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DIVIDEND CHANGES AND FUTURE PROFITABILITY CHANGES – EVIDENCE FROM POLISH LISTED COMPANIES

ZMIANY W ZAKRESIE DYWIDEND A ZMIANY RENTOWNOŚCI SPÓŁEK NOTOWANYCH NA GPW W WARSZAWIE

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Summary: The study attempts to extend the knowledge regarding the dividend policy of nonfinancial companies listed on the Warsaw Stock Exchange. In the previous part of the research the author analysed among others, determinants of dividend policy on the Polish capital market. The main aim of this paper, according to the dividend signalling theory, is to investigate whether the dividend changes convey some information about the future profitability of non-financial firms listed on the WSE paying dividends for at least two consecutive years. The study examines the relation between dividend changes and future profitability changes measured in terms of earnings per share payments of nonfinancial companies listed on the Warsaw Stock Exchange paying dividends in the 2007-2012 period using panel data analysis. The main hypothesis states that changes in dividends are positively correlated with changes of earnings in the year after the change in dividend. The research results show that firms that increase dividends are more profitable than firms that either decrease their dividends or do not make any changes in their dividend policy. Unpredictably, firms that cut dividends are more profitable than firms that leave dividends unchanged. The results of panel data analysis indicate that neither dividend increases, nor the dividend increases in the current year are related to future changes in earnings. Thus, the results do not support the hypothesis. To conclude, the current changes in dividends are not reliable signals of future earning changes one year ahead in the same direction.

Keywords: dividend, dividend policy, signaling theory, panel data analysis.

Streszczenie: Badanie podejmuje próbę pozszerzenia wiedzy na temat polityki dywidendowej niefinansowych spółek notowanych na GPW. Głównym celem opracowania jest zbadanie, czy zmiany w zakresie dywidend przekazują pewne informacje na temat przyszłej rentowności przedsiębiorstw na podstawie danych niefinansowych spółek notowanych na GPW wypłacających dywidendę przez co najmniej dwa kolejne lata w okresie 2007-2012. Zbadano zależność pomiędzy zmianami dywidendy oraz przyszłymi zmianami rentowności, mierzonymi w kategoriach zysku na akcję niefinansowych spółek notowanych na GPW za

pomocą modeli danych panelowych. Wyniki badań pokazują, że spółki zwiększające wartość wypłacanej dywidendy były bardziej rentowne niż spółki, które albo zmniejszały, albo nie wprowadzały żadnych zmian w swojej polityce dywidendowej. Okazało się, że firmy zmniejszające wartość dywidend, były bardziej rentowne niż te, które nie dokonywały zmian. Wyniki analizy danych panelowych pokazują, że ani wzrosty dywidend, ani spadki nie są w statystycznie istotny sposób powiązane z przyszłymi zmianami w zyskach na akcje. Bieżące zmiany dywidend nie są zatem wiarygodnym sygnałem przyszłych zmian zysków na akcję w kolejnym roku.

Słowa kluczowe: dywidenda, polityka dywidend, teoria sygnalizacji, modele danych panelowych.

1. Introduction

Dividend policy remains one of the controversial problems in corporate finance even though it has attracted the interest of researchers all over the world for decades. One of the key issues of dividend decisions is the signaling effect. The question whether dividend changes convey information about the future profitability of a firm is still valid. The signaling theories suggest that dividend increases signal better prospects of a company (e.g. [Bhattacharya 1979; John and Williams 1985; Miller and Rock 1985]), but on the other hand many empirical studies have not supported this hypothesized relation. The studies of Watts [1973], DeAngelo, DeAngelo and Skinner [1996], Benartzi, Michaely and Thaler [1997], Grullon, Michaely and Swaminathan [2002], Grullon, Michaely, Benartzi and Thaler [2005] find little or no evidence that dividend changes predict changes in future earnings.

The main aim of the paper is to examine whether dividend changes give information about the future profitability changes of non-financial companies listed on the Warsaw Stock Exchange. As a measure of firm's profitability the EPS (earnings per share) ratio was applied. The author presents the initial results of the research.

The paper is organized as follows: section 1 presents the literature review, section 2 describes the data, methodology and hypotheses, section 3 gives the results of the study, section 4 concludes the article.

2. Literature review

Miller and Modigliani [1958] started a discussion on capital structure and dividend policy by presenting the irrelevance theory. They argued that in perfect capital markets, a firm's dividend policy should be irrelevant to its value. Since then many theories have been raised to explain dividend behaviour when various market imperfections are present. In the late 1970s and early 1980s signalling theories were developed. The best known are the theories of Bhattacharaya [1979], John and Williams [1985]

and Miller and Rock [1985]. The basic assumption in all these concepts is that firms adjust dividends to signal their prospects, when information asymmetry exists. A rise in dividends suggests that a firm will have better financial results, and a decrease signals that it will have worse results.

Bhattacharya [1979], John and Williams [1985] and Miller and Rock [1985] contend that changes in dividends could be used by a firm to deliver information about a firm's future prospects without having to reveal sensitive information that could jeopardize the firm's competitive advantage. They claimed that top managers of a firm have more information about the firm's strategy, financial situation, etc., than investors, mainly minority investors and the market in general. This situation leads to the problem of information asymmetry, which is the key assumption of the signalling theory. According to this concept, firms can use dividends as a signalling tool which enable them to send information to the market. The main aim of this mechanism is to minimize or even reduce the risk of information asymmetry. Bhattacharya [1979; 1980] argues that firms pay dividends in order to signal some information so the market could make a proper valuation. Similarly, Miller and Rock [1985] claim that dividend payment is the only reliable way to provide the information to investors.

Dividend initiation or an increase of dividend value gives a positive signal about the firm's condition, dividend omission or the decrease of dividend value could be interpreted in a negative way as a signal of the firm's poor financial situation. The market reacts and corrects the price according to signals sent by the firm – when a company decides to initiate dividend payments or to increase the value of dividend, a rise of share price increase should follow, when a firm decides to omit dividend payments or to decrease the value of dividend, a share price drop should be expected [Kowerski 2011].

Signalling theory orders that dividend changes should be costly in order to be credible. Bhattacharya [1979] considers transaction costs which arise when new capital has to be raised as a result of the increased dividends. The signalling theory developed by John and Williams [1985] considers taxes as the primary cost for dividend signalling. Miller and Rock [1985] imply that the opportunity cost associated with the cash outflows of dividend payment is the major signalling cost.

Many quantitate studies have been conducted to empirically test the dividend signalling theory. Some of them support the concept, some not. The findings of Watts [1973] give no evidence of a significant effect from the dividend changes on next year's earnings. De Angelo, DeAngelo and Skinner [1996], analysed dividend policy during the years when firm's earnings unexpectedly decline and argue that dividend changes contain virtually no information about future changes in firm earnings. They claim that dividends are not a reliable signalling tool due to behavioural aspects associated with the fact that managers can interpret the future situation of a firm too optimistically. Grullon, Michaely, Benartzi and Thaler [2005] argue that investors should not use dividend changes as predictors of future earnings, since the results of

their research indicate that earning increases do not follow dividend increases in any systematic way.

On the other hand, Healy and Palepu [1988], find that dividend initiations are generally followed by increasing earnings for two years. Dividend omissions are followed by an earnings' decline in the same year and a dividend increase in later years. Nissim and Ziv [2001] support the hypothesis about "information content of dividend". They find a positive relation between dividend increases and future earnings changes, future abnormal earnings, and future profitability levels in each of the two years following a dividend increase. They find no relation between dividend decreases and future profitability. They conjecture that the lack of association between dividend decreases and future profitability is due to accounting conservatism. These results were later contested by Grullon et al. [2005] who claim that Nissim and Ziv's assumption of linear earnings expectations is incorrect and therefore the results are biased. They developed a model that assumes nonlinearity in earnings expectations and find no relation between dividend changes and future profitability.

On the Polish market not many studies have been conducted to empirically test the dividend signalling theory. Most of them tested the market reaction to dividend announcements (for example Gurgul and Majdosz [2005], Czerwonka [2010], Perepeczo [2013], Mrzygłód and Nowak [2017], Kaźmierska-Jóźwiak [2017]).

Only a few researchers analysed the relation between dividend changes and profitability level. Wrońska [2009] examined eight Polish firms to analyze the coefficient ratio between dividend and earnings (net profit, operating profit, net cash flow, operating cash flow). The author states that in the case of analyzed companies there is no positive relation between dividends and future earnings. However, there is strong evidence that dividends contain information about past earnings.

Brycz and Pauka [2013] analysed the financial data of 21 companies listed on the WSE in the years 2002-2012 to test if the initial dividend payments include information about the future financial situation of the companies. The authors found that companies which initiate dividend payments increase the level of assets and revenues. The results of their study confirmed an increase in the net profit in most companies. However, the authors argue that the predictive power of initial dividends is not so clear nor strong enough that investors could resist their expectations about the formation of future results.

Pieloch-Babiarz [2015] tested the hypothesis that the commencement of dividend payment is a signal of an improvement of subsequent earnings of the companies. She analysed data of 33 companies listed on the WSE. Using profitability analysis and deviation analysis, the author found that the companies are profitable for a few years before and after the first dividend payment. However, the study confirms decreasing profitability in the first year after the initial dividend.

It is still unclear whether dividend changes could be used as predictors of a firm's future prospects, as suggested by traditional signalling hypothesis. Due to the fact that the study results are mixed, the questions about the validity of the dividend signalling hypothesis have not been answered yet.

3. Methodology, data, hypotheses

The study focuses on non-financial companies listed on the Warsaw Stock Exchange in 2007-2012. The financial data employed comes from the Thompson Reuters database covering the period 2007-2012. To be included in the final sample, a company must satisfy the following criteria:

1. The company pays dividend in the current year and in the previous year.
2. The firm's financial data are available in the Thompson Reuters.
3. The firm is not a financial institution.

Finally, unbalanced panel data has been constructed for 76 firms that satisfied the criteria [Gruszczyński (ed.) 2012, p. 270]. In such a case, relationships between variables can be examined using ordinary least squares (OLS). The author needs to bear in mind, however, that no individual effect may appear. Therefore three stages of the analysis were conducted. Firstly, the Breusch-Pagan test, to check whether it is reasonable to introduce individual effects. When no reason was found for rejecting the zero hypothesis, the author assumed that a given panel model can be estimated using ordinary least squares (OLS). Where the test produced high values (LM multiplier), the zero hypothesis was rejected in favour of an alternative one and introduced individual effects. In the next stage, the Hausman test was conducted to choose between fixed effects and random effects [Kufel 2007, p. 170-171].

The main aim of the study is to gauge the relationship between dividend changes and changes in earnings in the next year after the change in dividend. As a measure of firm's earnings the EPS ratio (earnings per share) has been applied, therefore there was a need to exclude from the research sample firms which made splits or consolidations of shares, to avoid the risk of distorting analysis result.

Taking into the consideration the signalling aspects of dividend changes, the study assumes that dividend changes signal some information about future earnings, to be precise that there is a positive relation between dividend changes and future changes in earnings. Therefore the following main hypothesis was formulated: changes in dividends are positively correlated with the changes of earnings in the next year after the change in dividend.

This assumption stems from the most important prediction of the dividend-signalling hypothesis – the potential relationship between changes in dividends and future financial results (including earnings) achieved by a company, which is a consequence of "the information content of dividends hypothesis".

To investigate whether dividend changes are reliable predictors of future earnings changes, the study applies a specification that analyses the relation between dividend changes. Specifically, it examines the relation between the rate of change in dividend per share in the current year and the rate of change in earnings per share one year ahead.

There are dividend increases, dividend decreases and no-change in dividends identified, however it assumed that no-change in dividends give no information

about future profitability changes, therefore no-change events are omitted in further analysis. Thus, the author implemented the dummy variable DPC (DNC) that takes the value of 1 for dividend increases (decreases) and 0 otherwise, to allow for different coefficients on dividend increases and decreases [Nissim and Ziv 2001, p. 2119; Grullon et al. 2005, p. 1664].

Finally the following model was tested:

$$(R\Delta EPS_t)_{i,t} = \beta_0 + \beta_1 (DNC_0 xR\Delta DIV_0)_{i,t} + \beta_2 (DPC_0 xR\Delta DIV_0)_{i,t} + \upsilon_{i,t}$$

All dependent variables are represented by selected parameters of *i*-companies in *t*-time units (years), and $\upsilon_{i,t}$ is the total random error.

Where:

- $R\Delta EPS_t = (EPS_t - EPS_{t-1}) / EPS_{t-1}$ is the annual percent change in earnings per shares in the next year after the dividend change (year 1),
- $R\Delta DIV_0 = (DIV_{t-1} - DIV_{t-2}) / DIV_{t-2}$ is the annual percent change in the cash dividend payment in year 0,
- DPC is a dummy variable that takes 1 for dividend increases in the current year and 0 otherwise,
- DNC is a dummy variable that takes 1 for dividend decreases in the current year and 0 otherwise.

Table 1. The number of dividend events and the number of increases, decreases, and no-changes in dividends of non-financial companies listed on the Warsaw Stock Exchange in 2007-2012

Year	Dividend increases	No changes	Dividend decreases
2007	19	11	9
2008	30	2	11
2009	13	19	15
2010	12	39	73
2011	22	35	5
2012	19	22	13
Total	115	128	126

Source: own calculations.

The number of dividend events and the number of dividend increases, dividend decreases, and no-changes in dividends of non-financial companies listed on the Warsaw Stock Exchange in 2007-2012 (which paid dividends for at least the two following years) are shown in Table 1.

4. Empirical results

To report the firm's characteristics, the descriptive statistics on the percent dividend change, the market-to-book ratio, the earning per share ratio, the return on equity ratio (ROE), and the return on assets ratio (ROA) for dividend decreasing firms (panel A), dividend increasing firms (panel B) and firms with no change in their dividend policy (panel C) is presented in Table 2.

Table 2. Descriptive statistics for dividend event observations

	Mean	Median	SD
A. Dividend increases			
Δ DPS	111.45%	63.27%	163.00%
MV/BV	3.47	1.52	6.27
EPS	5.37	2.15	12.95
ROE	16.30%	12.95%	13.21%
ROA	9.36%	7.4%	7.90%
B. No changes			
Δ DPS	0	0	0
MV/BV	1.83	1.14	1.84
EPS	2.94	0.97	6.14
ROE	9.68%	8.93%	11.59%
ROA	5.55%	5.32%	6.54%
C. Dividend decreases			
Δ DPS	–36.99%	–39.00%	21.00%
MV/BV	2.33	1.28	4.16
EPS	7.66	2.06	25.16
ROE	12.33%	10.03%	10.65%
ROA	7.81%	5.89%	6.41%

Note: Δ DPS is the annual percentage change in the cash dividend payment, MV/BV is the market-to-book ratio, EPS is the earning per share ratio, ROE – return on equity ratio, ROA – return on assets ratio.

Source: own studies.

The average (median) increase in dividends is 111.45% (63.27%) compared with an average (median) decrease in dividends of –36.99% (–39.0%). Therefore it could be concluded that dividend increases were more common and more extreme in magnitude on the Polish market in 2007-2012. These results are not consistent with prior empirical studies from developed countries (e.g. [Grullon et al. 2005, p. 1663]) showing that dividend cuts are less common and more extreme in magnitude.

Moreover, firms that increase dividends were more profitable than firms that either cut their dividends or leave them unchanged. Surprisingly, firms that decrease dividends were more profitable than firms that do not change the dividend policy. This result is also not consistent with Grullon et al. [2005, p. 1663].

Due to the results of the Breusch-Pagan and Hausman tests, the random effects model was applied to verify the hypothesis. Table 3 reports the results of the regression analysis.

Table 3. Estimated results of panel data analysis (random effects model)

Variables		Coefficient	
Const		0,67398 (0,297075)**	
$DPCxR\Delta DIV_0$		–0,15367 (0,118325)	
$DNCxR\Delta DIV_0$		1,32608 (0,935495)	
N	129	S.D. dependent var	2.0507
Mean dependent var	0.45789	Akaike criterion	554.2128
Sum squared resid.	529.3484	Schwarz criterion	562.7922
Log-likelihood	–274.1064	Hannan-Quin criterion	557.6988

Figures in parentheses are the standard errors. Variable significant at ** $p < 0.05$.

Source: own studies.

Contrary to assumption, the findings show a negative relation between dividend increases and future earnings per share changes, and a positive relation between dividend decreases and future earnings per share changes. However, the coefficients on dividend increases and decreases are both insignificant. Therefore, the results of panel data analysis indicate that neither dividend increases nor the dividend increases in the current year, are related to future changes in earnings. Thus, the findings do not support the hypothesis.

Taking into the consideration these results, we can conclude that the current changes in dividends are not reliable predictors of future earning changes one year ahead in the same direction. This is consistent with Benartzi et al. [1997] who found no evidence to support the view that changes in dividends have information content about future earnings changes. This is also in line with Grullon et al. [2005, p. 1666], who found some statistically significant positive relation between dividend increases and changes in earnings, but who argued that current changes in dividends are not a reliable signal of future earning changes (either one or two years ahead) in the same direction.

5. Conclusions

The presented study, according to the dividend signalling theory, examines whether the dividend changes have information content about the future earnings changes of non-financial firms listed on the Warsaw Stock Exchange paying dividends for at least two consecutive years. Taking into the consideration the signalling aspects of dividend changes, the author assumed the positive relation between dividend changes and future changes in earnings, specifically that dividend increases predict increases in earnings, dividend decreases – decreases in earnings. The study covered the period from 2007 to 2012.

The findings show that dividend increases were more common and more extreme in magnitude on the Polish market, contrary to the results of Grullon, Michaelly, Benartzi, Thaler [2005] for the U.S. market. Essentially firms that increase dividends are more profitable than firms that either decrease their dividends or do not make any changes in their dividend policy. Unpredictably, firms that cut dividends are more profitable than firms that leave dividends unchanged. This result is also not consistent with the findings of Grullon et al. [2005].

The results of panel data analysis indicate that neither dividend increases nor the dividend decreases in the current year are related to future changes in earnings. Thus, we can conclude that the current changes in dividends are not reliable signals of future earning changes one year ahead in the same direction. Therefore, the findings do not support the hypothesis.

In conclusion, the analysis gives no evidence that dividend increases signal better prospects for firms' profitability. Thus, the traditional dividend signalling theory is not valid for the research sample of dividends events of non-financial companies listed on the WSE in 2007-2012. Given the evidence presented here and in the other papers cited, it could be argued that that changes in dividends are not useful in predicting future changes in earnings. This indicates also a suggestion for investors that the predictive power of changes in dividends seems to be invaluable.

The presented analysis is the first attempt to examine the information content of dividend hypothesis. Therefore there is a need to conduct further research on a larger sample of dividend events using alternative measures of profitability and dividend changes.

Bibliography

Ambarish R., John K., Williams J., 1987, *Efficient signaling with dividends and investments*, Journal of Finance, 42, pp. 321-343.

Benartzi S., Michael R., Thaler R.H., 1997, *Do changes in dividends signal the future or the past*?, Journal of Finance, vol. 52, pp. 1007-1034.

Bhattacharaya S., 1979, *Imperfect Information, dividend policy and "the bird in the hand" fallacy,* Bell Journal of Economics, no. 10, pp. 259-270.

Bhattacharya S., 1980, *Nondissipative signalling structures and dividend policy*, Quarterly Journal of Economics, 95, pp. 1-24.

Brycz B., Pauka M., 2013, *Dywidendy inicjalne jako sygnały o przyszłych wynikach na przykładzie spółek z GPW w Warszawie*, Zarządzanie i Finanse, vol. 11(2), pp. 19-29.

Czerwonka L., 2010, *Wpływ zainicjowania wypłaty dywidendy na cenę akcji spółki*, Zeszyty Naukowe Uniwersytetu Szczecińskiego, Finanse. Rynki finansowe. Ubezpieczenia, nr 34, *Uwarunkowania wzrostu wartości przedsiębiorstw w warunkach konkurencji*, pp. 67-85.

DeAngelo H., DeAngelo L., 1990, *Dividend policy and financial distress: an empirical investigation on troubled NYSE firms*, The Journal of Finance, vol. XLV, no. 5, pp. 1415-1431.

DeAngelo H., DeAngelo L., Skinner D.J., 1996, *Reversal of fortune: dividend signaling and the disappearance of sustained earnings growth*, Journal of Financial Economics, vol. 70, pp. 341-71.

Grullon G., Michaely R., Benartzi S., Thaler R.H., 2005, *Dividend changes do not signal changes in future profitability,* Journal of Business, vol. 78, no. 5, pp. 1659-1682.

Grullon G., Michaely R., Swaminathan B., 2002, *Are dividend changes a sign of firm maturity*?, Journal of Business, vol. 75, pp. 387-424.

Gruszczyński M. (ed.), 2012, *Mikroekonomia. Modele i metody analizy danych indywidualnych,* Oficyna a Wolters Kluwer business.

Gurgul H., Majdosz P., 2005, *Effect of dividend and repurchase announcements on the Polish Stock Market*, Badania Operacyjne i Decyzje, no. 1, pp. 25-39.

Healy P., Palepu K., 1988, *Earnings information conveyed by dividend initiations and omissions*, Journal of Financial Economics, 21, pp. 149-175.

John K., Williams J., 1985, *Dividends, dilution and taxes: A signaling equilibrium*, Journal of Finance, 40, pp. 1053-1070.

Kaźmierska-Jóźwiak B., 2017, *Reakcja rynku kapitałowego na inicjowanie dywidend na rynku polskim*, Ekonomika i Organizacja Przedsiębiorstwa, nr 6 (809), s. 109-118.

Kowerski M., 2011, *Ekonomiczne uwarunkowania decyzji o wypłatach dywidend przez spółki publiczne,* Wydawnictwo Konsorcjum Akademickie, Kraków-Rzeszów-Zamość.

Kufel T., 2007, *Ekonometria*. *Rozwiązywanie problemów z wykorzystaniem programu GRETL*, PWN, Warszawa.

Miller M., Modigliani, F., 1958, *The cost of capital, corporate finance and the theory of investment*, American Economic Review, 48, pp. 261-297.

Miller M., Modigliani F., 1961, *Dividend policy, growth and the valuation of shares*, Journal of Business, 34, pp. 411-433.

Miller M.H., Rock K., 1985, *Dividend policy under asymmetric information*, Journal of Finance, 40, pp. 1031-1052.

Mrzygłód U., Nowak S., 2017, *Market reactions to dividends announcements and payouts. Empirical evidence from the Warsaw Stock Exchange*, Contemporary Economics", vol. 11(2), pp.187-204.

Nissim D., Ziv A., 2001, *Dividend changes and future profitability*, Journal of Finance, vol. 56, pp. 2111-2133.

Penman S. H., 1983, *The predictive content of earnings forecasts and dividends*, Journal of Finance, 38, pp. 1181-1199.

Perepeczo A., 2013, *Reakcja akcjonariuszy na decyzje o wypłacie dywidendy w spółkach publicznych – wyniki badań empirycznych,* Research Papers of Wrocław University of Economics, no. 323, pp. 253-264.

Pieloch-Babiarz A., 2015, *Dividend Initiation as a Signal of Subsequent Earnings Performance– Warsaw trading floor evidence*, Research Papers of Wrocław University of Economics, no. 381, pp. 299-313.

Watts R., 1973, *The information content of dividends*, The Journal of Business, 46, pp. 191-211.

Wrońska E.M., 2009, *Zawartość informacyjna dywidendy*, Zeszyty Naukowe Uniwersytetu Szczecińskiego, Ekonomiczne Problemy Usług, no. 39, pp. 139-145.