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Dividend Payments by Russian Companies: A Signal to the Market or a Consequence of Agency Conflicts?

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Abstract

The article analyzes the dividend policies of Russian companies using two dividend payment theories: signaling theory and agency cost theory. A sample of 30 Russian companies over the period 2010–2021 is used. To test the applicability of signaling theory, pooled regression and fixed effects models are developed. It is shown that an increase/reduction in dividend payments exceeding 20% in the current year allows one to predict an increase/decrease in the return on assets in one or two subsequent years (in comparison to the year preceding dividend payments). However, the growth rate of dividend payments shows no stable relationship with the future return on assets. To test the applicability of agency cost theory, a Tobit model is used with the participation of a principal majority shareholder represented by the government as the dependent variable. This binary variable is equal to 1 if the government owns directly or indirectly over 30% of corporate stocks and 0 otherwise. The results do not confirm the applicability of agency theory to the Russian market. Government participation in stock capital exerts no significant impact on the dividend payout ratio. These findings contribute to understanding the relationship between a company's dividend policy and its future financial performance, providing a useful tool for Russian investors.

Keywords: dividends, company, signaling theory, agency theory, profitability, state-owned companies, ownership structure

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Introduction

A lot of stakeholders are involved in making decisions about dividend payments. They have differing and largely conflicting interests. This makes the analysis and forecasting of dividend payments difficult from both theoretical and practical points of view. Existing dividend payment theories often consider company behavior from the standpoint of developed capital markets. At the same time, the dividend policies of companies from emerging markets are often shaped by the unique factors of the latter [1]. In particular, the Russian market is characterized by significant ownership concentration, major government participation and high information asymmetry [2]. All these factors raise doubts about the applicability of conventional dividend payment theories.

The high volatility of the Russian stock market due to economic crises and heightened geopolitical risks make dividend payments a perspective tool for boosting the investment attractiveness of companies [2]. The dividend yield of the Russian market is one of the highest among emerging and mature markets [2]. Moreover, large Russian companies that seek to enhance their investment attractiveness show a steady trend towards an annual increase in dividend payments [3]. However, the economic troubles caused by different factors such as sanctions and the COVID-19 pandemic may lead the dividend policies of Russian companies to change significantly.

In the present study, we consider the Russian stock market from the point of view of two different perspectives on dividend payments: signaling theory and agency cost theory. Multiple empirical studies show that changes in dividends provide little or no information on future company income [4–8]. However, our results for the Russian market differ: using a sample of 30 Russian companies over the period 2010–2021, we partially confirm the applicability of signaling theory to the relation between dividend payments and future company profitability. Dividend changes serve as a signal of future company financial standing.

A high government share in the ownership structure of companies is characteristic of the Russian market. The government, as the controlling owner, may prefer its interests over those of minority shareholders, resulting in nonoptimal dividend payments. However, we find no confirmation of the agency theory in the Russian market: the fact of government participation[1] in stock capital has no significant impact on the payout ratio of companies.

This paper consists of three parts. The first part reviews previous studies of factors that influence corporate dividend payments and uses them to generate the research hypotheses. The second part describes the methodology of building econometric models for verifying the suggested hypotheses. The third part draws the conclusions of our empiric study.

Literature Review

M. Miller and F. Modigliani advanced the dividend irrelevance theory, which states that a company's value remains unchanged regardless of whether it pays dividends or reinvests its profits [9]. However, due to the inflexible character of its premises, the Modigliani – Miller theory has been criticized for a number of years, resulting in the development of alternative approaches: signaling theory [10] and agency cost theory [11].

In signaling theory, high dividends are considered to be a signal of the future financial performance and financial resilience of the company [12]. Several verifiable conclusions follow from signaling theory [13]. First, the market response should be positively related to the change of dividend policy: so, an unexpected increase in dividend payments should cause a rise in the stock value. Second, an increase in the profit growth rates or return on assets should follow an increase in dividend payments. Hypotheses of the first type are verified by means of event study. Hypotheses of the second type require the construction of regression models, where the dependent variable is indicators of future financial performance, while variables related to paid dividends are used as regressors.

In times of uncertainty, high dividends turn out to be a more informative signal than the profit generated by a company [14]. In periods of stability and growth, the situation is opposite: a reduction in dividends without a simultaneous stock buyback sends signals to the market, exerting a detrimental effect on stock yields [15]. Managers in foreign markets consider dividend increases as signals of profit growth [16]. I. Ivashkovskaya and E. Kukina showed a significant positive relation between the dividends paid during the preceding period and the economic profit of Russian companies [17].

Some empiric studies obtain results that contradict signaling theory: an increase in dividend payments has no impact on profit growth rates, while a reduction in dividends results in a significant increase in dividend payments over a two-year horizon [18]. At the same time, an increase in dividends signals the mitigation of corporate systematic risk, while a reduction in dividend payments signals the augmentation of systematic risk [5].

Research on dividend payments in the Russian market most often uses event studies to verify signaling theory [19–23]. The results of this verification vary depending on the methodology and period of study. For example, a paper by T. Teplova based on a sample of 24 Russian companies from 1999 to 2006 showed that the stock market responds negatively to the announcement of dividend increases in comparison with the previous period [23]. I. Berezinets et al. reveal a negative response of the Russian stock market both to positive and negative dividend "surprises" from companies over the period 2010–2014 [22]. Their earlier research confirmed the applicability of signaling theory to the Indian stock market: the positive impact of high-

[1] Government participation is understood as a situation when the government owns more than 30% of company shares.

er dividends on stock returns and the negative impact of dividend reductions [24]. The aforementioned paper by I. Berezinets et al. shows that, over the period 2010–2012, the Russian stock market responded negatively to announcements of both dividend increases and reductions. The authors attribute this to the specifics of the development and dividend policies of Russian companies after the financial and economic crisis of 2008–2009 [21]. E. Rogova and G. Berdnikova obtained results similar to those of T. Teplova: over the period 2009–2013, the Russian market responded negatively to dividend increases and positively to dividend reductions [20; 23]. Nevertheless, the response of corporate stocks to announcements of changes in dividend payments depends on the industry. While stocks of iron and steel as well as fuel and power companies respond weakly to announcements of dividend increases, the shares of chemical and mineral extraction companies (except for the fuel and power sector) show a strong negative response to dividend increases.

The ambiguity of the signal of high dividend payments is among the limitations of signaling theory: investors may regard an increase in dividends as a sign that the company has no profitable investment opportunities [24].

There is a substantial number of studies which call the applicability of signaling theory into question. Usually, large companies have sufficient financial resources to pay regular dividends to their shareholders. If signaling theory was the key factor for decisions on dividend payments, one would expect a wide range of companies to make such payments in order to transfer information to stakeholders [25; 26].

Agency cost theory posits that there exists a conflict of interests between company shareholders and management. Managers are not interested in dividend payments, because they can use funds to get personal privileges or invest in activities related to the payment of higher manager remunerations, which is often loss-making for the company [27]. A conflict of interests often increases shareholder expenses on monitoring the management's activities (agency costs). Another explanation of the conflict of interests is that the amount of manager remuneration is often related to company size, which drives managers to enlarge their company beyond its optimal size. If a company has excess funds, the management may also use them for projects with a negative net present value [28]. Dividend payments defuse the conflict by decreasing the amount of funds available for the management [29].

The conflict of interests may be partially solved by letting managers own company shares. In this case, the management becomes interested in providing a positive cash flow necessary to pay dividends, which matches the shareholders' interests. This, in turn, decreases the agency costs caused by possible conflicts of interests between the parties [30].

The greater the percent of management-owned shares, the lower the dividend payments. The greater the number of independent directors on the board, the higher the dividend payments [31]. The market highly rates the expected decrease in agency costs caused by a company's decision to pay out dividends [32].

A lot of papers studying agency theory focus on the analysis of the corporate ownership structure and its influence on the dividend policy. For example, a study of emerging markets shows that companies with major shareholders make larger dividend payments [33]. In contrast, other studies show a negative relationship between the share of majority shareholders and the amount of dividend payments, which contradicts the assumption that the largest shareholder may expropriate corporate wealth [34–36].

The presence of a principal shareholder can either defuse or exacerbate agency conflicts. On the one hand, principal shareholders are at an advantage in collecting information and monitoring the management's activity [37]; on the other, their interests may clash with those of minority shareholders resulting in the possible expropriation of the latter's resources [38]. Some studies show a positive relationship between the presence of a majority shareholder and the amount of dividend payments [39], while others find a negative relationship [40]. Thus, the application of agency cost theory can lead to contradictory conclusions.

In this way, the conclusions of previous studies are ambiguous. Signaling theory is mainly verified by means of event study, which shows the market response to dividend changes instead of the actual state of business in a company. It should be noted that a lot of studies pay insufficient attention to verifying the sustainability of attained results.

Hypotheses

In the present paper, we attempt to use signaling theory and agency cost theory to explain dividend payments in the Russian market.

Hypothesis 1: An increase (reduction) in dividend payments in comparison to the preceding period is positively (negatively) related to the future return on assets.

Changes in dividends send signals to investors about alterations in the financial standing of the company and its future prospects [26]. Companies which announce an increase in dividends signal investors that they are showing high financial performance and have good growth prospects [10].

Hypothesis 2: The presence of a principal shareholder represented by the government increases the payout ratio.

The government may place its own interests above those of minority shareholders, resulting in nonoptimal dividend payments from the point of view of the company's development [3]. At the same time, the government should be interested in getting large cash flows from the company in the form of dividend payments [34].

Data

To test the proposed hypotheses, we sourced data from Bloomberg on 30 companies from the Moscow Exchange index and the first level of the quotation list. A sample of companies from this index may be considered representative, because the Moscow Exchange index and the first level of the quotation list comprise the largest and most liquid Russian companies. Financial companies have been excluded from the sample because of their specific rules of financial statement submission. The capitalization of the companies under consideration is over half of the capitalization of the whole Russian market. The analysis was performed over the years 2010–2021, which comprises periods of economic growth and recession as well as changes in national policy, which could also influence corporate dividend policy. See the descriptive statistics in the Appendix (Table P1).

Figures 1 and 2 show the average return on assets in the period before and after the year in which changes in dividend payments took place. When constructing the charts, we used the criterion that the amount of dividend payments changes if the annual dividend growth rate modulo exceeds 20%.

In the case of a dividend increase (Figure 2), the average return on assets grows significantly in the years following the year of dividend changes (as compared to the year before the increase). Graphical analysis suggests that the fact of dividend changes may indicate changes in the return on assets.

Figure 1. Average return on assets before and after dividend reduction

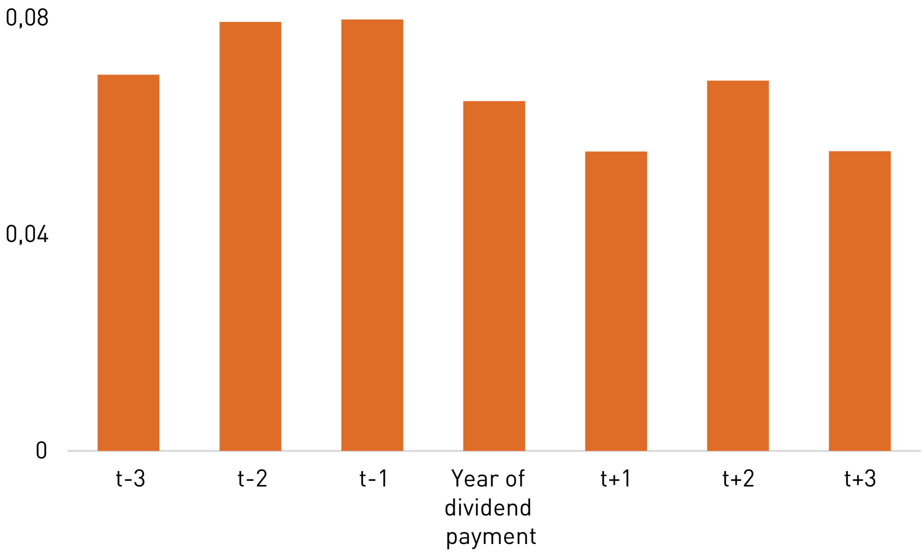
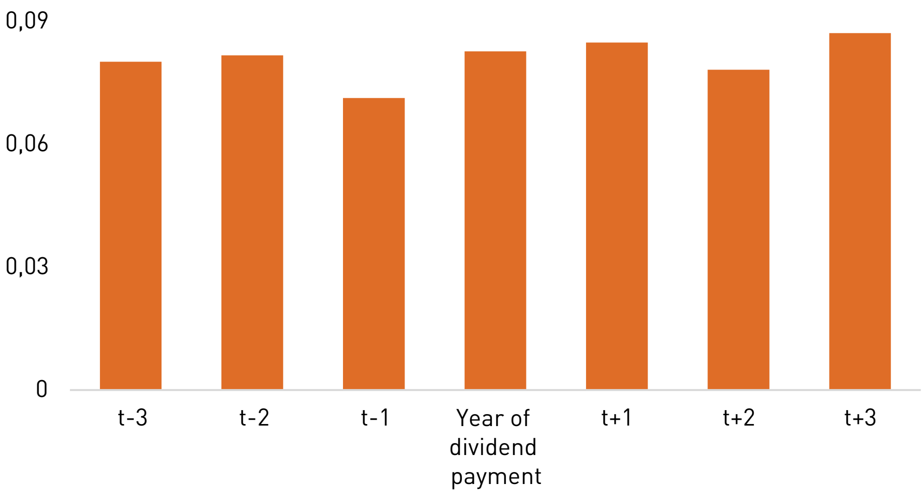


Figure 1 shows that the average return on assets decreases in the first, second and third years after the dividend payment as compared to the year before dividend reduction (t-1).

Figure 2. Average return on assets before and after dividend increase



Research Methodology

Signaling Theory

To verify the provisions of signaling theory, we evaluate the relationship between dividend changes and changes in the future return on assets of a company. We use the difference between the return on assets one year (Equation 1) or two years (Equation 2) after the dividend payment and the return on assets a year before the payment as the dependent variable. Another dependent variable is the change in the average return on assets for three years after the dividend payment in comparison to the three-year period before the payment (Equation 3). G. Grullon et al. [5] applied a similar approach to creating variables.

$$\Delta ROA_t^1 = ROA_{t+1} - ROA_{t-1} \quad (1)$$

$$\Delta ROA_t^2 = ROA_{t+2} - ROA_{t-1} \quad (2)$$

$$\Delta ROA_t^3 = \frac{1}{3} \bullet \left(ROA_{t+3} + ROA_{t+2} + ROA_{t+1} \right) - - \frac{1}{3} \bullet \left(ROA_{t-1} + ROA_{t-2} + ROA_{t-3} \right). \quad (3)$$

We use binary variables representing an increase (Equation 4) or reduction (Equation 5) in dividend payments as variables of interest.

$$I_i^{increase}(k) = \begin{cases} 1, if\ r_i^{d} \geq k \\ 0, r_i^{d} < k \end{cases}; \quad (4)$$

$$I_i^{reduction}(k) = \begin{cases} 1, if\ r_i^{d} \leq -k \\ 0, r_i^{d} > -k \end{cases}, \quad (5)$$

where r_i^{d} is the growth rate of dividend payments, and k is the threshold value set at 0.1, 0.2 or 0.3, depending on the model specification.

Following [41], we assume that there is an asymmetric influence of the dividend growth rate on changes in the corporate return on assets. We further introduce indicators of positive and negative dividend growth rate, respectively:

$$r_i^{+} = I_i^{\text{increase}}(0) \bullet r_i^{d} \quad (6)$$

$$r_i^{-} = I_i^{\text{reduction}}(0) \bullet r_i^{d}. \quad (7)$$

The following specifications are used:

$$Y_{it} = \gamma_0^{(1)} + \gamma_1^{(1)} \bullet I_{it}^{\text{increase}}(k) + \sum_{n=1}^{j} \gamma_{n+1}^{(1)} \bullet z_{itn} + \varepsilon_{it}^{(1)} \quad (8)$$

$$Y_{it} = \gamma_0^{(2)} + \gamma_1^{(2)} \bullet I_{it}^{\text{reduction}}(k) + \sum_{n=1}^{j} \gamma_{n+1}^{(2)} \bullet z_{itn} + \varepsilon_{it}^{(2)} \quad (9)$$

$$Y_{it} = \gamma_0^{(3)} + \gamma_1^{(3)} \bullet r_i^{+}(k) + \gamma_2^{(3)} \bullet r_i^{-}(k) + + \sum_{n=1}^{j} \gamma_{n+2}^{(3)} \bullet z_{itn} + \varepsilon_{it}^{(3)}, \quad (10)$$

where Y_{it} is a dependent variable, $\varepsilon_{it}^{(s)}$ is the normally independently distributed random variable with mathematical expectation equaling zero, and z_{itn} is the control variable *n*.

Signaling theory implies that a dividend increase sends a positive signal of the company's future profitability, while a reduction sends a negative signal.

This means that the coefficients $\gamma_1^{(1)}$, $\gamma_1^{(3)}$, $\gamma_2^{(3)}$ should be positive ($r_i^{-}(k) \leq 0$ and a reduction in dividend payments should result in a decrease of return on assets, which implies that $\gamma_2^{(3)} > 0$), while $\gamma_1^{(2)}$ should be negative.

Agency cost theory

We use a model specification similar to that of N. Ramli [33] to analyze the relationship between the dividends paid and the presence of a majority shareholder. The payout ratio is the dependent variable. As long as this parameter is non-negative, we can apply the Tobit model, in which the dependent variable cannot assume negative values. The binary variable of the presence of a majority shareholder represented by the government serves as the variable of interest. It is equal to 1 if the government owns directly or indirectly over 30% of the company's shares. We add the following control variables to the model: return on assets (ROA), company size calculated as the logarithm of total assets, company investment opportunities calculated as the ratio of the company's market value to its book value, and company debt load measured as the ratio of debt to corporate assets [33]. These variables are used in models for studying dividend payments in emerging markets [42; 43].

To test Hypothesis 2, we used the following specifications:

$$PR_{it}^{*} = \gamma_0^{(4)} + \gamma_1^{(4)} \bullet G_{it} + \sum_{n=1}^{j} \gamma_{n+1}^{(4)} \bullet z_{itn} + \varepsilon_{it}^{(4)} \quad (11)$$

$$PR_{it} = \begin{cases} PR_{it}^{*}, if\ PR_{it}^{*} \geq 0 \\ 0, if\ PR_{it}^{*} < 0 \end{cases}. \quad (12)$$

PR_{it}^{*}, the ratio of dividends to net profit, may assume negative values; PR_{it} is the payout ratio ($PR_{it} \geq 0$); and G_{it} is a binary variable which takes the value 1 if the government's share in the corporate stock capital exceeds 30% and 0 otherwise. For the purposes of agency cost theory, we assume that $\gamma_1^{(4)}$ is positive.

Results

Signaling theory

To test the first hypothesis, we used linear regression models with fixed effects of the company and year (models 2, 4, 6) and without them (models 1, 3, 5) (Table 1). The threshold value was set at 0.2: if the dividend growth rate exceeds 20% in a given year, we consider it as an increase in dividend payments. Before developing the models, we excluded companies which did not pay any dividends at all within the considered period. It is important to note that a dividend increase entails the growth of the return on assets in certain years (models 1–4); however, the coefficient preceding the variable of interest in model 6 turns out to be insignificant, which excludes the possibility of growth in the average return on assets within a two-year horizon.

Table 1. Regressions of changes in ROA after an increase in dividend payments

	Dependent variable					
	ΔROA_t^1		ΔROA_t^2		ΔROA_t^3	
	(1)	(2)	(3)	(4)	(5)	(6)
Dividend increase (20%)	0.027**	0.022**	0.023**	0.024**	0.018*	0.008
	(0.013)	(0.011)	(0.011)	(0.010)	(0.010)	(0.007)
Logarithm of total assets	0.001	–0.032	–0.002	–0.061**	–0.008*	–0.051*
	(0.003)	(0.023)	(0.004)	(0.030)	(0.004)	(0.027)
Ratio of liabilities to assets	0.058**	0.323***	0.054**	0.266***	–0.014	0.196**
	(0.025)	(0.065)	(0.026)	(0.080)	(0.037)	(0.084)
P/B	0.019***	0.053**	0.015	–0.013	0.022	0.018
	(0.007)	(0.021)	(0.010)	(0.017)	(0.016)	(0.019)
Constant	–0.073		–0.013		0.114	
	(0.053)		(0.066)		(0.080)	
Number of observations	265	265	236	236	149	149
R^2	0.050		0.040		0.109	
Within R^2		0.124		0.088		0.120
F-statistic	3.400***	7.858***	2.390*	4.691***	4.425***	3.825***

Note: models 1, 3, 5 are pooled regressions while models 2, 4, 6 comprise fixed effects of the company and year. Robust standard errors were employed. The P-value for the test verifying the hypothesis that fixed effects are equal to zero is less than 0.001 for models 2, 4, and 6. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

A similar threshold value is used in models for evaluating the influence of a reduction in dividend payments: if the dividends decrease by more than 20% in a given year, we consider it as a reduction in dividend payments. The results suggest that there is a relationship between a reduction in dividend payments and the return on assets for all three dependent variables (Appendix, Table P2): the coefficients preceding the variable of interest are significant in models 2, 4 and 6. The conclusions reached are consistent with the results of previous studies [44; 45].

To measure the sensitivity of the obtained results to the choice of the cutoff threshold, we developed models for k equal to both 0.1 and 0.3 (Appendix, Tables P3 and P4). The results of the fixed effects models show that the choice of the cutoff threshold does not lead to changes in the conclusions, i.e., the results are stable.

We constructed models using positive and negative dividend growth rates as the variables of interests. In all models with the dividend growth rate, we considered only companies which had paid dividends at least once within the studied period. Moreover, we excluded observations in which the annual dividend growth rate exceeded 500%. A positive dividend growth rate turned out to be positively related to changes in the return on assets in all considered models (Table 2). The coefficient preceding the variable responsible for the negative dividend growth rate is positive in models 1–5, which aligns with signaling theory: a reduction in dividends results in a decrease in the return on assets. However, these coefficients are insignificant, while the significant coefficient in model 6 is negative, which contradicts signaling theory. This result may be due to the fact that the extreme values of the dividend growth rate, which seriously influence the result, were retained in the data. When we exclude companies for which the growth rate exceeded 300%, virtually all the coefficients preceding the variables of interest turn out to be insignificant (except for the coefficient preceding the positive growth rate in model 3) (Appendix, Table P5). These results suggest that there is no stable influence of the dividend growth rate on changes in a company's return on assets.

Table 2. Regressions for changes in ROA depending on the dividend growth rate

	Dependent variable					
	ΔROA_t^1		ΔROA_t^2		ΔROA_t^3	
	(1)	(2)	(3)	(4)	(5)	(6)
Dividend growth rate⁺	0.015*	0.018*	0.011*	0.021**	0.014**	0.021***
	(0.009)	(0.010)	(0.006)	(0.009)	(0.007)	(0.004)
Dividend growth rate⁻	0.040	0.047	0.020	0.003	0.012	–0.042***
	(0.037)	(0.034)	(0.032)	(0.033)	(0.023)	(0.014)
Logarithm of total assets	0.006*	0.003	0.002	–0.001	–0.005	0.001
	(0.003)	(0.006)	(0.004)	(0.004)	(0.004)	(0.011)
Ratio of liabilities to assets	0.063**	0.090*	0.068***	0.111***	–0.007	0.014
	(0.025)	(0.048)	(0.024)	(0.043)	(0.037)	(0.041)
P/B	0.023***	0.049**	0.021*	0.025**	0.031*	0.058***
	(0.007)	(0.020)	(0.011)	(0.010)	(0.018)	(0.009)
Constant	–0.133**		–0.078		0.059	
	(0.059)		(0.065)		(0.081)	
Number of observations	216	216	190	190	119	119
R^2	0.064		0.055		0.161	
Within R^2		0.112		0.074		0.241
F-statistic	2.895**	4.503***	2.144*	2.446**	4.346***	5.150***

Note: models 1, 3, 5 are pooled regressions, while models 2, 4, 6 comprise fixed effects of the company and year. In the models we used observations for which the dividend growth in comparison to the previous period takes on values less than 5. Robust standard errors were employed. The P-value for the test verifying the hypothesis that fixed effects equal zero is < 0.1 for models 2 and 4 and < 0.001 for model 6. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

At the next stage we developed models using the future return on assets as the dependent variable. Information about the dividend growth rate does not enable us to predict the future return on assets: a significant influence of a reduction in dividend payments has been detected only in two models and only for the high threshold value $k = 0$. With threshold values of 0.1 and 0.2, the coefficient preceding the variable of interest differs from zero significantly only in model 2. An increase in dividend payments does not allow to forecast the future return on assets in any of the specifications (Appendix, Table P6).

The modeling results lead to the following conclusions. An increase in dividend payments results in the growth of the return on assets, while a reduction results in the decrease of the return on assets, which confirms the applicability of signaling theory to the Russian market. However, no stable relationship between the dividend growth rate and the size of changes in the return on assets was found: only the information that an increase or reduction in dividend payments exceeds the threshold value has predictive power, while the size of the changes cannot be used to forecast the change in the return on assets in future periods.

Agency cost theory

To test Hypothesis 2, we developed Tobit regression models with fixed industry and year effects (Table 3). The dependent variable – the payout ratio – shows high variance, significantly exceeding 1 for some companies. To decrease the impact of outliers, we limited the sample to values less than 5 in model 1, less than 3 in model 2, and less than 1 in model 3. We developed a separate model 4 in which all values of the payout ratio exceeding 1 are replaced with 1, and we added the limitation that 1 is the maximum value which the independent variable can take in the initial data.

The coefficient preceding the variable responsible for the return on assets in the preceding period turns out to be significant and positive: the growth of the return on assets in the current period has a positive relationship with the payout ratio in the next period. The coefficient preceding the variable of government participation is insignificant in all developed models; furthermore, the result is negative in the majority of models. Thus, Hypothesis 2 is rejected, which may be explained by the fact that the ownership structure of many Russian companies is displaced towards the presence of principal shareholders, and so the government gets no additional advantages from solving agency conflicts.

Table 3. Tobit regression for the relationship between government participation and the dividend payout ratio

	Dependent variable: dividend payout ratio			
	(1)	(2)	(3)	(4)
Constant	−0.443***	−0.541***	−1.127***	−0.776***
	(0.051)	(0.051)	(0.054)	(0.057)
Government participation	−0.146	−0.099	0.064	−0.102
	(0.106)	(0.096)	(0.059)	(0.076)
ROA_{i-1}	1.172	1.237*	1.058**	1.363**
	(0.621)	(0.562)	(0.356)	(0.452)
Logarithm of total assets	0.060	0.058	0.010	0.042
	(0.063)	(0.057)	(0.034)	(0.045)
P/B	−0.068	−0.044	0.004	−0.049
	(0.064)	(0.057)	(0.033)	(0.045)
Ratio of liabilities to assets	0.714**	0.531*	−0.078	0.522**
	(0.273)	(0.248)	(0.156)	(0.195)
Number of observations	285	283	241	291
McFadden R^2	0.099	0.106	0.195	0.142

Note: the observations have a payout ratio of less than 5 in model 1, less than 3 in model 2, and less than 1 in model 3. In model 4, all the values of the payout ratio that exceed 1 are replaced with 1. Models 1, 2 and 3 limit the values of the dependent variable to nonnegative values. Model 4 has a lower limit (≥ 0) and an upper limit (≤ 1) for the dependent variable. Fixed effects of the year and industry are added to all models. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

The obtained results are consistent with research on the Russian market by L. Alekseeva et al., who attribute the insignificant influence to the specific character of accounting within the ownership structure of principal shareholders [45]. A. Novak et al. also found no significant relationship between the amount of dividend payments and the share of government participation; at the same time, they discovered a nonlinear relationship between the share owned by the government and the amount of dividends [46]. Unlike A. Ankudinov and O. Lebedev, who demonstrated the significant impact of government presence in the corporate ownership structure on the payout ratio [47], we have detected no evidence of the applicability of agency cost theory.

Conclusion

In this study, we analyzed the applicability of two main dividend payment theories to the Russian stock market over the period 2010–2021. Our findings partially confirmed the applicability of signaling theory: changes in dividends were related significantly to changes in the return on assets in the three years following dividend changes. Unlike numerous studies [5–8] that indicate the impossibility of forecasting the future return on assets on the basis of dividend payment changes, we showed a significant influence of both the fact of an increase in dividends and the dividend growth rate on the future return on assets.

Nevertheless, stability testing of the results showed that, when companies with a dividend growth rate exceeding 300% are excluded from the analysis, the coefficients preceding the variables of the dividend growth rate become insignificant. At the same time, the relationship between the fact of an increase or reduction in dividends and future changes in the return on assets turns out to be stable. Thus, dividend payments can serve as an information signal of the future profitability of a company.

In regard to agency cost theory, we considered the influence of the presence of principal shareholders – and, in particular, government agencies – on the dividend payments of companies. We found no significant impact of government participation on the payout ratio, which argues against applying agency cost theory to the Russian market. Our results demonstrate stability in relation to the exclusion of observations with extreme payout ratio values from the sample.

The present study enhances the understanding of the relationship between dividend payments and the future financial performance of companies in the Russian market and casts the foundations for further research. Understanding the consequences of dividend policy implementation will be useful for investors taking investment decisions.

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Appendix

Table P1. Descriptive statistics of variables

	Mean value	Standard deviation	Minimum	First quartile	Third quartile	Maximum
Government's participation	0.36	0.48	0.00	0.00	1.00	1.00
Logarithm of total assets	13.34	1.27	10.61	12.58	13.87	17.11
P/B	0.87	0.69	0.02	0.35	1.29	3.81
Ratio of liabilities to assets	0.55	0.23	0.08	0.37	0.74	1.13
ROA	0.08	0.09	-0.21	0.03	0.11	0.47
Payout ratio	0.72	1.71	0.00	0.11	0.81	23.67

Note: the government participation variable is equal to 1 if the share of stocks owned by the government or government-owned companies exceeds 30%. P/B is calculated as the ratio of company capitalization to the book value of assets. ROA is calculated as the ratio of net profits to the book value of assets. The payout ratio is determined as the ratio of dividends paid during the year to annual net profit.

Table P2. Regressions of changes in ROA after a decrease in dividend payments

	Dependent variable					
	ΔROA_t^1		ΔROA_t^2		ΔROA_t^3	
	(1)	(2)	(3)	(4)	(5)	(6)
Dividend reduction (20%)	−0.026*	−0.035**	−0.019	−0.030*	−0.011	−0.016**
	(0.015)	(0.015)	(0.014)	(0.015)	(0.011)	(0.007)
Logarithm of total assets	0.001	−0.024	−0.002	−0.055*	−0.008*	−0.050*
	(0.002)	(0.024)	(0.004)	(0.030)	(0.004)	(0.027)
Ratio of liabilities to assets	0.057**	0.326***	0.051**	0.269***	−0.017	0.198**
	(0.025)	(0.065)	(0.025)	(0.080)	(0.038)	(0.084)
P/B	0.020***	0.059***	0.016*	−0.006	0.023	0.019
	(0.007)	(0.021)	(0.009)	(0.016)	(0.016)	(0.020)
Constant	−0.054		0.004		0.127	
	(0.046)		(0.066)		(0.083)	
Number of observations	265	265	236	236	149	149
R^2	0.042		0.031		0.097	
Within R^2		0.131		0.087		0.129
F-statistic	2.821**	8.414***	1.827	4.655***	3.848***	4.156***

Note: models 1, 3, 5 are pooled regressions, while models 2, 4, 6 comprise fixed effects of the company and year. Robust standard errors were employed. The P-value for the test verifying the hypothesis that fixed effects are equal to zero is less than 0.001 for models 2, 4, and 6. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

Table P3. Change in ROA after an increase in dividends depending on the threshold value

	Dependent variable					
	ΔROA_t^1		ΔROA_t^2		ΔROA_t^3	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Increase in dividends (10%)	0.023*	0.022**	0.022**	0.022*	0.018	0.006
	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.007)
Increase in dividends (20%)	0.027**	0.022**	0.023**	0.024**	0.018*	0.008
	(0.013)	(0.011)	(0.011)	(0.010)	(0.010)	(0.007)
Increase in dividends (30%)	0.030**	0.022*	0.025***	0.022**	0.030***	0.016*
	(0.013)	(0.011)	(0.008)	(0.009)	(0.011)	(0.009)

Note: all models comprise fixed effects of the company and year. The following control variables are used: logarithm of total assets, ratio of liabilities to assets, P/B. Robust standard errors were employed. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

Table P4. Regressions of change in ROA after a reduction in dividends depending on the threshold value

	Dependent variable					
	ΔROA_t^1		ΔROA_t^2		ΔROA_t^3	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Reduction in dividends (10%)	–0.023	–0.037**	–0.023	–0.037**	–0.018*	–0.020***
	(0.015)	(0.015)	(0.014)	(0.014)	(0.010)	(0.007)
Reduction in dividends (20%)	–0.026*	–0.035**	–0.019	–0.030*	–0.011	–0.016**
	(0.015)	(0.015)	(0.014)	(0.015)	(0.011)	(0.007)
Reduction in dividends (30%)	–0.029*	–0.027*	–0.042**	–0.043**	–0.018*	–0.016**
	(0.016)	(0.014)	(0.021)	(0.021)	(0.010)	(0.007)

Note: all models comprise fixed effects of the company and year. The following control variables are used: logarithm of total assets, ratio of liabilities to assets, P/B. Robust standard errors were employed. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

Table P5. Regressions of changes in ROA depending on the dividend growth rate

	Dependent variable					
	ΔROA_t^1		ΔROA_t^2		ΔROA_t^3	
	(1)	(2)	(3)	(4)	(5)	(6)
Dividend growth rate$^+$	0.021	0.019	0.012*	0.015	0.007	0.012
	(0.015)	(0.016)	(0.007)	(0.010)	(0.010)	(0.010)
Dividend growth rate$^-$	0.035	0.027	0.020	0.016	0.019	-0.019
	(0.035)	(0.036)	(0.033)	(0.032)	(0.025)	(0.029)
Number of observations	210	210	184	184	117	117
R^2	0.065		0.051		0.132	
Within R^2		0.074		0.063		0.190
F-statistic	2.857**	2.768**	1.916*	1.973*	3.363***	3.763***

Note: models 1, 3, 5 are pooled regressions, while models 2, 4, 6 comprise fixed effects of the company and year. In the models we used the observations for which the dividend growth in comparison to the previous period has values of less than 300%. The following control variables are used: logarithm of total assets, ratio of liabilities to assets, P/B. Robust standard errors were employed. The P-value for the test verifying the hypothesis that fixed effects are equal to zero is < 0.1 for models 2 and 4 and < 0.001 for model 6. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

Table P6. Regressions of ROA depending on changes in dividends

	Dependent variable					
	ΔROA_t^1		ΔROA_t^2		ΔROA_t^3	
	(1)	(2)	(3)	(4)	(5)	(6)
Increase in dividends (30%)	0.005		0.009		0.010	
	(0.006)		(0.009)		(0.011)	
Reduction in dividends (30%)		−0.015**		−0.029*		−0.015
		(0.006)		(0.016)		(0.010)
Number of observations	265	265	236	236	207	207
Within R^2	0.273	0.277	0.112	0.128	0.085	0.087
F-statistic	20.904***	21.390***	6.127***	7.126***	3.891***	3.970***

Note: all models comprise fixed effects of the company and year. The following control variables are used: logarithm of total assets, ratio of liabilities to assets, P/B. Robust standard errors were employed. *, ** and *** indicate a 10%, 5% and 1% significance level, respectively.

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