference for a firm or its shareholders. So the whole agency theory does not provide any explanation of the dividend puzzle.

Chapter 5

Conclusion

This bachelor thesis discussed all major dividend theories that developed after the publication of Miller & Modigliani 1961. By relaxing certain assumptions, these theories showed the possibility of the departure from the original irrelevance proposition of the dividend policy.

Different tax rates on dividends and share repurchases should cause an average shareholder to prefer companies that do not pay large dividends, because tax on dividends is generally higher than on capital gains. However certain investors, like corporations or institutional investors, may have lower tax rate on dividends and these investors should prefer companies with large dividend payments. Theory thus suggests that investors should group themselves into clientele according to their tax rate on dividends.

The empirical evidence of clientele theory is mixed. One of the reasons may be that despite higher taxes, some individual investors may prefer to obtain dividends after all. Dividends represent certain and stable income and they can also act as a constraint on consumption, because they limit an investor to consume only his dividends, leaving the shares untouched. Such constraint can be for behavioural reasons self-imposed by some investors.

When we accept that the clientele theory reflects the reality and thus investors group themselves into clientele, we can discuss the implications of the theory. The theory explains why some firms pay high dividends while others pay low or no dividends. Firms simply want to attract investors with different preferences for dividend payments. On the other hand, the theory does not try to compare dividends and share repurchases and so it does not explain why dividends are preferred. Another implication of the theory states that unless there are some investors with specific abilities (like institutional investors that

can provide better monitoring of managers or so), the clientele theory does not imply that dividend policy can change the value of a company. All investors value a company in the same way regardless their tax rate and so the dividend policy remains irrelevant.

Signaling theory discussed in the third chapter tries to explain the positive market reaction to dividend increases and negative market reaction to dividend cuts. Successful companies with profitable projects want to convey the good information to the market and they can use dividends to do that. For a signal to be credible, additional assumptions like no transaction costs or equal tax rates have to be relaxed. The empirical part of the chapter found a positive market reaction to dividend increase and negative reaction to dividend cuts. It also documented that financial analysts react to dividends by changing their expectations about future earnings of a firm. However the evidence failed to support the hypothesis that dividends can predict the future earnings of a firm. So the reaction of financial analysts does not seem to be reasonable and we can probably reveal certain irrationality on the market.

Signaling theory partly explains why the firms may prefer dividends over share repurchases. However some signaling models based only on share repurchases were also developed. Firms may use both methods of redistribution to convey the information so the theory again does not clearly explain the preference for dividends. But unlike the clientele hypothesis, signaling theory evidently implies that dividend policy can increase the value of a firm and thus is not irrelevant.

In the fourth chapter, we took into consideration that every firm consists of many groups of agents. Between these groups, agency relationships can arise and they can influence the dividend policy of a firm. We discussed the relationship between shareholders and debt holders where the biggest conflict was rooted in different preferences for dividends. Paying a dividend decreases the value of equity, increases debt to equity ratio and thus increases the risk of a firm. The increase in risk causes the value of a debt to decrease. So the debt holders do not want dividends to be paid. On the other hand, shareholders want the maximum possible dividend, because it represents safe payment.

Shareholders and managers are also in conflict for various reasons. A manager is heavily dependent on a firm, so he wants it to be as safe as possible. For this reason he also does not like dividends. Furthermore, when a manager is left with some free cash flow, he can easily waste this money on perquisites or bad projects because as a part owner, he does not bear all the costs his firm

incurs. By paying a dividend, manager's power over the cash flow of a firm is limited. Similar effect can be reached by issuing new debt, because interest payments again impose restriction on a manager.

We showed that agency theory was later used to develop the life-cycle theory. According to this theory, young companies need a lot of funds to invest in their projects, so they do not pay any dividends. Later however, their projects are stable, they receive cash flow and they do not have many new opportunities to invest. That is why the shareholders want to receive a dividend at this moment, they want to reduce the possibility of managers wasting the money.

Empirical evidence proved that both dividends and debt are used to reduce agency costs between shareholders and managers. At the same time a direct study that compared signaling and agency theory favoured the first one.

Agency theory explains, why a firm disburse its cash to shareholders, but it does not explain why a firm should use dividends over share repurchases. Reducing the agency costs should increase the value of a firm so the theory implies that the dividend policy is relevant. Life-cycle theory furthermore explains that firms in a later stage of their life are more likely to pay a dividend than young companies.

We can conclude, that none of the theories provides clear and unambiguously empirically supported explanation of dividend preference over share repurchases. The dividend puzzle has not yet been solved but maybe it is too late now. Recent data show that the market is changing and the position of dividends and share repurchases has equalized. Skinner 2008 reported that managers started using share repurchases as a substitute for dividends, because they provide more flexibility. According to Skinner, share repurchases in fact exceeded dividends in 2000, 2004 and 2005. If managers realized that share repurchases represent cheaper way of cash redistribution, we should observe declining trend of dividends towards zero in the future. Or maybe dividends and share repurchases can coexist together in an equilibrium. Some firms may prefer dividends while others only share repurchases. Or a firm can change its method of cash redistribution depending on its current situation. Future research could focus on this problem and provide satisfactory answers explaining why we can observe dividends and share repurchases at the same time.

Bibliography

- Agrawal, A., & Jayaraman, N. (1994). The dividend policies of all-equity firms: A direct test of the free cash flow theory. *Managerial and Decision Economics*, 15(2), 139–148.
- Aharony, J., & Swary, I. (1980). Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis. *The Journal of Finance*, 35(1), 1–12.
- Allen, F., Bernardo, A. E., & Welch, I. (2000). A theory of dividends based on tax clienteles. *Journal of Finance*, 55(6), 2499–2536.
- Allen, F., & Michaely, R. (1995). Dividend policy (reprint 050). Rodney L. White Center for Financial Research Working Papers 14-94, Wharton School Rodney L. White Center for Financial Research.
- Ambarish, R., John, K., & Williams, J. (1987). Efficient signalling with dividends and investments. *Journal of Finance*, 42(2), 321–43.
- Asquith, P., & Mullins, J., David W. (1983). The impact of initiating dividend payments on shareholders' wealth. *The Journal of Business*, 56(1), 77–96.
- Baker, H. K., Powell, G. E., & Veit, E. T. (2002). Revisiting the dividend puzzle: Do all of the pieces now fit? *Review of Financial Economics*, 11(4), 241–261.
- Benartzi, S., Michaely, R., & Thaler, R. (1997). Do changes in dividends signal the future or the past? *The Journal of Finance*, 52(3), 1007–1034.
- Bernheim, B. D., & Wantz, A. (1995). A tax-based test of the dividend signaling hypothesis. *The American Economic Review*, 85(3), 532–551.
- Bhattacharya, S. (1979). Imperfect information, dividend policy, and "the bird in the hand" fallacy. *The Bell Journal of Economics*, 10(1), 259–270.

- Black, F., & Scholes, M. (1974). The effects of dividend yield and dividend policy on common stock prices and returns. *Journal of Financial Economics*, 1(1), 1–22.
- Booth, L. D., & Johnston, D. J. (1984). The ex-dividend day behavior of canadian stock prices: Tax changes and clientele effects. *The Journal of Finance*, 39(2), 457–476.
- Brennan, M. J. (1970). Taxes, market valuation and corporate financial policy. *National Tax Journal*, 23, 417–427.
- Brennan, M. J., & Thakor, A. V. (1990). Shareholder preferences and dividend policy. *The Journal of Finance*, 45(4), 993–1018.
- Campbell, J. A., & Beranek, W. (1955). Stock price behavior on ex-dividend dates. *The Journal of Finance*, 10(4), 425–429.
- Chaplinsky, S., & Niehaus, G. (1993). Do inside ownership and leverage share common determinants? *Quarterly Journal of Business and Economics*, 32(4), 51–65.
- Chetty, R., & Saez, E. (2006). The effects of the 2003 dividend tax cut on corporate behavior: Interpreting the evidence. *American Economic Review*, 96(2), 124–129.
- Crutchley, C. E., & Hansen, R. S. (1989). A test of the agency theory of managerial ownership, corporate leverage, and corporate dividends. *Financial Management*, 18(4), 36–46.
- DeAngelo, H., & DeAngelo, L. (1990). Dividend policy and financial distress: An empirical investigation of troubled nyse firms. *The Journal of Finance*, 45(5), 1415–1431.
- DeAngelo, H., & DeAngelo, L. (2006). The irrelevance of the MM dividend irrelevance theorem. *Journal of Financial Economics*, 79(2), 293–315.
- DeAngelo, H., DeAngelo, L., & Stulz, R. M. (2006). Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. *Journal of Financial Economics*, 81(2), 227 – 254.
- Denis, D. J., & Osobov, I. (2008). Why do firms pay dividends? international evidence on the determinants of dividend policy. *Journal of Financial Economics*, 89(1), 62–82.

- Dhillon, U. S., & Johnson, H. (1994). The effect of dividend changes on stock and bond prices. *The Journal of Finance*, 49(1), 281–289.
- Dyl, E. A., & Weigand, R. A. (1998). The information content of dividend initiations: Additional evidence. *Financial Management*, 27, 27–35.
- Easterbrook, F. H. (1984). Two agency-cost explanations of dividends. *The American Economic Review*, 74(4), 650–659.
- Elton, E. J., & Gruber, M. J. (1970). Marginal stockholder tax rates and the clientele effect. *The Review of Economics and Statistics*, 52(1), 68–74.
- Fama, E. F., & French, K. R. (2001). Disappearing dividends: changing firm characteristics or lower propensity to pay? *Journal of Financial Economics*, 60(1), 3 – 43.
- Grullon, G., Michaely, R., & Swaminathan, B. (2002). Are dividend changes a sign of firm maturity? *Journal of Business*, 75(3), 387–424.
- Handjinicolaou, G., & Kalay, A. (1984). Wealth redistributions or changes in firm value : An analysis of returns to bondholders and stockholders around dividend announcements. *Journal of Financial Economics*, 13(1), 35 – 63.
- Healy, P. M., & Palepu, K. G. (1988). Earnings information conveyed by dividend initiations and omissions. *Journal of Financial Economics*, 21(2), 149 – 175.
- Jensen, G. R., Solberg, D. P., & Zorn, T. S. (1992). Simultaneous determination of insider ownership, debt, and dividend policies. *The Journal of Financial and Quantitative Analysis*, 27(2), 247–263.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323–329.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305 – 360.
- John, K., & Kalay, A. (1982). Costly contracting and optimal payout constraints. *The Journal of Finance*, 37(2), 457–470.
- John, K., & Lang, L. H. P. (1991). Insider trading around dividend announcements: Theory and evidence. *The Journal of Finance*, 46(4), 1361–1389.

- John, K., & Williams, J. (1985). Dividends, dilution, and taxes: A signalling equilibrium. *The Journal of Finance*, 40(4), 1053–1070.
- Kalay, A. (1982a). The ex-dividend day behavior of stock prices: A re-examination of the clientele effect. *The Journal of Finance*, 37(4), 1059–1070.
- Kalay, A. (1982b). Stockholder-bondholder conflict and dividend constraints. *Journal of Financial Economics*, 10(2), 211 – 233.
- Lang, L. H. P., & Litzenberger, R. H. (1989). Dividend announcements : Cash flow signalling vs. free cash flow hypothesis? *Journal of Financial Economics*, 24(1), 181 – 191.
- Lease, R. C., John, K., Kalay, A., Loewenstein, U., & Sarig, O. H. (2000). *Dividend Policy: Its Impact on Firm Value*. Harvard Business School Press.
- Lee, Y.-T., Liu, Y.-J., Roll, R., & Subrahmanyam, A. (2006). Taxes and dividend clientele: Evidence from trading and ownership structure. *Journal of Banking & Finance*, 30(1), 229–246.
- Lewellen, W. G., Stanley, K. L., Lease, R. C., & Schlarbaum, G. G. (1978). Some direct evidence on the dividend clientele phenomenon. *Journal of Finance*, 33(5), 1385–99.
- Lipson, M. L., Maqueira, C., & Megginson, W. (1998). Dividend initiations and earnings surprises. *Financial Management*, 27, 36–45.
- Michaely, R., Thaler, R. H., & Womack, K. L. (1995). Price reactions to dividend initiations and omissions: Overreaction or drift? *The Journal of Finance*, 50(2), 573–608.
- Miller, M. H., & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *Journal of Business*, 34, 411–433.
- Miller, M. H., & Rock, K. (1985). Dividend policy under asymmetric information. *The Journal of Finance*, 40(4), 1031–1051.
- Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5(2), 147 – 175.

- Ofer, A. R., & Siegel, D. R. (1987). Corporate financial policy, information, and market expectations: An empirical investigation of dividends. *The Journal of Finance*, 42(4), 889–911.
- Ofer, A. R., & Thakor, A. V. (1987). A theory of stock price responses to alternative corporate cash disbursement methods: Stock repurchases and dividends. *Journal of Finance*, 42(2), 365–94.
- Pettit, R. R. (1972). Dividend announcements, security performance, and capital market efficiency. *The Journal of Finance*, 27(5), 993–1007.
- Pettit, R. R. (1977). Taxes, transactions costs and the clientele effect of dividends. *Journal of Financial Economics*, 5(3), 419–436.
- Romer, D. (2000). *Advanced Macroeconomics*. McGraw-Hill.
- Scholz, J. K. (1992). A direct examination of the dividend clientele hypothesis. *Journal of Public Economics*, 49(3), 261–285.
- Shefrin, H. M., & Statman, M. (1984). Explaining investor preference for cash dividends. *Journal of Financial Economics*, 13(2), 253–282.
- Skinner, D. J. (2008). The evolving relation between earnings, dividends, and stock repurchases. *Journal of Financial Economics*, 87(3), 582 – 609.
- Thaler, R. H., & Shefrin, H. M. (1981). An economic theory of self-control. *The Journal of Political Economy*, 89(2), 392–406.
- Vermaelen, T. (1984). Repurchase tender offers, signaling, and managerial incentives. *The Journal of Financial and Quantitative Analysis*, 19(2), 163–181.
- Watts, R. (1973). The information content of dividends. *The Journal of Business*, 46(2), 191–211.

Appendix A

Derivation of multiple signal

Let us start with the constraint every firm has to face:

$$D + I = C + p_e N \quad (\text{A.1})$$

which says that firm's uses of funds, dividend D and investments I must equal firm's sources of funds, cash C and a revenue from new shares sold $p_e N$.

Because the authors wanted to get rid of the arbitrage around the ex-dividend day, they defined the prices as:

$$p = p_e + (1 - t)D/Q \quad (\text{A.2})$$

where p is a price before the ex-dividend day, p_e is a price after the ex-dividend day, t is a tax on dividends, D is a total dividend payment and Q is a number of shares outstanding.

The model further assumes shareholders to have liquidity demand function L . The supply of liquid cash consists either of a dividend payment or of shares sold for the ex-dividend day price:

$$L(D, P) = (1 - t)D + p_e M \quad (\text{A.3})$$

Managers want to maximize the wealth of shareholders, which consists of current demand for cash and a fraction of a firm left, after M shares were sold. Managers thus maximize function:

$$W(D, P, I) = (1 - t)D + p_e M + \frac{Q - M}{Q + N} F(I) \quad (\text{A.4})$$

We can express Q from the equation A.2 as $Q = \frac{(1-t)D}{p-p_e}$ and insert it into equation A.4. We obtain:

$$W(D, P, I) = L(D, P) + \frac{(1-t)D + p_e M - pM}{(1-t)D + pN - p_e N} F(I) \quad (\text{A.5})$$

In the nominator, we obtain liquidity function minus pM . In the denominator, we can use equation A.1 and substitute $D - p_e N$ for $C - I$. We then obtain

$$W(D, P, I) = L(D, P) + \frac{L(D, P) - pM}{C - I - tD + pN} F(I) \quad (\text{A.6})$$

Both pM and pN depend on price p the market is ready to pay. We can replace p for an arbitrary pricing function P and insert M and N into this function. Such pricing function is dependent on investment I and dividend D as can be seen from the equation A.1. We can then rewrite A.6 as

$$W[D, I, P(D, I)] = L[D, P(D, I)] + \frac{P(D, I) - L[D, P(D, I)]}{P(D, I) + tD + I - C} F(I) \quad (\text{A.7})$$

which is dependent only on D and I .

This equation holds for asymmetric and also for symmetric information. Equation A.7 represents firm's true value to the shareholders. With information symmetry, outsiders can observe the quality of the firm and will price it properly, thus P equals W and we can solve equation for P . We obtain $P = C - I - tD + F(I)$ which is in fact the present value of a firm minus the dissipative costs of the dividend signaling.

Appendix B

Bachelor Thesis Proposal

Author Jaroslav Šnajdr
Supervisor PhDr. Mrs. Jan Zápál
Proposed topic Why do firms pay dividends?

Topic characteristics The aim of this paper is to analyse different concepts explaining dividend payments made by firms. I am going to examine factors of dividend payments using major theories including catering theory, signalling theory, life-cycle theory combining agency theory with changes in investment opportunity set of the firm. I am also going to deal with dividend puzzle using models that depart from neoclassical profit maximization as an alternative explanation. At the same time I will try to verify individual theories using econometric studies both supportive and contradicting.

Outline

1. Introduction
2. Catering theory
3. Signalling theory
4. Life-cycle theory
5. New view models of corporate behaviour
6. Summary

Core bibliography

- Grinblatt, M., Titman, S. (2001): “Financial Markets and Corporate Strategy.” McGraw-Hill

-
- Denis, D.J., Osobov, I. (2008): “Why do firms pay dividends? International evidence on the determinants of dividend policy.” *Journal of Financial Economics* 89
 - Baker, M., Wurgler, J., (2004a): “A catering theory of dividends.” *Journal of Finance* 59
 - Baker, M., Wurgler, J., (2004b): “Appearing and disappearing dividends: the link to catering incentives.” *Journal of Financial Economics* 73
 - DeAngelo, H., DeAngelo, L., (2006): “The irrelevance of the MM dividend irrelevance theorem.” *Journal of Financial Economics* 79
 - Ambarish, R., John, K., and Williams, J., (1987): “Efficient Signalling with Dividends and Investments.” *Journal of Finance* 42
 - Ross, S., (1977): “The Determination of Financial Structure: The Incentive-Signalling Approach.” *Bell Journal of Economics* 8
 - Li, W., Lie, E., (2006): “Dividend changes and catering incentives.” *Journal of Financial Economics* 80
 - Jensen, M., (1986): “Agency costs of free cash flow, corporate finance and takeovers.” *American Economic Review* 76
 - Grullon, G., Michaely, R., (2002): “Dividends, share repurchases, and the substitution hypothesis.” *Journal of Finance* 57