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LARGE BLOCK TRADES AND PRIVATE BENEFITS OF CONTROL ON POLISH CAPITAL MARKET

Summary: The literature defines private benefits as benefits that accrue to managers or controlling shareholders, but not to minority shareholders. The purpose of this paper is to determine private benefits of control value on the Polish capital market in the period from 1996 to 2014. The research methodology was proposed originally by Barclay and Holderness, and later modified by Dyck and Zingales, Nicodano and Sembenelli and Massari, Monge and Zanetti. As in the case of the above-mentioned researchers, attention has been focused on block transactions; nevertheless, a process of transaction selection for the survey sample has been modified. This empirical analysis includes 175 transactions which concerned more than 5% of votes and in which both the purchaser and the seller of a package of shares were known. The block premium estimated based on this set of data was from 10.52 to 4.41%, whereas the standardised premium was ruled at a respectively lower level from 1.11 to 0.46%.

Keywords: Control premium, transfer in corporate control, value of control, business valuation, Poland.

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1. Introduction

The aim of this paper is measuring private benefits of control under Polish conditions. *The literature defines private benefits as benefits that accrue to managers or controlling shareholders, but not to minority shareholders.* Private benefits of control are derived from various sources; consequently, their classification is extremely difficult since it will not be comprehensive and separable from the nature of things. Hence, in this case, we speak instead of a typology that is a division of certain entities into groups possessing a certain common characteristic or a group of characteristics which constitute a certain type. Typological division is more flexible than classification. Dyck and Zingales [2004a] emphasise that this is not an accident, but a consequence of the fact that, due to their character, private benefits of control cannot be observed directly, and thus it is difficult to measure them in a reliable way.

The owner of a control package will try to take over the cash flows due to minority shareholders only in cases when it is very difficult to verify and prove it in court. Coates [2003] defines this phenomenon as follows: “scale of ownership concentration is strictly related with a concept of private benefits of control. On the other hand, private benefits of control are all benefits derived by the shareholder disposing of a control package and which are not shared with minority shareholders adequately to their share in the ownership structure.” Coates distinguishes three types of private benefits of control:

- “bad benefits of control” involve transfers of values from minority shareholders to shareholders disposing of a control package, which is ineffective in that the control package owner’s profit is smaller than the shareholder’s loss;
- “good benefits of control”, which authors such as Demsetz and Lehn [1985] call “amenity potential” involves transfers of values which are effective in that the control package owner’s profit is not smaller than the minority shareholder’s loss; and
- “inherent benefits of control” are those that, by their nature, cannot be shared with minority shareholders, irrespective of whether the minority shareholder would evaluate them higher or lower than the shareholder disposing of the control package.

When defining private benefits of control as benefits unavailable to minority shareholders, Sepe [2010] divides them into those which lead to dispersion of values and those which have no degenerating impact on wealth of minority packages owners. A similar classification is used by Massari, Monge and Zanetti who, using a criterion of influence of private benefits of control on the level of the controlled company’s pecuniary flows, distinguish two types of private benefits of control [Massari, Monge, Zanetti 2006]:

- private financial benefits from flows generated by a controlled company and consumed exclusively by the shareholder disposing of control package, and
- private benefits of control realised by the shareholder disposing of the control package without infringing on the minority shareholders’ interests.

On the other hand, Ehrhardt and Nowak analyse private benefits of control in two planes: pecuniary and regarding the possibilities of transferring them [Ehrhardt, Nowak 2003]. Additionally, Astrachan and Jaskiewicz accentuate the importance of emotional questions with regard to family businesses [Astrachan, Jaskiewicz 2008].

In contrast with Coates and Holderness, Ehrhardt and Nowak are of the opinion that the existence of any benefits, pecuniary or non-pecuniary, related to any kind of convenience or social position, in which the minority shareholders do not participate, means a deviation from the realisation of a purpose function that is maximising the company’s total worth. Additionally, the problem of underinvestment (undercapitalisation) also appears here, which results from the fact that obtaining private benefits of control limits the possibility of gaining outside funds intended for financing attractive projects.

Studying private benefits of control realised by the owners of control packages of banks which are private companies, Meeker and Joy [1980] emphasise the importance of prerogatives unavailable to minority package owners.

As far as Benos and Weisbach are concerned, they define private benefits of control as benefits that fall to the managers and owners disposing of a control package [Benos, Weisbach 2004]. A similar opinion is represented by Hwang, according to whom private benefits of control should be divided into those which fall to managers and those which become a share of the owners [Hwang 2004]. The results of the research carried out by Hwang prove that a scale of private benefits of control increases slowly as the share in the ownership structure grows, but it increases significantly in relation to the increase of the managerial control scale. Another explanation of the existence of private benefits of control is the fact that they are compensation for the control package owners for maintaining a non-diversified portfolio. Ehrhardt and Nowak assert that the methodology used by researchers such as Dyck and Zingales and Barclay and Holderness reflects only those private benefits of control which are transferable, but it omits those which are not of such character. Ehrhardt and Nowak emphasise that this type of privilege would not represent any worth from the point of view of successive owners, whereas the present owners would protect them when they decided to introduce the company into the market. Furthermore, it is very difficult to create measures of their level; therefore, most researchers, when analysing private benefits of control, concentrate on their manifestations, such as overestimated remunerations and premiums. Results of analyses carried out on the German market prove clearly that introducing preference shares into a financing structure considerably reduces the risk of losing control. Therefore, Ehrhardt and Nowak, when analysing results of different types of private benefits of control, use a non-standard measure: the effects of original issues of preference shares. Nevertheless, in Polish circumstances it is not possible because preference shares are not listed on WSE, hence in the context of business valuation, attention should be focused on benefits of a pecuniary and transferable character.

2. Methodology

For private benefits estimation, the methodology proposed originally by Barclay and Holderness [1989] and later modified by Dyck and Zingales [2004a], Nicodano and Sembenelli [2004] and Massari, Monge and Zanetti [2006] has been used. As in the case of Barclay and Holderness [1989], attention has been focused on block transactions; however, the process of selecting transactions for the sample has been modified because the Shapley–Shubik power index has been used, following the example of Nicodano and Sembenelli [2004]. In the present paper, attention has been fixed on transactions in which there is a well-grounded suspicion that control has been actually taken over.

In summary, Barclay and Holderness have based their research methodology on the following assumptions:

1. in the process of package evaluation, the future purchaser takes into consideration two flows of benefits:

a. expected pecuniary flow falling to all shareholders in proportion to their shares,

b. private benefits that can be realised by the shareholder being in possession of the control package, to the detriment of atomised shareholders; and

2. the market takes into account immediately the forecasts (anticipations) included in business plans of the taking over a firm; the stock market price, after the announcement of information about the transaction, constitutes only a valuation of common benefits of control falling, as per definition, to all shareholders.

According to the above, the control premium value will be reflected in the form of a difference between the bid price and the price after the announcement of information about the transaction. Barclay and Holderness [1989], in their pioneer paper, used the first two premium categories mentioned below, whereas the last one was proposed by Dyck and Zingales [2004b]:

- block premium (BP) is a difference between the price offered in a block transaction and the market price:

$$BP = \frac{(P_B - P_t)}{P_t}, \quad (1)$$

where: BP – block premium; P_B – price paid within the scope of block transaction;
 P_t – market price as on reference day.

- standardised block premium (SBP), in the case in which nominal premium value is standardised with company market value (measured with capitalisation value):

$$SBP = \frac{(P_B - P_t)}{P_t} \times \alpha, \quad (2)$$

where: SBP – standardised block premium; α – proportion of share package taken over in the share capital in total (number of shares in block/number of all shares in total).

- standardised premium taking into account the so-called adjustment factor (AF). Conception of this factor was introduced into research, as mentioned above, by Dyck and Zingales [2004 b], according to whose opinion a standardised premium should be adjusted both with the purchaser's bargaining power and with changes taking place on the market as a whole as well as with the difference in market value of the shares before the transaction and after concluding it. The formula for calculating control premium with the use of adjustment factor AF is presented below:

$$SBP_{AF} = SBP * \lambda - (1 - \lambda) * \sigma * \left[\frac{(P_t - P_{t-30})}{P_t} - \frac{(\text{Index}_t - \text{Index}_{t-30})}{\text{Index}_t} \right], \quad (3)$$

where: SBP – standardised block premium; P_t – company's share price at closure of session on transaction day; P_{t-30} – company's share price at 30th session closure before transaction day; σ – stands for the size of the acquired stake; $Index_t$ – broad market index quotation at closure of session on transaction day; $Index_{t-30}$ – broad market index quotation at 30th session closure before transaction; λ – relative seller's bargaining power (following Dyck and Zingales, it has been assumed as 0.66).

The quality of results obtained in the study depends, to a great extent, on the identification of transactions that occurred as a result of a control transfer. Several researchers resolve this problem by limiting a sample to those transactions which concern at least 5% of the votes at the General Shareholders' Meeting [Barclay, Holderness 1989, 1991; Hwang, Hu 2004]. On the other hand, while Dyck and Zingales [2004a], Albuquerque and Schroth [2010] and Lauterbach and Barak [2007] raise this threshold to 10%. This type of procedure is practical because it limits the labour consumption of research; however, it leads to burdening the sample with selection error. As proven rightfully by Nicodano and Sembenelli [2004], the same share, depending on the shareholders' structure, can give different bargaining power at the General Shareholders' Meeting. Therefore, a key question in the process of estimating benefits of control is the analysis of bargaining power of a given package in the context of shareholders structure in a given company. In this analysis, two approaches have been used simultaneously:

- in relation to package transactions, the Shapley–Shubik power index has been estimated, by means of which the probability that a given share package will become a key package at the General Shareholders' Meeting has been measured, and
- information of a qualitative character, in particular press announcements and comments made by market analysts, has been analysed, making it possible to separate the transactions in which a control transfer had actually taken place.

In this research project, the following transaction sets have been taken into consideration:

- block transactions in which identifying the parties to the transaction was possible, which was extremely important with regard to the data necessary for calculation of the Shapley–Shubik power index value, and
- block transactions in which control transfer took place.

In the case of block transactions, tender (bid) price is a result of a negotiation process between the share block purchasers and sellers, and therefore it has identifiable economic importance (i.e. it determines a value of the firm from the purchaser's perspective, depending on the purchaser's bargaining power). However, it should be emphasised here that the premium level depends, to a considerable extent, on the correct identification of these transactions which result in transfer of control in a company. Barclay and Holderness [1989] have managed to overcome

this problem in a mechanical way, by limiting the survey sample to those transactions which concerned at least 5% of the votes at the General Shareholders' Meeting, whereas Dyck and Zingales [2004a] have raised the threshold to at least 10% of shares and added a condition that the purchaser had to exceed, as a result of the transaction, a threshold of 20% share in equity. On the other hand, according to Nicodano and Sembenelli [2004], the same share in votes at the General Shareholders' Meeting can give quite different possibilities in the area of controlling the company; hence, the selection procedures using pre-determined, fixed thresholds can produce results with artificially lowered premium estimates because of a sample selection error. In this survey, attempts have been made to limit the effect of sample selection errors on results, by introducing data of a qualitative character in the transaction selection procedure. These attempts have definitely increased the project's laboriousness but have, at the same time, enabled selection of those transactions in which transfer of control actually occurred, and thus premiums could have been potentially paid out.

3. Sample selection

In the first stage of data selection, 54,806 block transactions (of package and redistribution types) effected in the period from June 1996 to June 2014 were analysed. Individual records differed in the information capacity, depending on the year in which a given transaction was carried out; however, the core information was always data regarding: the stock exchange session date on which the transaction was carried out; the ISIN code and name of the company (instrument) of which the securities were the subject of the transaction; the security price; and the transaction volume.

Next, from the original base, the items referring to bonds were excluded, which reduced the number of block transactions by 37% (from 54,806 to 34,268). After completing of a list of block transactions concerning share securities only, the first stage of detailed selection began, the effect of which was obtaining a relative (percentage) volume of packages that were the subjects of transactions. The following parameters applied:

- transactions were grouped according to companies;
- transactions that concerned shares of National Investment Funds, unofficial market companies (MTS CeTo, NewConnect) and those whose subjects were Allotment Certificates or Subscription Rights were excluded; and
- for each transaction, block share in total quantity of company's shares were determined.

As a result of the first stage of selection, a set of transactions extended by an additional parameter, share in total quantity of transactions, was obtained. Control premium was then analysed, based on two sets of data:

- all block transactions in which identifying the parties to the transaction was possible, and
- a subset of transactions excluded from the first group, in which it was presumed that control transfer has taken place.

A detailed information concerning block transactions and block transactions with control selection procedures has been presented in [Byrka-Kita 2013] and [Byrka-Kita, Czerwiński 2013]. In the case of block transactions after undergoing steps presented in [Byrka-Kita 2013] and [Byrka-Kita, Czerwiński 2013], the base consisted of 175 transactions that concerned more than 5% of votes and in which both the purchaser and the seller of the share package were known. Nevertheless, in the majority of them, it is difficult to consider them as a public company control take-over process; hence, it would be erroneous to measure the control premium based on the whole aggregation. As far as transactions are concerned where it was presumed that control transfer had taken place, the results of the three-level, multi-criteria analysis of 175 block transactions produced 38 blocks transactions to which control take-over was attributed.

4. Empirical evidence on the pricing of large-block trades

The essence of the method of control premium estimation assumed in the analysis refers a given share package purchase price (transaction price), representing a significant number of shares in a company, to the market price of these securities at a selected moment or time period (reference price). If, in the case of the transaction price, we can speak about one value only, i.e. about the amount of money paid in the purchase transaction settled by the Warsaw Stock Exchange for one share, reference prices are more numerous. Generally, two groups of reference prices can be distinguished for all block transactions, the so-called base reference prices, where the division criterion is the date of information on transaction:

1. price as on transaction day, i.e. on the day on which the stock exchange has entered the company's share purchase/sale transaction into the transaction system (Warset). Volume, price, company's name, ISIN code of the security and, optionally, the hour of effecting transaction are known then;

2. price as on announcement day, i.e. on the day of publishing a press announcement or a current report confirming transaction terms (price, volume) as well as giving information about the parties to the transaction, change of share possessions and, possibly, further purchaser's/seller's intents.

A standard exists on contemporary capital markets that market participants are informed by the organiser about the volume and price of a transaction a "moment" after its realisation. However, this stock of information does not always cause market participants to make investment decisions. The amount and quality of information on transactions increases in direct proportion to the time lapse, i.e. investors' knowledge

about the purchaser's or seller's change in share in votes and possible motives appears as late as in the current report of a company whose shares were traded or in press information, for example an interview with the purchaser.

In the group of selected block transactions, the mean and median of the difference of stock exchange sessions between the day of announcement and the day of transaction was three, which means that the announcement about the effects of the transaction occurred on the third session after entering the transaction into the stock exchange system. Among each of the two reference price base groups, subgroups occur, where reference prices are official quotations at session closures in the particular time interval from base reference dates. Assumed reference prices have been used for determining transaction premiums, based on which the control premium will be evaluated later.

In the paper the following hypothesis is made: there exist private benefits of control in the Polish capital market. In the first stage the Shapiro-Wilk test was used to test the normality of the premium distribution with the α level set at 0.05. The results indicate that the empirical distributions of all the premiums are not normal distributions. In all the cases the critical values are much higher than the values found for empirical distributions, which means significantly abnormal distributions. Since the empirical distribution is not normal, any reasoning on private benefits of control based on the mean value is prone to overestimations.

In the next step, significance tests were performed for the positive values of the estimated means or medians. The null hypothesis (H_0) says that the mean (median) value of the premium equals zero ($\mu = 0, M = 0$), which should be interpreted that no private benefits of control occur in the market. The alternative hypothesis (H_1) argues that there exist private benefits of control in the Polish capital market, which according to the methodology adopted in the paper are reflected in positive values of the premium (medians) ($\mu > 0, M > 0$). Depending on the measure, the following tests were used to verify the hypotheses:

- *t*-test for means,
- the Wilcoxon test for medians.

Table 1 summarises all the means and medians of control premium. From sixty four average premium values estimated, 36% (23 values) are greater than zero at significance level 0.15. At 10% significance level, the greatest percentage of average premium values significantly greater than zero occurred in the block transaction group with control transfer (41%, i.e. 13 of 32 values). The group of transactions with absolutely highest premiums turned out to be a set of block transactions with control transfer. All premiums corrected with the adjustment factor AF proved to be statistically insignificant. Moreover, this premium category included negative (except one) mean values, whereas the remaining premium has assumed value below 1%; hence, in later parts of the paper, they will not be subject to detailed analyses. The premiums of highest values have been noted among the non-standardised premium

Table 1. Means and medians of control premium values evaluated based on selected package transactions

Premium category	Reference price (+/- number of sessions)	Mean ¹		Median ²	
		Block transactions	Block transactions with control transfer	Block transactions	Block transactions with control transfer
1	2	3	4	5	6
Block premium (BP)	<i>Ck</i> - 20	0.072*	0.1925***	0.0311*	0.0608**
	<i>Ck</i> - 3	0.008	0.1420***	0.0000	0.0248****
	<i>Ck</i> - 1	0.0003	0.1431***	-0.0157****	0.0245****
	<i>Ck</i> - share price of a company being taken over at session closure on transaction announcement day	-0.001	0.1411***	-0.0303****	0.0157****
	<i>Ck</i> + 1	-0.011	0.1219****	-0.0378***	0.0257
	<i>Ck</i> + 2	-0.013	0.1275****	-0.0325**	0.0275
	<i>Ck</i> (+7:+30)	-0.003	0.1478***	-0.0470***	0.0527***
	<i>Ct</i> - 20	0.079*	0.2029***	0.0370*	0.0660**
	<i>Ct</i> - 3	0.036****	0.1522***	0.0073	0.0273**
	<i>Ct</i> - 1	0.025	0.1487***	0.0000	0.0153***
	<i>Ct</i> - share price of a company being taken over at session closure on transaction day	0.024	0.1664**	0.0000	0.0359**
	<i>Ct</i> + 1	0.010	0.1447***	-0.0071	0.0134***
	<i>Ct</i> + 2	0.001	0.1438***	-0.0191	0.0476***
	<i>Ct</i> (+7:+30)	-0.017	0.0918	-0.0496**	0.0529
Standardised block premium (SBP)	<i>Ck</i> - 20	0.008*	0.0228***	0.0021*	0.0058**
	<i>Ck</i> - 3	0.002	0.0160	0.0000	0.0021
	<i>Ck</i> - 1	0.002	0.0167	-0.0009****	0.0019
	<i>Ck</i>	0.0003	0.0116	-0.0020****	0.0012
	<i>Ck</i> + 1	-0.001	0.0097	-0.0027***	0.0023
	<i>Ck</i> + 2	-0.0004	0.0112	-0.0027**	0.0023
	<i>Ck</i> (+7:+30)	0.001	0.0135	-0.0029***	0.0053****
	<i>Ct</i> - 20	0.009*	0.0237***	0.0022*	0.0068**
	<i>Ct</i> - 3	0.005***	0.0177****	0.0004	0.0031**
	<i>Ct</i> - 1	0.004	0.0171	0.0000	0.0011****
	<i>Ct</i>	0.003	0.0154****	0.0000	0.0029***
	<i>Ct</i> + 1	0.001	0.0115	-0.0005	0.0011****
	<i>Ct</i> + 2	0.001	0.0123	-0.0011	0.0038
<i>Ct</i> (+7:+30)	-0.001	0.0082	-0.0032**	0.0051	

1	2	3	4	5	6
Premium corrected with AF	Ck	-0.002	0.0057	-0.0012**	0.0016
	$Ck+2$	-0.002	0.0053	-0.0025*	0.0023
	Ct	0.001	0.0100	0.0001	0.0052***
	$Ct+2$	-0.001	0.0072	-0.0007***	0.0037

Ct – price as on transaction day (for example $Ct + 1$ means one day after a transaction day, which means that premium was calculated in the following way: $BP = \frac{(P_B - P_{t+1})}{P_{t+1}}$);

Ck – price as on announcement day (for example $Ck(+7:+30)$ is computed as an average of daily prices in the interval between 7th and 30th after the announcement date and the premium was calculated in the following way: $BP = \frac{(P_B - P_{k(+7:+30)})}{P_{k(+7:+30)}}$);

* – mean substantially greater than zero at 1% level;

** – mean substantially greater than zero at 5% level;

*** – mean substantially greater than zero at 10% level;

**** – mean substantially greater than zero at 15% level;

¹ t -test for one samples (Statistica, StatSoft);

² Wilcoxon Signed-Rank Test for One Sample (Statistica, StatSoft).

Source: own elaboration.

category, which is natural, since all remaining premium categories (standardised and corrected with the adjustment factor AF) constitute a certain part of a block premium.

Average premium values that were offered in selected transactions are considerably higher than premium medians observed on the same transactions (Table 1). In the case of a measure of central tendency, among 32 premiums estimated based on all block transactions, as many as 18 premium types were negative. Moreover, none of the premium medians exceeded 20%, and only those which concerned block transactions with control transfer exceeded 6%.

Following the example of Barclay and Holderness [1989], Nicodano and Sembenelli [2004] and Massari, Monge and Zanetti [2006], the estimated average premium values have been divided according to the volume of a share package a given transaction concerned, bearing in mind package distributions shown in the previous parts of the paper. For a detailed analysis, two intervals of the acquired percentage of votes have been assumed:

1. subject of transaction was a share package entitled to more than 5% and less than 10% of the votes in a company being taken over, the so-called “small package” – $\langle 5\%, 10\% \rangle$;

2. subject of transaction was a share package entitled to not less than 10% of votes in a company being taken over – $\langle 10\%; 100\% \rangle$.

For selected reference prices, the average values of non-standardised premiums with division into presented intervals were given (Table 2). The transaction division according to package size used here resulted in the first subset covering almost all (175) selected block transactions, including 38 block transactions with control

transfer. The calculated average values of premiums for transactions from the first interval are lower, for each specified reference price, than the respective means shown in Table 1, as evaluated for all selected transactions. The greatest difference that occurred in reference price was the share price of a company being taken over at 20th session closure before the announcement day. This difference was 29.1 and 29.5 percentage points for block transactions with control transfer and all block transactions, respectively.

Table 2. Selected average (and medians) values of non-standardised block premium (BP) for selected transactions depending on volume of votes package being the subject of transaction

Interval	Block transactions				
	<i>BPCk</i> – 20	<i>BPCk</i> – 3	<i>BPCk</i>	<i>BPCk</i> + 2	<i>BPCk</i> (+7:+30)
<5%;10%)	5.9% (2.1%)	–0.2% (0.0%)	–0.7% (–3.0%)	–2.0% (–3.2%)	–1.3% (–3.5%)
<10%;100%>	35.4% (18.3%)	22.2% (2.1%)	11.3% (–3.8%)	13.8% (–4.6%)	18.9% (–7.9%)
Interval	Block transactions with control transfer				
	<i>BPCk</i> – 20	<i>BPCk</i> – 3	<i>BPCk</i>	<i>BPCk</i> + 2	<i>BPCk</i> (+7:+30)
<5%;10%)	15.4% (0.6%)	11.3% (0.8%)	13.6% (0.7%)	11.5% (1.8%)	13.5% (5.0%)
<10%;100%>	44.5% (16.7%)	33.2% (14.4%)	17.5% (14.4%)	21.0% (10.1%)	23.4% (5.3%)

Source: own elaboration.

Furthermore, for block transactions with control transfer, the average premium values in both specified intervals differed significantly from zero, whereas for the all block transactions subset covering “small packages” of shares, most premium types were negative (except for one).

Also in the case of the second interval, average premiums for transactions control transfer were much higher than the average premiums from all transactions. The highest premiums in the second interval have been noted again for reference price at the 20th session before the announcement day; however, a high premium value at the 3rd session before the announcement and in relation to the mean value between session 7 and session 30 is also worth emphasising.

5. Conclusions

The realisation of private benefits of control depends on the possibility of effective influence on the managing board’s activities, and what share block volume will make it possible will depend on the volume of the package held by minority shareholders

as well as on whether other significant owners are present in the shareholder structure. This study leads to the conclusion that private benefits of control exist on the Polish capital market, however they are much lower than the premiums observed on mature capital markets. Larger premiums were also observed on other emerging markets. The results of the study by Weifeng, Zhang and Zhu [2008] show that private benefits of control in China are higher than those observed in advanced economies such as the United States or United Kingdom. Atanasov [2005], on the other hand, when comparing and contrasting the prices paid by 72 investment funds for small and large blocks of shares of the same companies in the same period in Bulgaria estimated benefits of control at 85%. In the Romanian market the premiums were found to be also much higher [Dragota et al. 2007]. The high level of premium could be an evidence for the lack of minority shareholders' protection. However, the reason behind low premiums in Poland is certainly not an exceptionally effective system of minority shareholders' protection and effectiveness of the judiciary in Poland, but rather low liquidity of big share blocks and information imperfections in the Polish capital market. Evidence for limited liquidity of the shares traded in the Warsaw Stock Exchange was found by Olbryś [2013] in her study.

The block premium estimates fluctuate between -0.017% and 19.25% , depending on the reference day and transaction type. Negative values have been noted five times in the case of average block premium (BP) and three times in the case of standardised block premium (SBP). However, none of them was significant and the highest was equal to -1.7% . Negative premium values may indicate that the buyers try to benefit from the lack of information in the market.

Private benefits of control occur – and become measurable – when a block of shares is worth more as a whole package than if sold in smaller blocks. If the benefits of control are low, the owner divides the package into smaller blocks and sells them as such. Hence, if large blocks of shares of a given company are frequently sold in smaller portions, private benefits may be overestimated. On the other hand, if the blocks are rarely divided into smaller ones, it is very probable that the valuation of the entire block will be an accurate estimation of the private benefits of control.

Another issue is that sometimes (even though the financial supervisory bodies impose the obligation to inform the public of the entire amount paid in any transaction) the parties involved in a transaction conceal some parts of the payment owing to the fact that the premiums accrued to owners of large blocks affect the minimum price set in the obligatory public offering. Moreover, some trades of large blocks of shares do not involve an actual transfer of control and offer only an uncertain option of control instead (if a sufficient number of proxy votes is acquired in a so-called proxy contest, or if more shares are acquired).

It should be also remembered that block trades may be subject to distortion in relation to the obligation of public offering imposed on the owners by the law if they reach a certain level of shares in the company set in appropriate regulations. Even the

block trades which are not related to the obligation of a public offering are strictly regulated by the law.

It is easily observed that the quality of results in such studies was to a large extent determined by the identification of transactions which involved transfer of control. Hence, a multistage procedure of selecting transactions to the database was proposed, based on both qualitative and quantitative criteria.

The above-mentioned reservations may lead to a conclusion that there are no reliable methods of evaluating private benefits of control. This complication affects the number of transactions which have been included in the sample. Nevertheless, attempts to estimate premium have to be made, since the lack of reliable information regarding its value produces problems not only with regard to appraisal of the degree (extent) of minority shareholders' protection and quality of the corporate governance systems, but also with regard to practical questions, including estimation of the fair market value of majority shares in mother-companies' balance sheets.

References

- Albuquerque R., Schroth E., 2010, *Quantifying Private Benefits of Control from a Structural Model of Block Trades*, Journal of Financial Economics, vol. 96, no. 1, p. 33–55.
- Astrachan J.H.H., Jaskiewicz P., 2008, *Emotional Returns and Emotional Costs in Privately Held Family Businesses: Advancing Traditional Business Valuation*, Family Business Review, vol. 21, no. 2, <http://ssrn.com/abstract=1134371> or doi:10.1111/j.1741-6248.2008.00115.x. (retrieved: 10.09.2014).
- Atanasov V., 2005, *How Much Value Can Blockholders Tunnel? Evidence from the Bulgarian Mass Privatization Auctions*, Journal of Financial Economics, vol. 76, no. 1.
- Barclay M., Holderness C.G., 1989, *Private Benefits from Control of Public Corporations*, Journal of Financial Economics, vol. 25, p. 371–395.
- Barclay M., Holderness C.G., 1991, *Negotiated Block Trades and Corporate Control*, Journal of Finance, vol. 46, no. 3, p. 861–878.
- Benos E., Weisbach M.S., 2004, *Private Benefits and Cross-listings in the United States*, Emerging Markets Review, vol. 5, no. 2.
- Byrka-Kita K., 2013, *Dylematy szacowania premii z tytułu kontroli w wycenie przedsiębiorstw*, CeDeWu, Warszawa.
- Byrka-Kita K., Czerwiński M., 2013, *Premia z tytułu kontroli na polskim rynku kapitałowym*, Ekonomista, vol. 1, Warszawa, p. 127–154.
- Coates J.C., 2003, *Ownership, Takeovers and EU Law: How Contestable Should EU Corporations Be?*, The Harvard John M. Olin Discussion Paper Series, no. 450, http://www.law.harvard.edu/programs/olin_center/ (retrieved: 10.09.2014).
- Demsetz H., Lehn K., 1985, *The Structure of Corporate Ownership: Causes and Consequences*, The Journal of Political Economy, vol. 93, no. 6.
- Dragota V., Dumitrescu D., Ruxanda G., Ciobanu A., Brasoveanu I., Stoian, A., Lipara C., 2007, *Estimation of Control Premium: The Case of Romanian Listed Companies*, Economic Computation and Economic Cybernetics Studies and Research, vol. 41, no. 3-4, p. 55–72, <http://ssrn.com/abstract=2181977> (retrieved: 10.09.2014).
- Dyck A., Zingales L., 2004a, *Private Benefits of Control: An International Comparison*, The Journal of Finance, vol. 59, no. 2, p. 537–600.

- Dyck A., Zingales L., 2004b, *Control Premiums and the Effectiveness of Corporate Governance Systems*, Journal of Applied Corporate Finance, vol. 16, no. 2-3, p. 51–72.
- Ehrhardt O., Nowak E., *Private Benefits and Minority Shareholder Expropriation (Or What Exactly Are Private Benefits of Control?)*, EFA 2003, Annual Conference Paper no. 809, <http://ssrn.com/abstract=423506> or doi:10.2139/ssrn.423506 (retrieved: 10.09.2014).
- Hwang J.H., 2004, *Whose Private Benefits of Control – Owners or Managers?*, unpublished working paper, Indiana University, Bloomington, https://www.fdic.gov/bank/analytical/CFR/2004/sept/CFRCP_2004-03_Hwang.pdf (retrieved: 10.09.2014).
- Lauterbach B., Barak R. 2007, *Estimating the Private Benefits of Control from Block Trades: Methodology and Evidence*, EFA 2007 Ljubljana Meetings Paper, <http://ssrn.com/abstract=965668> (retrieved: 10.09.2014).
- Massari M., Monge V., Zanetti L., 2006, *Control Premium in Legally Constrained Markets for Corporate Control: The Italian Case (1993–2003)*, Journal of Management and Governance, vol. 10, no. 1, p. 77–110.
- Meeker L., Joy O., 1980, *Price Premiums for Controlling Shares of Closely Held Bank Stock*, Journal of Business, vol. 53, no. 3, p. 297–314.
- Nicodano G., Sembenelli A., 2004, *Private Benefits, Block Transaction Premiums and Ownership Structure*, International Review of Financial Analysis, vol. 13, no. 2, p. 227–244.
- Olbrys J., 2013, *Zastosowanie wybranych miar płynności aktywów kapitałowych na Gieldzie Papierów Wartościowych w Warszawie S.A.*, Zarządzanie i Finanse, vol. 11, no. 3, part 2, p. 65–77.
- Sepe S.M., *Private Sale of Corporate Control: Why the European Mandatory Bid Rule Is Inefficient*, Arizona Legal Studies Discussion Paper 2010, no. 10-29, <http://ssrn.com/abstract=1086321> (retrieved: 10.09.2014).
- Weifeng H., Zhang Z., Zhu S., 2008, *Ownership Structure and the Private Benefits of Control: An Analysis of Chinese Firms*, Corporate Governance, vol. 8, no. 3, p. 286–298.
- Zingales L., 1995, *What Determines the Value of Corporate Votes?*, Quarterly Journal of Economics, vol. 110, no. 4, p. 1047–1073.

TRANSAKCJE DOTYCZĄCE ZNACZĄCYCH PAKIETÓW AKCJI A PRYWATNE KORZYŚCI Z TYTUŁU KONTROLI NA POLSKIM RYNKU KAPITAŁOWYM

Streszczenie: Literatura przedmiotu definiuje prywatne korzyści z tytułu kontroli jako korzyści realizowane z pominięciem udziałowców mniejszościowych przez menadżerów lub właścicieli kontrolnych pakietów akcji. Celem niniejszego artykułu jest oszacowanie wartości prywatnych korzyści z tytułu kontroli na polskim rynku kapitałowym w okresie od 1996 do 2014 r. Zastosowaną w pracy metodę badawczą zaproponowali Barclay i Holderness, a następnie zmodyfikowali Dyck i Zingales, Nicodano i Sembenelli oraz Massari, Monge i Zanetti. Tak jak w przypadku wymienionych badaczy skoncentrowano się na transakcjach pakietowych, niemniej jednak zmodyfikowano procedurę doboru transakcji do próby badawczej.

Słowa kluczowe: premia z tytułu kontroli, transfer kontroli, wartość kontroli, wycena przedsiębiorstw, Polska.