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Techniques for Estimating the Value of Control Using Indirect Method Based on Stock Prices

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Abstract

This article views the value of control rights when calculating the market value of the various stakes of regular shares, i.e., minority, blocking, controlling and super controlling ones. The approach is based on the technique of determining the value of control rights, which is indirectly calculated as the difference between the results of the market equity value estimated with the techniques taking into account control rights and those estimated with the techniques disregarding control rights (estimating equity capital on the minority level). The author proposes mechanisms for calculating premiums on control and discounts for lack of control reflecting various sets of initial data, including the structure of the company's whole equity capital.

Keywords: Premium on control; Controlling stake; Minority stake; Discount for lack control rights

Introduction

The practice of both investment bankers and financial advisors frequently deals with the issues of generating tender proposals, which see share pricing as one of the objectives when attempting to acquire the strategic blocks of shares. The essential condition for a successful deal is to provide a major shareholder with a premium added to the current stock price, as well as to specify discounts for purchasing the shares of dissenting minority shareholders. In the value context, the phenomenon of corporate control is associated with the right to redistribute an actual majority of the shareholders' ownership interests, legally possessing a minority of company assets. This right is stipulated by the legal and normative delegation of the authority to manage both the company assets and economic activity to their managers appointed, as a rule by the company's major shareholders. The delegation of authority means a voluntary (and for some minority shareholders-rather "voluntary-compulsory") refusal by shareholders from a part of the rights to dispose their own equity. Those managers, who are appointed by the majority of the shareholders and who act for the benefit of the company entrusted to them, primarily look after the interests of the majority shareholders, who appointed them. In this context, the managers advanced by the majority shareholders sometimes use the breaches of the current legislation and funnel a part of the company's revenues to their "captive" companies, thus frankly prejudicing the rights of other shareholders. For this purpose, they use widely famous schemes of transfer pricing, assets siphoning-off, profit and expenses allocation within the established holding structures. All this leads to the difference between the actual participating interests of various groups of shareholders and their nominal participating interests. The degree of this disproportion differs from company to company and depends on the balance of the shareholders' interests and either the presence or absence of "grey" schemes for funneling revenues out of the company – transparent companies with a well-balanced structure feature a minimum disproportion; a maximum disproportion is regular for nontransparent companies practicing the violation of minority shareholders' rights. The disproportion of rights results in a different price per share in various stakes – as a rule, in a strategically large voting stake (absolute controlling stake (75%), controlling stake (50%+1 share) and/or blocking stake (25%+1 share), the price per share is higher than that in minority stakes. The stronger violation of interests is experienced by minority shareholders, the stronger the aforementioned difference becomes; e.g., either in the presence of an unfavorable equity structure featuring an absolute controlling stake owned by a single person or when the company's top-managers manipulate both the dividends and extra emissions of shares under a private subscription, which is resulted in stripping the assets of minority shareholders.

The above described redistribution of equity rights generates the existence of a special object of equity rights, i.e., the control, which possesses its own value. Speaking in general, the value of control is based on two components: the redistribution of benefits from minority shareholders to controlling ones (the phenomenon of "grabbing the biggest piece of the pie") and the possibilities to combine the resources of the controlled company with those of other companies.

The first component deals with both the voluntary delegation of the rights of all shareholders (regarding the operative management of their shares) to the controlling group of shareholders and the possibilities of the latter to set transfer prices, at which the company settles accounts with both suppliers and customers. The delegation of shareholders' rights to top-managers advanced by controlling shareholders means a positive effect from their influence on rather legitimate decisions to set high bonuses, salaries and other privileges, to pay dividends, to attract new financing sources and to operate the company's asset. The legitimacy of such decisions is gained through the decisions of their "own" managing staff, regarding the issues free from being approved by the majority of the shareholders, as well as through the "forced" adoption of a desired decision by the majority of votes. At the same time, manipulations with transfer prices (i.e., funneling profits

through transfers; super-high remuneration of top-managers without a certain agreement with other shareholders, etc.) are considered as not fully legitimate or even non-legitimate operations.

The second component deals with additional possibilities to combine the resources of a controlled company with those of other companies including enterprises affiliated with controlling ones. It features both legitimacy and individual benefits gained by the controlling shareholders, prejudicing to the interests of other shareholders of the company. E.g., in virtue of his position, the controlling shareholder of company A gets access to some information, which can be successfully used by him to realize possibilities for gaining profit in another company B owned by him.

To quantitatively estimate the influence of the control factor on the price of shares in various stakes, depending on both an existing equity structure and corporate management norms, the author creates a calculation mechanism, which is presented below.

The initial conditions are simple – we can calculate the price per 100% stake using both one of the methods (or several methods) taking into account the value of control and those disregarding the value of control. Besides, stock prices and prices of accepted tender bid to purchase definite blocks of shares are sometimes given.

Estimating the Value of Control

Estimating the value of control can be conducted by both direct and indirect methods. The direct method is more precise, but the data necessary for its application are, as a rule, less available (i.e., the information about the share of expenses, which are aimed at individual beneficiation of majority stockholders but charged to administrative and selling expenses, and sometimes to attributed costs, is usually inaccessible for "outsiders"). Theoretically, as far as a cash flow generated by control is adequately evaluated, the value of control can be easily estimated-the estimation of its value shall be conducted using the discounted cash flow technique (It is necessary to point out that estimating the market value of control doesn't generally involve the estimation of the component of control based on legitimate possibilities to combine resources. Taking this component into account is possible only when the investment value of the control is estimated using either option techniques or method [1]).

As it is impossible for the estimator-outsider to find a real "cash flow of control", the value of control can be estimated with the indirect method. This method is used to determine and to "estimate" the market value of control. To do this, one should start with calculating an absolute general value of control. This value is found as the difference between a company's equity value estimated with the profit and cost approaches (which determine the equity value on the majority level – author's note) and the equity value estimated with the comparison (market) technique, which determine the equity value on the minority level. Next, one should determine the degree of control the holders of the estimated stake can claim for. Then, taking into account the absolute value of control and the degree of control for the holder's estimated stake, a price for shares (stakes) is estimated.

Using the indirect method for estimation, the value of control is calculated as follows:

$CV = MC_c - MC = 120 - 100 = 20$

Where

MC-market capitalization disregarding the value of control, MC=p.N (MC=100 is given here as an example);

MC_c-weighted market capitalization estimator taking into account the value of control calculated either by the methods taking into account the value of control (These methods are associated in particular with the discounted cash flow technique and adjusted net asset technique. Obtaining the objective weighted estimate is possible only upon availability of the results calculated through both the adjusted net asset technique and the discounted cash flow technique.) Or on basis of prices for accepted tender bids to purchase strategically important blocks of shares, MC_c=120;

p-stock price per share or estimated price per share calculated by one of the methods, which estimate share price, disregarding control (This method is, e.g., a comparative method based on sector-specific multipliers, the aggregate result of which include discounts for non-liquidity (if the shares of analogue companies are traded on the organized securities market (OSM), and the shares of the estimated company aren't traded on the OSM), but exclude a discount for a non-controlling stock.), p=1;

N-total number of corporate shares, N=100.

Obviously, there exists the following relation between MC_c and MC:

$MC_c = MC \times (1 + pr_0)$, (2) $MC = MC_c \times (1 - c_d)$, (3)

Where

pr_0-relative size of premium for control over 100% stake (or 100% shares in authorized capital);

c_d-discount for lack of control over 100% stake.

The following obvious equities come from (2) and (3):

$$pr_0=\frac{MC_c}{MC}-1=\frac{120}{100}-1=0.2 \quad , \quad (4) c_d=1-\frac{MC}{MC_c}=1-\frac{100}{120}=0.167, \quad (5)$$

$$pr_0=\frac{cd}{1-cd} \quad (6) \quad cd=\frac{pr_0}{1+pr_0} \quad (7)$$

Estimating the equity, it is necessary to take into account the value of the options of the company's top-managers (if the company practices the participation of its managers in profits, stipulated in the contracts between the company and top-managers). We further assume that this factor is already taken into account by the estimates of MC and MC_c.

There exists one more indirect method for estimating the value of control, which is based on the use of the data on tender prices of shares in either controlling or blocking stakes. We will investigate this method later.

Estimating price discounts and premiums [2] upon availability of a controlling stake and in the absence of a blocking stake. To calculate premiums and discounts, let us view the equity structure, which has one controlling stake and lacks a blocking stake (i.e., other stakes are dispersed).

We introduce new positions:

N_{nc} — total number of shares in a non-controlling stakes, N_{nc}=49;

N_c — total number of shares in a controlling stake, N_c=51;

p_a — estimated price per share in a non-specific stake (i.e., when there is no information on a stake's nature; i.e., it's unknown whether it is controlling or not), $pa=MC_c/N=1.2$;

K_c — size of a controlling stake, $N_c/N=0.51$;

K_{nc} — size of a non-controlling stake, $N_{nc}/N=0.49$.

Considering the aforementioned notions, we find the value of control, discount and premium for control.

In the absence of a blocking stake, the value of control totally falls on the controlling stake and fails to participate in other stakes. Hence, the value of the controlling stake equals to (From now on, the author intentionally gives several formulas to let estimators use the most suitable one, depending on the initial data they possess.)

$$\begin{aligned} &P_c = p_a \times N_c + K_n{}^c \times CV = MC_c \times K_c + K_n{}^c \times CV = \\ &= p \times N_c + CV = K_c \times MC + CV = \\ &= 1.2 \times 51 + 0.49 \times 20 = 120 \times 0.51 + 0.49 \times 20 = \\ &= 1 \times 51 + 20 = 0{,}51 \times 100 + 20 = 71 \end{aligned} \quad (8)$$

(In formula 1, pa already includes a part of the premium for control; therefore, we only add a part of the premium left in the non-controlling stake).

The price per share in the controlling stake is calculated as:

$$\begin{aligned} &p1c = Pc/Nc = p + (1 + Nnc/Nc)WCV/N = \\ &= MCc/N + NncWCV/(N/Nc) = \\ &= \{MC + (1 + N_{nc}/N_c) \times CV\}/N = \\ &= 71/51 = 1 + (1 + 49/51) \times 20/100 = \\ &120/100 + 49W20/100/51 = \\ &= \{100 + (1 + 49/51)\ W20\}/100 = 1.392 \end{aligned} \quad (9)$$

The underlined variant of formula (9) clearly demonstrates that the price per share in the controlling stake doesn't equal a simple result of the division of capitalization, which takes into account control, by the number of shares. It (this price) exceeds this proportion by $N_{nc} \cdot CV/(N/N_c)$.

The price per non-controlling stake is equal to:

$$\begin{aligned} &P_{nc} = p_a \times N_{nc} - K_{nc} \times CV = K_{nc} \times (MC_c - CV) = \\ &= p \times N_{nc} = K_{nc} \times MC = 1.2 \times 49 - 0.49 \times 20 = \\ &= 0.49 \times (120 - 20) = 1 \times 49 = 0.49 \times 100 = 49 \end{aligned} \quad (10)$$

(i.e., if quoted price p is known, simply multiply by N_{nc}; and if calculated value MC is known, multiply by K_{nc}).

When reacquisition from dissenting shareholders takes place, the price per share is calculated as:

$$\begin{aligned} &p1_{nc} = P_{nc}/N_{nc} = MC/N = (MC_c - CV)/N = \\ &= 49/49 = 100/100 = (120 - 20)/100 = 1 \end{aligned} \quad (11)$$

Let us do a check. The sum of the values of both controlling and non-controlling stakes must be a "real" (fundamental, basic) price per 100% stake, which is calculated, taking into account the value of control: $71+49=120=MC_c$. As is clear, this condition works.

Now, as far as the values of prices per share in both the controlling and non-controlling stakes are obtained (this is what is demanded as a result), we find the values of discounts and premiums [3].

The absolute premium (discount) per share compared with the price per share in a non-controlling (controlling) stake equals 1.392 – 1=0.392.

The relative premium per share in a non-controlling stake equals 0.392/1=0.392=39.2 %.

The relative discount per share in a non-controlling stake compared with the price per share in a controlling stake equals 0.392/1.392=0.2816=28.16 %.

The absolute value of the discount per share of in a non-controlling stake compared with the price per share of a non-specific stake equals 1.2 – 1=0.2.

The relative value of the discount per share in a non-controlling stake compared to the price per share in a non-specific stake equals 1 – 1/1.2=0.17=17 %.

The absolute value of the premium per share in a controlling stake compared with the price per share in a non-specific stake equals 1.392 – 1.2=0.192.

The relative value of the premium per share in a controlling stake compared with the price per share in a non-specific stake equals 1.392/1.2 – 1=0.16=16 %.

Estimating price discounts and premiums upon availability of controlling and blocking stakes

In the presence of a blocking stake (in addition to a controlling one), it "draws" a part of the value of control from the controlling stake. Thus, a share price in this stake is often higher than that in the minority stake,(The exception, at which the investment value of shares in a minority stake is higher than the value of shares in either blocking or controlling stakes, can be associated with the situation, in which a single holder (or holders) of large stakes changes his strategic "club" when acquiring a minority stake; e.g., the holders of a large minority stake become those of a blocking stake (25%+1); the holders of a blocking stake become either the holders of a controlling stake or those of an absolute controlling stake (75%). For the description of this situation, see information below.) and the price of shares in the controlling stake is lower than that when the blocking stake is absent. To build the calculation mechanism, we introduce a set of additional parameters (and their values as an example):

a — share (portion) of the value of control falling on the controlling stake (let a=0.75),

N_b — number of shares in a blocking stake, $N_b=26$,

K_b — share (portion) of blocking stake in the authorized capital, $K_b=N_b/N=0.26$.

It is necessary to point out in this situation, that when the number of shares is unchanged (N=100), the quantitative parameters for minority stakes are changed: $N_{nc}=23$, $K_{nc}=0.23$.

Regarding the aforementioned conditions, instead of using formula (8), we calculate the price of the controlling stake as follows:

$$P_c = p \times N_c + a \times CV = 1 \times 51 + 0.75 \times 20 = 66 \quad (12)$$

The price per share of this controlling stake is estimated as:

$$P_{1c} = p + a \times CV/N_c = 1 + 0.75 \times 20/51 = 1.294 \quad (13)$$

The price of the blocking stake is estimated as:

$$P_b = p \times N_b + (1 - a) \times CV = 1 \times 26 + 0.25 \times 20 = 31 \quad (14)$$

The price per share of the blocking stake is estimated as:

P_{1b}= p + (1 – a)×CV/N_b= 1 + 0.25×20/26 = 1.192 (15)

As it is obvious from formulas (13) and (15), the price per share of both the controlling and blocking stakes reaches its maximum when this type of stake has a minimum number of shares (i.e., upon availability of the minimum possible blocking stakes and minimum possible controlling ones (The same is also relevant for the absolute controlling stake (75 %))).

The estimation of parameter a must be conducted with due consideration of the peculiarities of the current legislation, norms of the emitter's constitutive documents, a real allocation of seats within the emitter's board of directors, the maximum interest of minority alliances, as well as with due consideration of the relations between large stakeholders (Table 1).

#	Equity Structure	Controlling Interest Falling on:			Controlling Interest Falling on Minority stakes:	
		Absolute Controlling Stake (75 %)	Controlling Stake (50 % +1 share or 51 %)	Blocking Stake (25 % +1 share)	Those Friendly to Largest Stakes	Those Hostile to Largest Stakes
1	The absolute controlling stake is owned by a single holder	1	—	—	0	0
2	The controlling stake is present; other stakes are dispersed (no strategic alliances).	—	1	—	0	0
3	Both the controlling stake and friendly blocking alliances are present.	—	0.9–0.85	—	0.1–0.15	0
4	Both the controlling stake and hostile blocking alliances are present; the blocking stake is absent.	—	0.9–0.6	—	0–0.1	0.1–0.3
5	Both the controlling and blocking stakes are present	—	0.65–0.8	0.35–0.2	0	0
6	Only the blocking stake is present; other stakes are equally allocated among friendly and hostile structures.	—	—	0.8–1	0.15–0	0.05–0
7	Both the blocking stake and friendly alliance are present, together forming a controlling stake.	—	—	0.6–0.8	0.3–0.1	0.1
8	The blocking stake and friendly alliance are present, together forming the absolute controlling stake.	—	—	0.7–0.85	0.3–0.15	0
9	Both the blocking stake and hostile controlling alliance are present	—	—	0.3–0.6	0.05	0.65–0.35
10	All the stakes are dispersed	—	—	—	The Control is held by top-managers, thus falling on their shares (if they hold the shares of the controlled company as it is often practiced)	
11	The strategic stakes are absent; but the strategic alliances are present.	In this situation, the alliances are conditionally considered as stakes; therefore, interests (portions) of control falling on these conditional stakes are the first to estimate (see the above given lines of this Table), after which controlling interests within the alliances are to be found.				

Table 1: Allocation of Control Depending on Equity Structure.

The numerical values of the parameter a in the Table are based on two conditions: 1) the actual controlling interest of the majority stake is prevented from being lowered below the level of its nominal interest in the authorized capital; 2) the summed shares of control equal 1. The values given in the Table don't take into account the peculiarities of the allocation of seats within the company's board of directors.

Note 1: One of the alternative variants for estimating the degree of control is the technique based on shareholders' rights stipulated by the law on joint-stock companies (concerning shareholders' rights, which appear in dependence on the size of a stake), and on determining either a range of potential stake acquirers from those holding stakes (1% and more) or a third party acquirer.

The author of this article believes that this technique is of high interest, considering the attempt to reflect the involvement of shareholders' rights stipulated in the legislative norms; although this technique experiences a so-called effect of vanishing value, which means that the sum of all shares of the equity capital calculated by this technique is lower than the value of the company's total equity capital.

Note 2: Another alternative variant for estimating the degree of control deals with the V.V.Kozlov and I.S.Frolov technique [4,5,6,].

This paper determines the following main pricing factors, which form the value of premium per a share stake (per capital interest in business):

-Quantitative factor (the size of a stake);

-Legal factor (privileges stipulated by the legislation);

-Structural factor (distribution of shares (stakes) among business participants).

The author proposes a mathematical game-theoretical model for estimating the premium for holding a stake of a random size on the basis of the Shepley cooperative game theory, which characteristically comprises three components: 1) a list of participants; 2) a range of coalitions; 3) a prescribed premium for each coalition.

The paper also gives basic diagrams of premium distribution depending on the stake size in relation to OAOs (open joint-stock companies) for the critical variants of capital allocation: a) one large

stake and a maximum dispersion of other shares (minimum opposition); b) maximum opposition corresponding to large stakes.

The advantages of this technique are associated with a high accuracy of estimation; and its disadvantages deal with a mathematical technique difficult for "hand" calculations.

As it is clear from the Table given above, if a single holder owns the absolute controlling stake (75%), he usurps the total value of control; therefore, the parameter a for the estimation of the value of this stake can be considered as equal to 1(Actually, taking into account the possibility to file a claim by minority shareholders, its value will be somewhat lower the n 1. Nevertheless, this also means that the price for shares in minority stakes already possesses some (minor) part of the value of control; thus, if this interest assumingly equals to 1, it is necessary to take into account that only 99% of the value of control (rather than 100% as it is given in examples) will fall on both the blocking and controlling stakes.).

General approach to estimating the values of premiums for control and discounts for lack of control

According to formulas (12) given above, the value of the controlling stake is estimated as:

$$P_c = K_c \times MC + a \times CV = p \times N_c + a \times CV$$

At the same time, the value of this stake can be estimated in a different way:

$$P_c = K_c MC_c(1 + cp_a) \quad (17)$$

Where

cp_a — relative value of premium for control as compared with the proportional price: $p_a = MC_c / N$.

Equating (17) with the previous formula, we will obtain a general equation to calculate a relative value of premium for control defined as the excess of the share value in the estimated stake over the price per share in the non-specific (proportional) stake:

$$cp_a = (K_c \times MC + a \times CV)/(K_c \times MC_c) - 1 \quad (18)$$

Let's use formula (18) to find a relative value of premium for the blocking stake upon availability of one controlling stake and with a significant dispersion of other stakes (the values of all parameters correspond to the example given above):

$$_c cp_a = (0.26 \times 100 + 0.25 \times 20)/(0.26 \times 120) - 1 = 31/31.2 - 1 \cong 0$$

This situation demonstrates that the premium per share in the blocking stake approximates 0 and falls even below zero in particular, which is equivalent to the discount (as it follows from (15) that 1.192 is less than 1.2).

By comparison, the value of premium for shares in the controlling stake equals:

$$p_a = (0.51 \times 100 + 0.75 \times 20)/(0.51 \times 120) - 1 = 66/61.2 - 1 = 0.078$$

Let's check: from formula (13), the price per share in the controlling stake equals 1.294, which are 1.294/1.2=1.078 times higher than the proportional price per share.

Let's determine a general formula to estimate a relative value of premium for control in the controlling stake over the non-controlling interest. To do this, we shall use formula (13), which determines the price per share in the controlling stake: $p_{1c} = p + a.CV/N_c$. If we divide this expression by p and subtract 1 from it, we will obtain the desired expression to estimate a relative value of premium for control in the controlling stake over the non-controlling interest:

$$c_p = p_{1c}/p - 1 = a \times CV/(p \times N_c) \quad (19)$$

And finally, let's determine the formula to estimate a relative value of discount for lack of control as compared with the proportional value of the stake. Analogically, the value of a non-controlling stake can be calculated as:

$$P_{nc} = K_{nc} \times MC = K_{nc} \times MC_c \times (1 - c_d) \quad (20)$$

Where

c_d — relative value of discount for lack of control.

From here, we find a relative value of discount for lack of control:

$$c_d = 1 - MC/MC_c \quad (21)$$

The analysis of the text given above makes it possible to conclude that the value of premium for control (pr_c) in stake K_c generally depends not only on the relationship between MC and MC_c but also on the value of premium for control when 100% control (pr_0) is held, on the sizes of both controlling and non-controlling stakes (parameters K_c, N_c, K_{nc} and N_{nc}), as well as on the degree of control belonging to the holders (a single holder) of the controlling stake (parameter a). Alternatively, it can be determined as follows:

Value of premium on control for the shares in the controlling stake, which has control of "a" size, as compared with the price per share in the unspecified stake:

$$pr_c = c_d \times \left(\frac{a}{K_c} - 1\right) = 0.167 \times \left(\frac{0.75}{0.51} - 1\right) = 0.078 \quad (22)$$

Value of premium on control for the shares in the controlling stake compared with the price per share in the unspecified stake in the absence of the blocking stake:

$$pr_c = \frac{pr0 \times K_{nc}}{(1 + pr0) \times K_c} = \frac{0.2 \times 0.49}{(1 + 0.2) \times 0.51} = 0.160 \quad (23)$$

Estimation of Share Value While Forming Tender Proposals

As it was pointed out here in before [7], in the situation that holders of a large stake, acquiring a minority stake, can become the holders of strategically more important stake, they may offer a holder of a minority stake the premium on the current market price, which can sometimes result in the excess of a price per share in either the acquired minority stake or blocking one over the price per share even in the absolute controlling stake. To estimate the maximum value of premium, which, in this situation, can be paid without any losses by the holders of one stake to the holder of another stake, we need to introduce new parameters:

N_a — number of shares in the "acquirer's stake", N_a=23;

N_t — number of shares in the desired minority stake, N_t=3.

Thus, the value of maximum premium in acquiring the desired stake will be (This formula lets us conclude that at the current value of the stake of N_a shares, equal to $p.N_a$, and the acquisition of N_t shares at the price $p_t = (p + PR_b)$ per share, the total number of shares is equal to N_b and the stake is blocking. Hence, its value is estimated as in Formula (14) as long as the expenses for acquiring the stake are $p.N_a +$

$(p+PR_b).N_t$. analogically, the expression for estimating the maximum premium PR_c is obtained (see the hereinafter text))

$$\begin{aligned} PR_b &= \{p\times(N_b - N_a) + (1-a)\times CV\}/N_t - p = \\ &= \{p\times N_t + (1-a)\times CV\}/ /N_t - p = \\ &= (1-a)\times CV/N_t = \\ &= [1\times(26-23) + (1-0.75)\times 20]/3 - 1 = \\ &= (1-0.75)\times 20/3 = 1.67 \end{aligned} \quad (24)$$

Where the index "b" means a belonging to a blocking stake (i.e., PR_b means the premium paid for the transition of the acquirer's stake into the blocking stake category), all the other parameters and their values correspond to those accepted hereinbefore.

According to the result obtained in (24), the maximum ask price per share in this stake can be 1+1.67=2.67, which is much higher than the price per share even in the controlling (or absolute controlling) stake in formula (9). In reality, it is hardly possible that a maximum possible premium on the current market value will be offered to the holder of this minority stake as its acquirers think not least of the possibility of the profitable resale of the acquired strategic stake in the future. The premium will more probably be not higher than 10-30 % (This mostly depends on the proportion of the necessary number of shares and the free float index, which is referred to as the number of the issuer's shares freely floating in the market-if the necessary number of shares is lower than the free float index, the premium on the current market value will be low; if the values are equal in their quantities, the premium will be high) from the maximum level, i.e., approximately 0.17-0.5, and the ask price will be ranged from 1.17 to 1.5.

Expression (24) can be used for estimating the maximum value of premium in all situations of acquiring the minimum possible stake, accompanied by "strategic transitions". For example, if, in the previous case, the holders of the large stake had owned 47 shares and had wanted to acquire the stake of 4 shares, which had let them hold a controlling stake, the maximum premium for becoming a majority holder would have become:

$$\begin{aligned} PR_c &= \{p\times(N_c - N_a) + (2a-1)\times CV\}/N_t - p = \\ &= (2a-1)\times CV/N_t = \\ &= [1\times(51-47) + +0.5\times 20]/4 - 1 = \\ &= 0.5\times 20/4 = 2.5 \end{aligned} \quad (25)$$

In case the excess stake is acquired (e.g., when its seller doesn't want to break the stake to peaces), the value of odd shares doesn't exceed their market price in the minority stake; therefore, the value of premium per share will be lower than the maximum value, which is possible in acquiring the minimum desired number of shares. For instance, if, in the previous example, the stake of 10 rather than 4 shares had been acquired, the maximum value of premium would have been 1.

Estimating the Value of Control Based on Tender Prices

Let's assume that the estimator knows one of the prices for the tender offer, which has been accepted-either p_{tc} is the accepted tender price per share in the controlling stake when the whole stake is acquired, or p_{tb} is the accepted tender price per share in the blocking stake when acquired.

Moreover, the estimator knows that the equity structure has a second strategic stake, and at the same time he doesn't know the value of 100% stake with account of the value of control (parameter MC_c). Then estimating another unknown price (either p_{tb} if p_{tc} is knows, or p_{tc} if p_{tb} is known) becomes possible only in case a certain information is available, including stake sizes and allocation of both control between them and prices of shares in minority stakes.

In this situation, estimating the value of control is nonobligatory for the estimator (but obligatory for those participating in the deal) and, to some extent, auxiliary as far as the possibility to use the aforementioned formulas is concerned for estimating one of the unknown values.

To calculate the value of control based on tender prices, let's use the equation of the values of the strategic stakes, found with formulas (12) and (14), and tender prices for these stakes.

If one knows the accepted tender price for the controlling stake:

$$P_c = p_{tc}\times N_c$$

then setting this expression equal to the previously obtained one for the value of the controlling stake in the presence of the blocking stake (see formula (12)), we get the value of control:

$$CV = N_c\times(p_{tc} - p)/a \quad (26)$$

If one knows the accepted tender price for the blocking stake:

$$P_b = p_{tb}\times N_b$$

then setting it equal to the previously obtained estimated price for the blocking stake in the presence of the controlling stake (see formula (14)), we get one more expression to estimate the value of control:

$$CV = N_b\times(p_{tb} - p)/(1-a) \quad (27)$$

Using formulas (26) and (27), we can get the formula to determine a theoretical (estimated) price per share in blocking stake p_{tb}, knowing price per share p_{tc} for the accepted tender offer to acquire the controlling stake:

$$p_{tb} = p + (N_c/N_b)\times(p_{tc} - p)\times(1-a)/a \quad (28)$$

Or to express p_{tc} at known price p_{tb}:

$$p_{tc} = p + (N_b/N_c)\times(p_{tb} - p)\times a/(1-a) \quad (29)$$

It is necessary to point out that tender prices, as a rule, don't correspond to the estimated market values of certain strategic stakes, as such stakes can actually have only an investing price, which is reflected, to some extent, by tender prices. The possible differences of the investing value from the estimated market price, in this case, are primarily preconditioned by two factors:

Proportion of both the necessary number of shares and number of free floating shares;

Ignorance of the estimation technique by those participating in the deal.

Before finishing the topic, it is necessary to comment on implementing this technique in the context of the premium (discounts) on control simultaneously applied with the procedure for a single common estimation of the results obtained on basis of various approaches.

If the estimation process uses not less than two approaches, one of which is a comparison approach (on basis of deals with minority stakes), it is allowable to average out either only intermediate results obtained within the comparison approach (e.g., if several multipliers are used) or the results of both the profit and cost approaches

In all these cases, the intermediate results mustn't be subject to discounts or premiums. It is also forbidden to average out the result of the comparison approach with those of both the profit and cost approaches.

Conclusions/Results

Summing up, we should point out that the proposed technique provides investors with real guidelines for estimating the value of control and the premiums and discounts preconditioned by it, which, as distinguished from widely popular empirical constants, enable to take into account both the equity structure and differences between a market price for shares in minority stakes and fundamental value for strategic investors. We shall particularly underline that the aforementioned approach enables one to estimate the value for not only legally controlling stakes but also factually controlling ones(For example, in case of significantly dispersed minority stakes and in the presence of only one large stake, the latter is factually considered as a blocking stake in the legal context). Implementing the proposed technique enables both to more reasonably calculate discounts/premiums for lack/presence of control and to avoid the voluntarism recently present in this issue-when the exact size of either discount or premium is specified with a so-called "expert technique" from the range of the discounts/premiums estimated at the unknown time and for the unknown conditions(If to be accurate, the existing information (e.i., that from the Mergestat) is so vast and contradictory that the concerned party can always find the value suitable for him in this diversity).

Having written this paragraph, the author met similar developments by A.Damodaran [7]. The essence of the Damodaran approach can be formulated as:

$MC_{opt} = MC + p_R' (MC_{opt} - MC)$ (30) $CV = MC_{opt} - MC$ (31)

Where

CV – value of control,

MC_{opt} – value of optimum structured company,

MC – value of company under the current management,

p_R – possibility of company's take-over by outside investors and/or possibility of a successful reorganization.

According to the Damodaran approach, the market capitalization of the company is affected by the value of control only when there is the possibility to increase the company's value. This possibility is associated with the potential of the optimally restructured value as well as with the restructuring plan featuring the possibility to be really implemented in practice.

The author believes that the application of this approach faces several problems: firstly, it is rather labor-intensive and somewhat theoretical as far as the necessity to estimate the optimally restructured value is concerned; secondly, there occur problems with determining the probability of the successful realization of the restructuring plan; and finally, this approach limits the use of the comparison approach and, in particular, its techniques which use information on the quotations of minority stakes. This limitation is preconditioned by the presence of internal cycling – estimating the integral equity value on basis of the results of implementing various approaches is possible only if homogeneous values – either with the premiums on control or without them-are weighed; however, the value of control itself stays unknown at this stage. Besides, it is essential to mention that the Damodaran approach doesn't take into account the factor of "grabbing the biggest piece of the pie" by controlling shareholders.

According to the approach given in this paragraph, the value of control is determined by the market itself as "it is" (i.e., one shouldn't estimate an optimally restructures value and either the possibility for control to be transited to more efficient shareholders-managers or the possibility of a successful restructuring plan). At the same time, the Damodaran approach makes the author generate an interesting assumption. The matter of fact is that estimating the value of control with formula (1) indirectly implicates the result usually being positive; to meet this condition, the results of both the profit and cost approaches must exceed the results of the comparison approach, obtained on basis of analogue companies' quotations for minority stakes. And what if the value of control estimated with formula (1) occurs to be negative? Won't this mean losses in value because of inefficient management? So, the module of this value may intrinsically be the "inverted" value of control "according to Damodaran" – if, based on primarily market data (using the comparison approach on basis of the deals with analogue companies' minority stakes), the market value is higher, this means that, without any notice of the company's internal situation (primarily including a quality of its managements), the market generally perceives the company more positive than it is in reality. So, the question occurs if this situation may be possibly considered as the market signal to the current shareholders that the company is to be sold?

References

1. Diev SB (2003) Estimation of Correction for Degree of Control of a Stake on Basis of Equity Structure Analysis. Journal of Estimation Issues 4.
2. Christopher Mercer Z, Harms TW (2007) Business valuation. An Integrated Theory.(2nd Edition). John Wiley & Sons, Inc.
3. Shannon PP (2009) Business Valuation. Discounts and Premiums. (2nd Edition) Maroseika Ltd. Moscow.
4. Kozlov VV, Frolov IS (2005) Estimation of Equity Participation in Business. International Scientific Workshop on Estimation Activity Dataware and Software.
5. Kozlov VV, Kozlova EV (2003) Estimation of Stakes: Part II. Journal of Estimation Issies 4.
6. Kozlov VV, Kozlova EV (2003) Estimation of Stakes. Journal of Estimation Issies 3.
7. Damodaran A (1994) Damodaran on valuation. Security Analysis for Investment and Corporate Finance, Study Guide . (2nd edition) John Wiley & Sons, N.Y .