Estimating Preferred Shares with Regard to the Possibilities of Gaining the Voting Right by their Holders

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Abstract

This article views the techniques to estimate preferred shares, the holders of which have acquired the voting right for the shareholder's meeting by nonpayment of dividends on these shares. The author of this paper attempts to show regard to the option factor, which reflects the possibilities to gain the voting right by preferred shareholders, directly in special calculation models. In addition, the article proposes the criterion of decision making by majority (controlling) shareholders on the reasonability of either the payment or nonpayment of dividends to minority shareholders.

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1 Introduction

Not many research works are devoted to the peculiarities of the method for estimating the value of preferred shares, as distinct from common stock. The author of this paper has found few publications on this topic ([1],[2],[3],[4]). And there are even fewer studies devoted to describing the techniques for preferred share estimation, which regard the existing and potentially possible situations, in which preferred shares either are or may become voting. Among the aforementioned studies, it is necessary to particularly emphasize paper [3], which, according to the author's view, was the first in literature to comment on the existence of the voting option for the holders of preferred shares at a general meeting and on both the value of this option and value of dividend payments being subject to consideration while estimating the value of preferred shares. In this context, Gomzin notes: *"…the holders of common stock have somewhat similar to the option – i.e., not to pay dividends in case the value of the voting right at the next meeting*

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of the shareholders is lower than that of the paid dividends on preferred shares of the A type." Further hereon, the author of this paper attempts to show regard to the option factor (the factor of the possibility to gain the voting right) directly in some special calculation models.

2 Peculiarities of Estimating the Value of Preferred Stock

To start with, let's try to answer the question – what are the components of the share value? This value comprises of the expected economic benefits from the prospects of receiving dividends; of business management; and of the potential possibilities of a profitable stock broking in the future as their market value being increased. Moreover, the peculiarity of preferred shares is that their holders feature the absence of the voting right most of the time. Nevertheless, in some cases (if nonpayment of dividends to the holders of preferred shares takes place) the holders of these shares gain the voting right for a general meeting. Correspondingly, the holders of preferred voting shares lose dividends but gain the voting right instead. Thus, while the necessity to estimate preferred shares, which may become voting, occurs, it can be realized as:

$$V_{1psv} = V_{1ps} - PV(\text{divs }(t)) + Voption_{1ps}(t) \tag{1}$$

$$V_{1ps} = v(0) + \sum_{i=1}^{k} \frac{(1 - p_i) \times div_i}{(1 + r_f)^i} + \sum_{i=1}^{k} \frac{b \times CV_i \times p_i}{N_{ps} \times (1 + r_f)^{k-0.5}} + \frac{V_{1k}}{(1 + r_{psr})^k} \tag{2}$$

Where

V_{1psv} – Value per one preferred voting share;

V_{1ps} – Value per one preferred nonvoting share, on which dividends are paid;

PV(divs (t)) – Present value of dividends on preferred shares for the *t*-period, within which the absence of dividend payment is supposed;

Voption$_{1ps}$ (t) – Value of the option preconditioned by the presence of the voting right on preferred shares during the *t*-period;

div_i – Expected value of dividend payments on preferred shares during the *i*–period;

r_f - Risk-free discount rate at the moment of estimation;

r_{psr} – Discount rate reflecting the risks of changes in the market value of preferred shares;

b – Share of control "drained" by preferred shares in the situations, when they become voting, $0 < b \leq 0.25$;

CV_i – Value of control, which is expressed in the absolute value (RUR), over the operation of the company-emitter of estimated shares[2] during the *i*-period;

p_i – Possibility of preferred shares to become voting during the *i*-period;

N_{ps} – Aggregate amount of emitted preferred shares;

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[2]The value of control may be estimated by both the direct and indirect techniques. The latter one estimates the value of control as the value of the company's equity capital, which is calculated through the control-involved estimation techniques, minus the estimation techniques, which calculate the value of the whole equity capital on the minority level.

k – Period of time, during which (inclusively) the holder of the estimated preferred shares is going (intends) to continue staying its holder, and upon the expiry of which he plans to sell it at the rate V_{1k}[3];

$v(0)$ – Value of holding preferred shares in the period nearest to a next meeting:

In the event that at the time of estimation (t_0) preferred shares are actually voting, and till the nearest meeting of shareholders, the t_m-time is left:

$$v(0) = \frac{b \times CV_0}{N_{ps} \times (1 + r)^{0.5(tm-t0)}} \tag{3-1}$$

Where "r" is the discount rate applied for the flows of incomes on common stock;

- In the event that in the current period the decision was made on paying dividends on preferred shares in the amount of div_0, and t_p of days is left till the payment:

$$v(0) = \frac{div_0}{(1 + r_f)^{(tp-t0)}} \tag{3-2}$$

- In the event that in the current period the decision was made on paying dividends on preferred shares, and this payment has already been made:

$$v(0) = 0 \tag{3-3}$$

The third summand in equation (2) obviously represents the value of the options embedded in preferred shares for their holders, i.e., this is the parameter "$Voption_{1ps}$ (t)" in (1). Thus, the value of the embedded option for preferred shares in every i-period can be calculated as:

- While estimating in real costs (as per share):

$$V_{option1psi} = \frac{b \times CV \times p_i}{N_{ps}} \tag{4}$$

- While estimating in future costs as of the current date of calculation (as per share):

$$V_{option1psi} = \frac{b \times CV \times p_i}{N_{ps} \times (1 + r_f)^{k-0.5}} \tag{5}$$

- While estimating in real costs (on the basis of the aggregate amount of shares):

$$V_{optionpsi} = b \times CV \times p_i \tag{6}$$

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[3]Paper [5], p.558, Section 18.5 of "Estimation regarding the final date of holding", proves that the estimation of both the value per share through the discounting of dividends on it till a certain moment of time and the expected selling rate is equivalent to the estimation of the value per share by discounting all future dividends.

- While estimating in future costs as of the current date of calculation (on the basis of the aggregate amount of shares):

$$V_{optionpsi} = \frac{b \times CV \times p_i}{(1 + r_f)^{k-0.5}} \qquad (7)$$

Where all the components correspond to the previously accepted parameters.

The essence of equations (4)-(7) is associated with the understanding that they estimate the value for the possibilities of transferring the powers of control over the company $(b \times CV)$ to the holders of preferred voting shares in the i-period in the event that the possibility for preferred shares to become voting in the i-period equates to p_i.

Equations (1)-(2) can obviously be reformatted for estimating the value of the total number of preferred shares. For this purpose, it is necessary to use the cumulative sum of the dividends expected for the payment on preferred shares, and not to divide the third summand by N_{ps} in equation (2):

$$V_{ps} = v(0) + \sum_{i=1}^{k} \frac{(1 - p_i) \times div_i}{(1 + r_f)^i} + \sum_{i=1}^{k} \frac{b \times CV_i \times p_i}{(1 + r_f)^{k-0.5}} + \frac{V_{1k}}{(1 + r_{ps})^k} \qquad (8)$$

Where div_i is the expected value of summed dividend payments on preferred shares in the i–period.

Let's try to use equation (8) for the estimation. For example, let's assume that it is necessary to estimate preferred (actually) voting shares, which will stay the same, as expected, for one more year; and after this period they are expected to return into their voting status two more times – within the 3rd and 4th forecast years and during the 6th forecast year. Then the value of these shares can be calculated as:

$$V_{1ps} = b_1 \times CV_1 + \frac{div_2}{(1 + r_{ps})^2} + \frac{b_3 \times CV_3 \times p_3}{(1 + r_f)^{2.5}} + (1 - p_3) \times \frac{div_3}{(1 + r_f)^{2.5}} +$$

$$+ \frac{b_4 \times CV_4 \times p_4}{(1 + r_f)^{3.5}} + (1 - p_4) \times \frac{div_4}{(1 + r_f)^{3.5}} + \frac{div_5}{(1 + r_{ps})^5} + \frac{b_6 \times CV_6 \times p_6}{(1 + r_f)^{5.5}} + \qquad (9)$$

$$+ (1 - p_6) \times \frac{div_6}{(1 + r_f)^{5.5}} + \sum_{i=7}^{m \geq 7} \frac{div_i}{(1 + r_{ps})^i}$$

Where

b_i – Share of control "drained" by preferred shares in the i–period, when that they become voting, $0 < b \leq 0.25$;

CV_i – Value of control in the i–period given in absolute values (RUR);

p_i – Probability of preferred shares to become voting within the corresponding i–period;

div_i – Expected value of summed dividend payments on preferred shares in the i–period (moreover, for the 2nd and 5th periods, and starting with the 7th period and further, the fact of dividend payments isn't called into question; nevertheless, the change in these payments may possibly occur);

r_{ps} – Discount rate reflecting risks of receiving yields on preferred shares;
All the other parameters correspond to the previously accepted.
Besides equations (4)-(7), the value of embedded options can be calculated through the indirect technique, on the basis of comparing the value per one common share and that per one preferred share (which becomes possible only in the case of the developed market of these shares):

$$V_{option1ps} = V_{1os} - PV(div_{ps}) - \Delta \tag{10}$$

Where
$V_{option1ps}$ – summed value of embedded options per preferred share;
V_{1os} – cost per common share;
$PV(div_{ps})$ – present value of expected dividends as per preferred share;
Δ – difference between the value per common share and that per preferred share.
It is necessary to point out that according to [4], the average discount on Russian emitters' preferred shares amounted to 50-60%. The later observations by the author of this paper showed that the discount averaged from 30 to 40% (in rare cases, it was completely absent).

3 Additional Thoughts

In addition to the aforementioned equations, let's give as set of extra formulas, which can be useful for estimating the share value:

$$V_{osi} = N_{osi} \times V_{1osi} + CV_i \times (1 - b \times p_i) \tag{11}$$

$$V_{option1osi} = \frac{CV_i}{N_{osi}} \times (1 - b \times p_i) \tag{12}$$

Where
V_{osi} – cost of a 100% stake of common stock (with regard to control) in the i–period;
N_{osi} – aggregate amount of emitted common shares in the i–period;
V_{1osi} – cost per common share in the i–period in the minority stake;
CV_i – value of control over the company in the i-period;

$V_{option1osi}$ – value of the option (as per holder of one common share) providing control over the company's activity in the i–period.
Equation (12) shows that the value of option, which is predetermined by the possibilities for the holders of common shares to manage the company's activity, is the maximum in the cases of dividend payments on preferred shares (if $p_i = 0$, when preferred shares lacks the voting right), and it is the minimum in the cases of dividend nonpayment on them (if $p_i = 1$).
The structure of the aforementioned equations clearly demonstrates that the solution of some problems, as it often happens, inevitably invokes the occurrence of new ones; i.e., accounting for the status of preferred voting shares stipulates the necessity to estimate the

additional parameters of the calculation models, the value of which can be considerably found only with a high degree of subjectivity. Nevertheless, the aforementioned disadvantage doesn't affect the justifiability of the most theoretical calculation model/scheme.

In conclusion, it is reasonable to repeat the quotation given hereinabove from [3]: *"…the holders of common stock have somewhat similar to the option – i.e., not to pay dividends in case the value of the voting right at the next meeting of the shareholders is lower than that of the paid dividends on preferred shares <…>."* The author of this paper believes that this idea can be expressed in other words: *the holders of the controlling stakes of common stock have an option – not to pay dividends in case the decrease in the value of the power of control* (as a result of watering the voting shares while the voting right is gained by the holders of preferred shares) *is lower than the value of paid dividends on preferred shares[4];* and vice versa. The mathematic context, this condition can be expressed as:
- To pay dividends if

$$a(b - b_{CS})CV > (Div_{ps} – div_{ps}CS);$$
- Not to pay dividends if

$$a(b - b_{CS})CV < (Div_{ps} – div_{ps}CS) \tag{13}$$

Where
a – Share of control possessed by controlling share holders, who make a decision on dividend payment/nonpayment on preferred shares;
b_{CS} – Share (from the whole authorized capital) of the preferred stock, which is owned by controlling share holders;
$a(b - b_{CS})CV$ – Decrease in the value of control for controlling shareholders in the event of making the decision on dividend nonpayment and the transfer of the share of control amounting to b to the holders of preferred stock[5];
Div_{ps} – Aggregate size of the dividend masses on preferred stock;
$div_{ps}CS$ – Size of the dividend masses on the preferred shares possessed by controlling shareholders (in case such a situation is present).
Let's discuss the example of applying the conditions of (13). Let's suppose that the following information is known:
- The value of the company's equity capital calculated with the cash flow discounting technique amounts to 120 million RUR;
- The value of the company's equity capital calculated with the adjusted net asset technique amounts to 110 million RUR;
- The value of the company's equity capital calculated by the industry multiplier technique amounts to 90 million RUR;

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[4]Here, the dividends to the holders of the controlling stake (in case controlling shareholders possess a certain number of preferred shares) are to be excluded from the estimation of the dividend masses on preferred stock.
[5]In case controlling shareholders possess a certain number of preferred shares, the parameter "*b*" must be decreased and must regard only the transfer of the share of control to holders-outsiders in relation to controlling shareholders.

- The controlling shareholder possessing a 55% stake of all the common shares considers that due to the equity capital structure and his power in the Board of Directors, he has 70% control over the company's activity;

- Besides of the common stock, the company has emitted preferred shares, the number of which amounts to 25% of the authorized capital;

- The controlling shareholder possesses 20% of all the preferred shares of the company (which amounts to 5% of the total authorized capital);

- According to the results of the current period, the company has earned the benefit of 10 million RUR.

The controlling shareholder must make a decision on either the payment or nonpayment of dividends on common stock.

On the basis of the initial data, let's find the value of full control over the company (the parameter "*CV*"). The value of a 100% stake calculated on the basis of the techniques with regard to the value of control approximates $(120 + 110)/2 = 115$ million RUR. The value of the equity capital calculated on the basis of the technique regardless of the power of control amounts to 90 million RUR according to the conditions of the task. So the value of full control is calculated as: $CV = 115 - 90 = 25$ million RUR.

Let's find how the value of control will decrease for the controlling shareholder in the event of the decision on the nonpayment of dividends on the preferred stock. In accordance with the left-side expression of (13): $a(b - b_{CS})CV = 0.7 \times (0.25 - 0.2 \times 0.25) \times 25 = 3.5$ million RUR. And the controlling shareholder will save on dividend nonpayment the sum calculated with the left-side expression of (13): 10% of the net profit (i.e., $0.1 \times 10 = 1$ million RUR) and minus the dividends on the preferred shares held by him (i.e., $0.2 \times 1 = 0.2$ million RUR); so the total value equates to $1 - 0.2 = 0.8$ million RUR. As it is obvious from the calculated data that the estimated value of the decrease in the value of the powers of control at the shareholder's meeting (3.5 billion RUR) exceeds the savings in dividend payments on preferred stock to "outside" shareholders (0.8 million RUR), it would be more profitable for the controlling shareholder to make a decision on dividend payment to the holders of preferred stock.

4 Conclusion

In this article, the author proposes the technique for calculating the value of preferred shares with regard to the value of the embedded option providing the voting right in the absence of dividend payments, and additionally proposes the criterion of making a decision by majority (controlling) shareholders on the reasonability of either the payment or nonpayment of dividends to minority shareholders. The main disadvantage of the proposed method is a high subjectivity when estimating two parameters of the calculation models – the probability for preferred stock to become voting during the corresponding *i*-period (the parameter "p_i"), and the period, within which the absence of dividend payment is expected (the parameter "*t*"). But it is necessary to realize that the process of estimating the value of anything and estimating the share value in particular is impossible without the elements of subjectivity. In this context, the formulas proposed in this paper mustn't be taken as a dogma but as only a vector of movement toward the reasonability of estimating the values of preferred stocks.

Finishing the paper, the author hopes that the provisions given herein will help its readers to gain a fresh approach to the issues of preferred stock pricing and will possibly inspire some of them for further studies in the determined direction.

References

[1]   V.Shepelev, Preferred Stock and Some Peculiarities of their Estimation, *Appraiser.ru*, (2000).
[2]   O. Snigerev and O. Kalinovich, The Malue of Vote: on the Approach to Estimating the Market Value of the Shares of Russian Stock Companies, *Appraiser.ru*, (2002).
[3]   L. Gomzin, Some Peculiarities of Calculating the Market Value of Preferred Stock with the Income Approach, *Securities Market Journal*, **4**(235).
[4]   V. Gettsman and M. Shpigel, *Relative Values of Preferred and Common Stocks of Russian Companies*, Yale School of Management, 2001.
[5]   W. Sharpe, J. Aleksander and G. Bailey, *Investments*, M. izd. Infra-M, 1997, p.1024.