

# Ownership Structure and Dividend Strategy of Public Companies. Evidence from Poland

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## Abstract

*The aim of the article is to verify a hypothesis of the ownership structure influencing the dividend strategy of companies listed at both main stock and alternative markets of the Warsaw Stock Exchange. In order to evaluate the hypothesis, dynamic panel Lintner's partial adjustment models with individual random effects have been estimated by means of instrument variables method, separately for each of the five company groups specified due to their ownership structure. Each one has systematically paid out dividends in the years 2012–2016. The results confirm that the dividend strategies of companies significantly depend on their ownership structure. Companies controlled by strategic investors had the highest dividend payout ratio, whereas the ones controlled by institutional investors—the lowest.*

**Keywords:** ownership structure, dividend strategy, Lintner's partial adjustment model, instrument variables method, Warsaw Stock Exchange

## Introduction

One of the basic areas of the strategic financial decisions in a public company is to settle the net financial result and consequently share the profits. In economical literature this issue is mostly narrowed down to dividend policy, although paying out dividends is only one of the profit distribution directions. The dividend policies are connected with such aspects of company functioning as: formulating and pursuing the main aim, financing structure optimization, equity cost or the position at the stock market. When looking at dividends in the context of the company and its owners relations, their dual character becomes evident: paying out dividends is a reward for shareholders providing capital, yet for the company it means surrendering funds which could be used for financing investments.

All of these means that the dividend policy should be carried out according to a specific strategy. It should be long-term and clearly specified in the prospectus or company statements. Additionally, the issue of dividend policy should be researched only in reference to companies which share their profit with shareholders quite regularly. In reality, not all of the Polish public companies clearly inform about their intentions of sharing profit and dividend policy. In most of the cases such information covers the timespan of the following year, mostly two years. This does not mean that these companies do not have dividend policies. The researcher's task is to try to identify the so-called dividend strategies, although these do not always correlate with the definition of strategy in its classic meaning.

It is evident that the main source of dividends is profit generated in the last fiscal year, although sometimes it can be paid out of retained earnings (also in a case of a financial loss). Dividend strategies are also determined by a number of other factors. One of the most important is the fact of separating ownership from management, which is reflected in the ownership structure.

This structure represents a form of ownership supervision and is in a way a control instrument used by shareholder in regards to the management actions. The reason for this interference may be, amongst others, the difference of interest between the investors and the management when it comes to the issue of profit distribution. This stems from the dual character of the dividend itself. Basing on this, a following research hypothesis has been formulated: the ownership structure and the form of company supervision (which correlates to the structure itself) determines dividend strategies. The aim of this article is to verify this hypothesis. More specific aim is to define the target payout ratio for companies with different ownership structure. The analysis has been performed on the basis of dividend payout decisions made by companies listed on the Warsaw Stock Exchange, which regularly shared their profits with their shareholders in the years 2012–2016.

## 1 The essence and the identification of the dividend strategy

The dividend strategy is a reflection of the dividend policy, which itself may be defined by derivation from the definition of strategy. In a classic view, a strategy means the plan of actions, the pattern of conduct of the company, a set of fixed rules and ways to respond to changes in environment. These serve to achieve set goals (Krupski 1999, 13; Pierścionek 1997, 13). Given the main purpose of the company functioning according to the rules of the market, the dividend policy in a public company may be defined as the activities of its authorities (board of directors, general meeting of shareholders), involving the dividend as an instrument to effectively create and consolidate conditions for creating wealth for its owners and strengthening the market position of the company (Duraj 2002, 82). This definition is very general and it is difficult to diagnose on its basis the nature of the implemented dividend policy. In the literature and practice the dividend policy is more often interpreted in a more narrow and unambiguous way. Cooley and Roden (1991, 721) consider that such policy is decision made by the company management as to the form and amounts of dividends. Brigham (1995, 221) declares that the dividend policy amounts to the decision of distributing profits amongst shareholders or retaining them for re-investments. It is more fleshed out by Pluta (1996, 128), who specifies the dividend policy as „decisions settling how much of the company profit must be paid out as dividends and how much must be retained and used for development targets” and Łukasik (2010, 10) — „making choice as to the way of sharing the company profit from the previous year (or profit retained earlier) and determining the relative proportions of funds allocated for dividends and for re-investment.” In this way of understanding the dividend policy the emphasis is placed on the relation between the amount of dividends and the level of net financial result, which is the reference point for calculating the dividends. This relation is called the dividend payout ratio and may be a basis for identifying the dividend strategy implemented by the company.

Such way of identifying the dividend strategy is based on the so-called stable dividend payout ratio model (Łukasik and Błach 2016, 99; Sierpińska 1999, 99–100). This model assumes closely linking the dividend with the net financial result. Adopting such strategy does not expose the company to the risk that the payment of dividends could threaten the financial stability. It can also mobilize the management to improve profitability. Lintner (1956), taking as a reference point the strategy of stable dividend ratio, proposed a model of target dividend payout ratio, commonly known as the Lintner’s model. It is also possible to find other models of dividend policy in the literature. These are, amongst others, the model of constant dividend policy and the model of residual dividend policy (Duraj 2002, 89; Sierpińska 1999, 95). The assumption of constant policy is the desire to provide a longer period of relatively constant or increasing dividend per share. This procedure is based on belief that paying stable dividends contributes to the increase in market prices of shares and testifies to the good condition of the company.

In the case of the residual policy in the distribution of profit the investment needs are deemed to be the most important in the decision of paying dividends. This means that the dividend itself is a residual<sup>1</sup> value—the resultant between the net profit and transferring its part or the whole

1. From lat. *residuus*—“That is left over from an earlier period, persisting, lingering, surviving etc.” See: Glare P.G.W. ed. 1968. *Oxford Latin Dictionary*. Oxford – New York: Clarendon Press; Oxford University Press.

for financing investment needs. The consequences of such policy are significant variations between the level of dividends and cases when they are not paid at all. The usefulness of both models to diagnose dividend strategies in respect of companies that can be classified according to various criteria is limited. Dividend per share is an absolute value and cannot be used for comparing companies. The residual policy allows for the lack of dividends, and so the condition of regularly paid dividend cannot be met. Moreover, fluctuations in the level of dividends makes it more difficult to identify its target payout ratio.

Because of these, in order to identify dividend strategies with the aim of researching the relationship between the ownership structure and the dividend policy implemented by a given company, the stable dividend payout ratio model will be used. In order to assess the dividend strategies, the Lintner's model will be employed.

## 2 Ownership structure and its relations to company supervision

The decisions of paying dividends and the character of the implemented dividend strategy are determined by a set of factors. At the moment there is no single synthetic theory which would allow unambiguous indication of which of these factors are the most important. Synthetic reviews of the decision factors of dividend payments based on analyzing existing theories and hypotheses have been made by Kowalewski, Stetsyuk and Talavera (2007, 80–82), Kowerski (2011, 163–205), Łukasik and Błach (2016, 87–93). Among them there are profitability, needs and investment opportunities, the maturity of companies, financial leverage, tax policy, company size and the degree of control by shareholders. From the point of view of presented studies the last factor is the most important.

Generally speaking, there are two models of control (supervision) over a company: the internal one and the external one (Urbanek 2011, 215). The internal system is typical for a situation, when in a given company there is one or a small number of investors owning relatively high amount of market shares. In the external system, there is a dispersion of ownership. What is important, however, that the entities with the dominant packet of shares do not constitute a homogenous category. The degree of shareholding dispersion may also be varied. When one examines the influence of supervision on dividend strategy of companies it is necessary to group them, taking into account the scope and form of control of the company by its shareholders. The basis for such grouping may be an analysis of ownership structure.

The ownership structure is understood as the characteristics of amount of shares owned by certain groups of shareholders. This structure may be seen as:

- concentration of ownership, which is a presence of majority shareholders, or
- presence of certain types of shareholders, particularly institutional investors and the ownership share of managers (Hamrol and Ochocki 2008, 288).

In both cases, the ownership structure enables the owners to influence the managers and to exercise control over the company. The shape of the structure determines the managing decisions, including those concerning the allocation of profit. From an analysis of the ownership structure of the largest companies it appears that dispersed ownership appears only in the United States, United Kingdom and Japan (La Porta, Lopez-de-Silanes, and Shleifer 1999). In other countries, a presence of dominant investor is more common (Becht and Mayer 2002; Hamadi 2010). A relatively large share of dominant investor is also observed in Poland (Patena 2008; Wilczyński 2014). It should be noted, however, that dominant shareholders do not constitute a homogenous group and may be classified by taking into account the type of property they represent.

Considering the shareholding structure in the context of differences in supervision systems and the presence of different types of dominant shareholders, a systematization of companies has been created for this study. It will be later used in the empirical part of this work. Companies included in the study have been divided into five groups, basing on the analysis of the ownership structure.

### 3 Lintner's model as a tool for defining dividend strategies of public companies

In the pioneering study of 1956, Professor John Lintner investigated dividend behavior of 28 US companies in the years 1947–1953 (196 observations). Lintner's survey can be summarized in four “stylized facts”:

- Firms have long-term target dividend payout ratios.
- Managers focus more on dividend changes than on absolute levels.
- Dividend changes follow shifts in long-term, sustainable earnings. This trend implies that managers tend to “smooth” dividends so that changes in transitory earnings are unlikely to affect dividend payments over the short term,
- Managers are reluctant to make changes to dividends that might have to be reversed (Younis and Javid 2014, 11).

Based on these conclusions Lintner developed a model, in which dividend is a function of net current profit and dividend payout in the previous year (lagged dividend).

Lintner's model is based on the assumption that firms have a target payout ratio such that changes in earnings translate into changes in payout. Adjustment is not immediate, however, firms only partially adjusting their payout towards new target levels.

Dividend ( $D_t$ ) in the target year  $t$  will equal the constant fraction of net profit ( $P_t$ ):

$$(1) \quad D_t = \tau \cdot P_t,$$

where  $\tau$  is target payout ratio.<sup>2</sup>

Change in dividend payments is defined as

$$(2) \quad D_t - D_{t-1} = \tau \cdot P_t - D_{t-1}.$$

A pattern of changing dividend, which is preferred by the managements, and relies on only partial increase in the dividend payment in a situation of net profit rise may be described by formula

$$(3) \quad D_t - D_{t-1} = \alpha(\tau \cdot P_t - D_{t-1}),$$

where  $\alpha$  is speed of adjustment.

Hence, a Lintner's model is obtained:

$$(4) \quad D_t = (1 - \alpha)D_{t-1} + \alpha \cdot \tau \cdot P_t.$$

It is called a partial adjustment model. This means that in the following years, the company only partially adjusts to the target dividend.

After introducing a constant parameter and random disturbances and making substitutions

$$(5) \quad \alpha_1 = 1 - \alpha \quad \text{and} \quad \alpha_2 = \alpha \cdot \tau,$$

a regression equation is obtained:

$$(6) \quad D_t = \alpha_0 + \alpha_1 D_{t-1} + \alpha_2 P_t + \varepsilon_t.$$

This equation allows for calculating two parameters of Lintner's model, which specify the dividend strategy of the company. First is target payout ratio

$$(7) \quad \tau = \frac{\alpha_2}{1 - \alpha_1},$$

and second is speed of adjustment

$$(8) \quad \alpha = 1 - \alpha_1.$$

Lintner was the first who introduced a partial adjustment dividend model and his empirical work is the most recognized empirical investigation on dividend behavior to date. Lintner's followers

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<sup>2</sup> In reality, profit  $P_t$  was earned in the year  $t - 1$ , but is divided in the year  $t$  and the dividend  $t$  is paid from this profit, so that is why the  $t$  index is used with the  $P$  variable.

extended, modified, verified his basic model and applied it to test different dividend hypotheses and theories. Lintner estimated his model using Ordinary Least Squares (OLS) method.<sup>3</sup> But the profit variable is likely to be correlated across firms with the firm-specific effect. In addition, the lagged dependent variable is most likely to be correlated with these firm-specific effects. Thus, if we estimate model using OLS, the estimators are inconsistent and biased. To obtain consistent estimators an instrumental variable (IV) approach (Anderson and Hsiao 1981) or the Generalized Method of Moments (GMM) suggested by Hansen<sup>4</sup> and developed by Arellano and Bond (1991) should be used as the estimation technique. As study uses the information for the number firms over the period of time (years) to test the dividend theories, panel data estimation technique is suitable for this purpose.

Fama and Babiak (1968) examined the dividend policy of 392 US industrial firms over a period of 19 years (1946–1964) and estimated Lintner's models. However, as they tested their models on individual firm data, similar results to the Lintner study were found. Fama (1974) has used a large sample and once again found the same results about dividend policy stability for USA. Fama and French (2002) using a US time series of annual cross-section (3 264 observations) tested the trade-off and pecking order hypotheses with the Lintner's model augmented by additional independent (control) variables.

The extensive literature on dividend policy of Anglo-American companies, which builds on Lintner model, shows that most firms set long term target payout ratios. Brav et al. (2005) surveyed and interviewed 384 US financial executives at the beginning of the 21st century and found that stability of future earnings still affects dividend policy as in Lintner. However, fifty years later after Lintner's survey, they found that the link between dividends and earnings has weakened. Many managers now favor repurchases because they are viewed as being more flexible than dividends. Goergen, Renneboog and Correia Da Silva (2004) selected all of the 221 industrial and commercial firms that were on German Stock Exchanges (GSE), and for which there were at least five years of accounting data available over the ten-year period from 1984 to 1993. They used a partial adjustment model to estimate the target payout ratio and the speed of adjustment of dividends. They found that German companies did not base their dividend decisions on published earnings, but on cash flows. Andres et al. (2015) estimated, on a large panel of all non-financial firms listed on the Frankfurt Stock Exchange that were among the largest 200 (as measured by total assets) in Germany at any time during the 21-year period of 1988–2008, Lintner partial adjustment models for both dividends and total payouts to analyze how the introduction of repurchases in 1998 affected the payout policy of German firms. Their results support the flexibility hypothesis that predicts that dividends are used to disburse permanent, and repurchases transitory, earnings.

The available literature on dividend policy is mainly focused on developed countries but there are a few studies on developing countries also. The study concludes that firms in developing markets set a targeted dividend payout ratio and try to maintain this payout ratio ignoring short term changes in earnings. Anyhow, when firms have a target payout ratio they usually give less importance to changes in dividends overtime and as a result dividend's smoothing with time becomes less relevant. Consequently, it is found that dividend policies of emerging markets are more volatile than developed countries (Younis and Javid 2014, 7).

#### **4 Research on the relations between the ownership structure and dividend strategies**

Most of studies focused on assessing the influence of ownership concentration on the dividend payout level and, less frequently, on establishing which groups of shareholders are more prone to paying higher dividends. Most of researchers extensively explored only the US and UK firms. Rozeff (1982), using the multiple linear regression model of the target dividend payout ratio (measured as the arithmetic average of seven dividend payout ratios over the seven years 1974–1980), found

3. At that time it was the best known method of estimating linear regression models.

4. GMM was developed by Lars Peter Hansen in 1982 as a generalization of the method of moments which was introduced by Karl Pearson in 1894. Hansen shared the 2013 Nobel Prize in Economics in part for this work.



that the dividend payout is, amongst others, a significantly negative function of the percentage of stock held by insiders, and a significantly positive function of the firms' number of common stockholders.<sup>5</sup> In other words, the dividend payout ratio was negatively correlated with ownership concentration.

In terms of the institutional ownership of firms, there are significant differences between the US and UK. These differences result from the differences in legal restrictions and tax incentives. In fact, institutional shareholdings in the US are only about two-thirds of those in the UK (Short, Zhang, and Keasey 2002, 106). The ownership of equity in the UK is dominated by institutional shareholders and this may affect the dividend payout ratio in a number of ways. Short, Zhang and Keasey used a sample of 211 firms listed on the London Stock Exchange between 1988 to 1992 and estimated four types model (including Lintner's model) and showed a positive association between dividend strategy and institutional ownership. In addition, there was some evidence in support of the hypothesis on negative association between dividend payout policy and managerial ownership. The same results have been achieved for the UK by Renneboog and Trojanowski (2004). Zeckhauser and Pound (1990), investigating US companies, found no evidence to support the view that institutional shareholders have an impact on dividend strategy.

The study of 360 large industrial firms quoted in the UK Stock Exchange in 1985–1997 by Khan (2006) investigated how the ownership structure of firms affects their dividends strategies. He used extremely rich ownership data on all beneficial owners (individuals, insurance companies, pension funds and other financial institutions). A significantly negative relation between dividends and ownership concentration result appear to corroborate Rozeff's model. Dividend yields fall when the degree of ownership concentration increase, which is generally associated with better incentives to monitor. Research of other markets also did not provide clear answers to the question of direction and level of correlation between the ownership management and dividend strategies. Eckbo and Verma (1994), from a sample of Canadian quoted companies, reported that the cash dividend yield increases significantly with the voting power of corporate/institutional shareholders and decreases significantly with the voting power of management. Gugler and Yurtoglu (2003) analyzed 736 dividend change announcements in Germany over the period 1992–1998 and using Lintner's model found the largest owner to reduce, while the second largest shareholder to increase the dividend payout ratio. The presence of a second largest shareholder with a considerable equity stake makes a crucial difference in the governance of the firm. Harada and Nguyen (2011), using a sample consisting of Japanese firms listed on the Tokyo Stock Exchange over the period 1995–2007 (11 062 firm-year observations), analyzed the effect of ownership concentration on the dividend strategies of Japanese firms. Consistently with Khan (2006), they found out that firms with high ownership concentration pay lower dividends. They found that tightly controlled companies are less likely to increase dividends when profitability increases and when profits are negative. They also found that such firms are more likely to omit dividends when investment opportunities which protect the interest of current shareholders improve. Mancinelli and Ozkan (2006) investigated the relationship between the ownership structure of firms and the firm's dividend strategies using a sample of 139 listed Italian companies. The results of the empirical analysis revealed that firms make lower dividend payouts as the voting rights of the largest shareholder increase. Furthermore, their findings also provided some support for the prediction that managers prefer to withhold resources under their control rather than distribute returns to shareholders. Lundgren and Lantz (2016) examined the effect of ownership structure on dividend strategies of 284 firms listed on the OMX Stockholm Exchange in Sweden in the period of 2010–2015 (1 046 observations). Specifically, the purpose of the study was to investigate the relationship between 17 different investor types and dividend strategies of firms, measured as dividend yield and dividend payout ratio. The findings indicated significant positive relationships between institutional ownership and dividend yield and dividend payout, with one exception being private equity which exhibited a negative relationship with dividend yield. Al-Najjar and Kilincarslan (2016) analyzed a panel dataset of 264 Istanbul Stock Exchange listed firms (non-financial and non-utility) over

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5. Model was estimated on data from circa 1000 US companies.

ten-year period of 2003–2012 and showed that foreign and state ownership are associated with a less likelihood of paying dividends, while other ownership variables (family involvement, domestic financial institutions and minority shareholders) are insignificant in affecting the probability of paying dividends. However, all the ownership variables have a significantly negative impact on the dividend payout ratio and the dividend yield. Their article presents consistent evidence that increasing ownership of foreign investors and the state in general reduce the need for paying dividends in the Turkish market.

In Poland the most extensive research was performed by Kowalewski, Stetsyuk and Talavera (2007), who analyzed 110 non-financial companies listed on the Warsaw Stock Exchange (WSE) in the years 1998–2004 (760 observations) and documented that Polish firms with a large shareholder have, on average, lower payouts. Next, they concluded that the one-share-one-vote mechanism significantly reduces the dividend payout ratio in Poland. These results present strong evidence that ownership may determine the dividend strategies of listed companies on the WSE.

## 5 Methodology

The research included companies listed on the main stock market and alternative market (New-Connect) of the Warsaw Stock Exchange. The initial panel consisted of 72 companies (360 observation), which regularly paid dividends in the years 2012–2016. After analyzing the ownership structure, investigated firms were divided into five groups:

- companies controlled by a strategic investor (both domestic and foreign)
- companies controlled by the state and by the local government
- companies controlled by institutional investors (financial funds and asset management firms)
- companies controlled by groups of individual investors
- companies with dispersed ownership (non-controlled)

The analysis of data showed that in the case of 63 (17,5%)<sup>6</sup> observations the amount of dividend was bigger than the net profit for the last fiscal year. Companies pay dividends not only using net profit of the last fiscal year, but also reserve capital and undistributed earnings from previous periods. Sometimes they pay dividends in spite of losses. This phenomenon becomes more and more frequent amongst the companies listed at the Warsaw Stock Exchange (Kowerski 2013), but it is difficult to assume that this could be a permanent strategy for any firm. Due to this, such observations were excluded from the panel and an unbalanced panel of 307 observations from 71 companies has been reached (level of balance 86,5%)

In order to assess dividend strategies of analyzed companies, the following Litner's model of partial adjustment has been used:

$$(9) \quad D_{it} = \alpha_0 + \alpha_1 D_{it-1} + P_{it} + \varepsilon_{it},$$

where:

$D_{it}$  — dividend paid by the  $i$ -th company for the fiscal year  $t$  in relation to the average value of assets at the end of the years  $t$  and  $t - 1$  of the  $i$ -th company,

$D_{t-1}$  — dividend paid by the  $i$ -th company for the fiscal year  $t - 1$  in relation to the average value of assets at the end of the years  $t - 1$  and  $t - 2$  of the  $i$ -th company,

$P_{it}$  — profit of the  $i$ -th company for the fiscal year  $t$  in relation to the average value of assets at the end of the years  $t$  and  $t - 1$  of the  $i$ -th company,

$\varepsilon_{it}$  — random disturbances.

Litner's model may also be derived from a model with infinite delays, assuming that the amount of the paid dividend for the fiscal year  $t$  depends on the net profit of the year  $t$  and the previous years:

$$(10) \quad D_{it} = \beta + \beta_0 P_{it} + \beta_1 P_{it-1} + \beta_2 P_{it-2} + \beta_3 P_{it-3} + \dots + \varepsilon_{it}.$$

6. [In the journal European practice of number notation is followed—for example, 36 333,33 (European style) = 36 333.33 (Canadian style) = 36,333.33 (US and British style).—Ed.]

If one acknowledges the quite logical Koyck's assumption of parameters creating a declining geometric sequence, the earlier Lintner's model takes the form of a model with infinite delays (Zelias 1997, 252–271):

$$(11) \quad D_{it} = \frac{\alpha_0}{1 - \alpha_1} + \alpha_2 P_{it} + \alpha_2 \alpha_1 P_{it-1} + \alpha_2 \alpha_1^2 P_{it-2} + \alpha_2 \alpha_1^3 P_{it-3} + \dots + \varepsilon_{it}.$$

If one assumes that the dividend for the year  $t$  is influenced not only by the dividend for the year  $t - 1$  and the profit for the year  $t$ , but also by individual random effects, a dynamic panel model with individual random effects is achieved:

$$(12) \quad D_{it} = \alpha_0 + \alpha_1 D_{it-1} + P_{it} + \gamma_i + \varepsilon_{it},$$

where  $\gamma_i$  is non-observable individual random effects for the  $i$ -th company.

In order to estimate the model above, the Instrument Variables (IV) method of Anderson and Hsiao (1982) has been used. This method is to find a set of instrumental variables correlated with the explanatory variables and non-correlated with the random element. These variables are used to eliminate the correlations between the explanatory variables and the random disturbances. In these work, the following were used for the instrumental variables<sup>7</sup> for all the estimated models:

- the relation of the average value of equity at the end of the years  $t$  and  $t - 1$  to the average value of assets at the end of the years  $t$  and  $t - 1$ , as a percentage value
- the relation of dividend for the year  $t - 1$  to the average value of equity at the end of the years  $t - 1$  and  $t - 2$
- the natural logarithm of the average value of equity at the end of the years  $t$  and  $t - 1$  in constant prices of 2015; the index of prices and consumer services of the Central Statistical Office of Poland has been used as a deflator
- the share of companies listed at the main stock market in the total number of companies as a percentage value

The calculations were performed using the GRET software (Cottrell and Lucchetti „Jack” 2015).

## 6 Results

Analyzed companies paid less and less dividends in the years 2012–2016. In 2012 they paid dividends of a total value of PLN 16,4 billion. In 2016 this amount was more than a half smaller (PLN 8,1 billion). Still, an analysis on the basis of the ownership structure shows, that the “responsibility” falls on the companies controlled by the state and the local government, which paid dividends of a total value of PLN 11,1 billion in 2012, but only PLN 2,7 billion in 2016. In other groups the value of paid dividends showed only small and multidirectional changes. While in 2012 companies controlled by the state and the local government had the largest ratio of dividend to assets, in 2016 this index was the smallest. In 2016, the companies controlled by institutional investors had the biggest ratio of dividend to assets. It should be noted that throughout the whole analyzed period, the companies controlled by strategic investors had the lowest level of this index. On the other hand, companies of this sector showed the highest volatility of the dividend to assets index. The highest stability of this index was achieved by the companies controlled by groups of individual investors. It is worth noting that the ratio of dividend paid in 2016 to net profit from 2015 surpassed 100%. It was mostly an effect of controlled by the state KGHM, which paid dividends despite a substantial financial loss. Removal of companies, whose dividends exceeded the net financial result of the last year resulted in lowering the ratio of dividend to the net profit in 2016 to 67,7% in total and to 56,4% in the sector of companies controlled by the state and local government. In previous years, the ratio of dividend to financial result was higher than the dividend payout ratio by at most 7,4 percentage point.

7. These variables ensured the significance of all the parameters and the highest  $R^2$  amongst all the considered potential instrumental variables, which included also: the number of years on the stock exchange, the relation of the dividend for the year  $t$  to the average value of equity at the end of years  $t$  and  $t - 1$ , the relation of the financial result in the year  $t$  to the average value of equity at the end of years  $t$  and  $t - 1$ , the relation of the financial result in the year  $t - 1$  to the average value of equity at the end of years  $t - 1$  and  $t - 2$ , the natural logarithm of the average value of equity at the end of years  $t$  and  $t - 1$  in constant prices of 2015, the annual GDP rate of growth in Poland.



**Tab. 1.** Basic data of the investigated panel

Year <sup>a</sup>	Dividend value (PLN billion)	Dividend to fi- nancial result (%)	Dividend to assets (%)	Coeff. of variation: di- vidend to assets (%)	Dividend to equity (%)	Dividend > finan- cial result (%)
<b>Companies total</b>						
72 companies, in 2011–2014 86,1% and in 2015 87,5% of them on the main market of WSE						
2012	16,41	62,2	5,1	139,7	13,8	15,3
2013	11,52	72,8	3,4	121,5	9,1	13,9
2014	13,87	75,1	4,0	126,8	10,8	15,3
2015	11,15	64,2	3,0	130,6	8,4	22,2
2016	8,05	101,9	2,1	156,0	6,0	20,8
<b>Companies controlled by strategic investors</b>						
31 companies, 83,9% on the main market of WSE						
2012	4,66	69,2099	2,1	144,8	9,8	19,4
2013	4,57	72,1	1,9	153,9	9,3	3,2
2014	5,25	80,0	2,2	159,3	10,3	12,9
2015	5,26	95,9	2,1	144,8	10,1	22,6
2016	4,42	89,3	1,7	160,0	8,5	16,1
<b>Companies controlled by the state and the local government</b>						
7 companies, 71,4% on the main market of WSE						
2012	11,09	59,6	13,0	105,4	17,9	0,0
2013	6,17	74,2	6,8	83,5	9,2	14,3
2014	7,78	73,3	8,6	103,6	11,8	0,0
2015	4,96	47,0	5,0	107,3	7,2	28,6
2016	2,68	199,9	2,5	134,0	3,9	42,9
<b>Companies controlled by the institutional investors</b>						
8 companies, 87,5% on the main market of WSE						
2012	0,14	83,8	4,2	171,1	7,3	37,5
2013	0,18	95,6	5,2	68,4	9,0	37,5
2014	0,24	94,8	6,6	50,8	11,4	50,0
2015	0,33	102,3	8,8	108,2	15,2	50,0
2016	0,35	87,3	8,5	137,4	15,1	50,0
<b>Companies controlled by groups of individual investors</b>						
16 companies, in the years 2011–2014 and in 87,5%, in 2015 93,8% on the main market of WSE						
2012	0,08	65,6	3,5	69,5	6,6	6,3
2013	0,10	77,5	3,9	80,0	7,5	18,8
2014	0,09	58,2	3,2	72,1	6,6	18,8
2015	0,12	61,7	3,7	62,6	8,3	12,5
2016	0,13	65,8	3,7	77,3	3,7	18,8
<b>Companies with dispersed ownership</b>						
10 companies—all of them on the main market of WSE						
2012	0,44	59,0	5,3	96,4	7,0	10,0
2013	0,50	57,8	5,5	83,5	7,3	20,0
2014	0,51	57,3	5,2	81,9	6,8	0,0
2015	0,48	60,7	4,6	86,2	6,2	10,0
2016	0,48	47,0	4,3	82,3	5,8	0,0

<sup>a</sup>The year in which dividend was paid (for the previous fiscal year)

The target dividend payout ratio, calculated basing on the estimated by the IV method dynamic panel Lintner's model of partial adjustments with random individual effects for all the observations was 52,8%. Companies controlled by strategic investors have the highest target dividend payout ratio (76,8%). Companies with dispersed ownership (52,5%) and companies controlled by the state and local government (51,3%) has the target payout ratio up-close to the average for the all studied companies. In case of the last sector, credibility of the outcome is lowered by the insignificance of the  $\alpha_1$  parameter. The companies controlled by institutional investors have the lowest target dividend payout ratio (36,1%), but again in this case the result may be distorted by the insignificance of the  $\alpha_1$  parameter. The companies controlled by a group of individual investors had a 47,1% target dividend payout ratio. These companies, and after them the companies with dispersed ownership adjusted the most slowly to the target dividend payout ratio. The indicators of

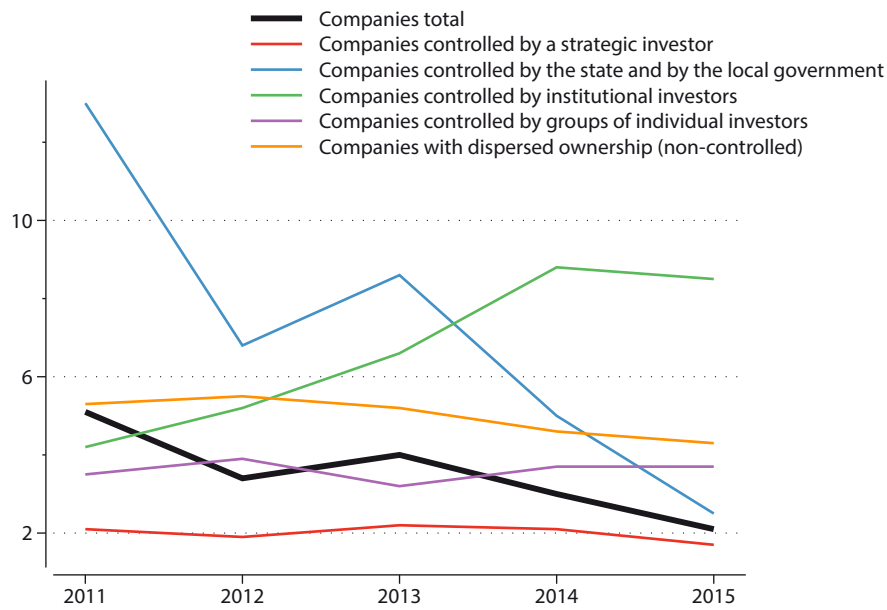


Fig. 1. Changes of dividend yield (dividend for the fiscal year  $t$  to the average value of assets at the end of the years  $t$  and  $t - 1$ ) in the fiscal years 2011–2015 by the ownership structure

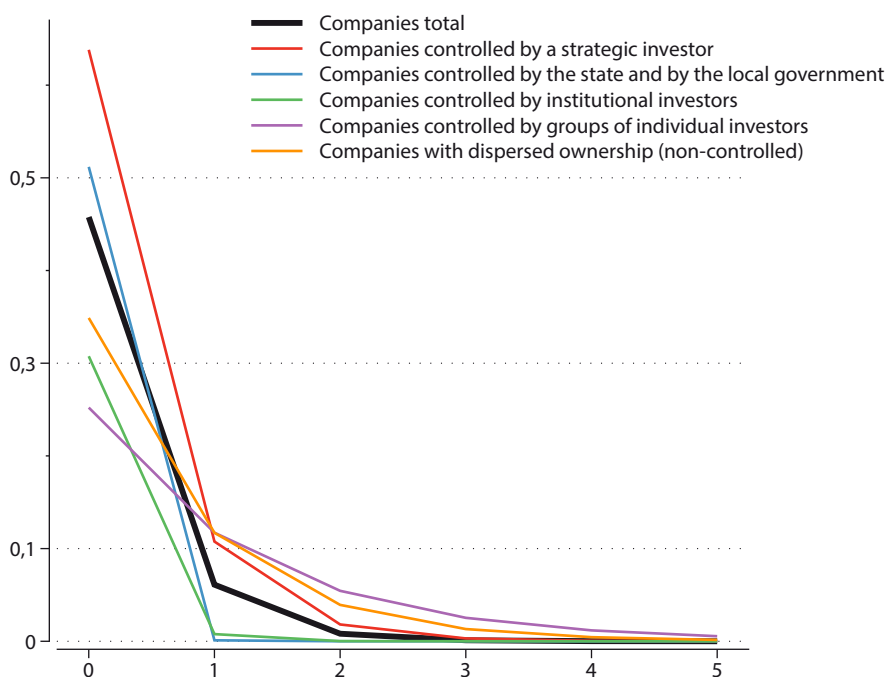


Fig. 2. Distribution of the value of parameters of Koyck model depending on the length (years) of the delay

**Tab. 2.** The results of estimating dynamic panel Lintner's partial adjustment models with individual random effects with the IV method

Ownership structure	$\alpha_1$	$p$	$\alpha_2$	$p$	Target pay- out ratio $\tau$	Speed of adj. $\alpha$	$R^2$	Wald	$p$	Number of companies	Number of observations
In total	0,1334	0,0027	0,4577	< 0,0001	52,82	0,867	0,4000	351,52	< 0,0001	71	236
Companies controlled by strategic investors	0,1686	0,0497	0,6381	< 0,0001	76,75	0,831	0,6317	555,40	< 0,0001	30	107
Companies controlled by the state and the local government	0,0020	0,9843	0,5118	< 0,0001	51,29	0,998	0,5813	29,42	< 0,0001	7	22
Companies controlled by institutional investors	0,0251	0,7882	0,3075	0,0103	31,55	0,975	0,5740	9,96	0,0069	8	17
Companies controlled by groups of individual investors	0,4646	< 0,0001	0,2521	< 0,0001	47,09	0,535	0,0368	60,13	< 0,0001	16	53
Companies with dispersed ownership	0,3355	0,0157	0,3488	0,0010	52,49	0,665	0,2142	72,74	< 0,0001	10	37

this adjustment for the companies controlled by the state and the local government and by the institutional investors are very close to the value of 1. This suggests an almost immediate response to the target dividend payout ratio.

A good illustration for the speed of adjustment could be the distribution of parameters in relation to delay calculated on the basis of Koyck's model. In total, investigated companies adjust to the target dividend payout ratio after two years, companies controlled by strategic investors—after 3 years, companies with dispersed ownership—after 4 years and companies controlled by groups of individual investors after 5 years. Companies controlled by the state and the local government and by the institutional investor adjust after one year.

## Conclusion

Performed study indicates that the dividend strategies of companies listed on the Warsaw Stock Exchange significantly depend on their ownership structure. Similarly to the studies of developed capital markets, the lowest target dividend payout ratio is characteristic for the companies controlled by institutional investors. The companies controlled by the strategic investors have the highest target dividend payout ratio. It may stem from the fact, that strategic investors usually control mature companies, which—according to the firm life cycle theory of dividends—have more opportunities to generate profit than to find profitable investment opportunities. This means that the optimal solution for such companies is to distribute free cash in the form of dividends (Bulan and Subramanian 2009, 211; Damodaran 2007, 1021–1022). Another explanation for such a high dividend target payout ratio in this sector may be the behavior of foreign strategic investors, who treat dividends as an attractive source of income, especially in a situation when analysis covers a period of economic slowdown and there is limited access to attractive investment projects in Poland. The economic downturn may be even treated as one of the conditions of paying high dividends. In the opinion of Zarzecki (1999, 171), companies should not pay dividends if the board of directors has a set of investment projects which guarantee a relatively high rate of return. If there are no attractive investment projects, the only rational solution is to distribute generated profit in the form of dividends. Brigham and Houston (2005, 215) also treat access to attractive investments alternatives as one of the main factors determining the level of the dividend payout ratio. Higher target dividend payout ratios in companies controlled by strategic investors, with high ownership concentration, appear less frequently on other capital markets, especially the developed ones. Most of all, they are opposite to those discovered by Kowalewski, Stetsyuk and Talavera (2007) for the companies listed on the Warsaw Stock Exchange in the years 1998–2004. This may mean that over the period of ten years companies listed on the WSE changed their dividend strategies.

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