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The value of corporate voting rights embedded in option prices ☆

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ABSTRACT

This paper proposes and tests a new method to extract the value of corporate voting rights from market prices of American-style single-stock options. The method models voting-right values as non-cash dividends and backs them out via numerical optimization from prices of equity options. Simulation experiments show that the method is accurate and outperforms existing option-based approaches by reducing their measurement error from 17.2% to 1.57% in terms of root mean squared errors and almost eliminates their bias.

The paper also contributes an empirical analysis of corporate voting-right values in European companies in the time period between 2003 and 2010. Voting rights have an annualized average value of 0.37% of the share price and are significantly worth more in months in which either ordinary or extraordinary general meetings take place but no single shareholder holds a majority stake in the company. Finally, voting values are higher in companies incorporated in French-civil-law countries (France and the Netherlands) than in German-civil-law countries (Germany and Switzerland).

1. Introduction

Corporate voting rights are valuable because they enable investors to exercise control and gain access to private benefits (see, e.g., Demsetz and Lehn, 1985; Grossmann and Hart, 1988). The use of corporate resources for private purposes can take several forms, from the managerial consumption of perquisites to empire-building, the overpayment of "friendly" managers and directors, over-staffing, and tunneling[1] (see, among others, Johnson et al., 2000). Besides this broad range of material advantages, exercising control in a company could also generate 'psychological' values arising from popularity or the feeling of power (see, e.g., Aghion and Bolton, 1992; Bebchuk, 1994; Demsetz and Lehn, 1985). Finally, scholars have pointed out that voting rights can be valuable also to minority shareholders, namely in situations when large non-controlling blockholders attempt to gain control and minority shareholders are able to sell their stocks at a premium (see, e.g., Rydqvist, 1996; Zingales, 1994, 1995).

To measure the value of corporate voting rights, financial researchers have developed several empirical strategies that differ mainly with respect to the kind of market prices they rely on.[2] The *dual-class approach* measures the value of voting rights by comparing prices of two classes of shares issued by the same company with a different ratio of cash-flow and voting rights. Everything else equal, the price difference between those two classes of shares can be interpreted as the value of voting rights. A

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[1] Tunneling occurs when an investor who has claims in two companies transfers company resources from the one where she has high voting rights to the one where she has high cash-flow rights.

[2] A detailed description of the literature is provided in Section 2.

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second method, the *block-trade approach*, compares prices paid for disclosed large block transactions with market prices paid for the same security just after the block trade. This difference is attributed to the controlling power of the block stake which enables the access to private benefits of control. Finally, the *option-based approach* extracts the value of corporate voting rights from prices of single-stock options. This approach compares the price of a voting stock with the value of a non-voting synthetic stock created from a combination of call and put options written on that stock.[3]

While the dual-class approach and the block-trade approach are widely used and accepted, extracting the value of corporate voting rights from option prices offers a number of advantages.[4] First, it increases the scope of empirical investigations because it offers the opportunity to measure the value of voting rights for companies with no disclosed block-trade transaction and no dual-class shares outstanding. Second, it mitigates possible selection and endogeneity biases of the other two approaches. Finally, the option-based approach allows one to attribute the value of corporate voting rights to specific periods in time and not to the entire future development of a firm. This is very useful for testing the influence of specific events (e.g., general meetings) on the value of voting-rights.

This paper contributes in two ways to the existing literature. First, we propose a new methodology to extract the value of corporate voting rights from prices of American-style single-stock options. Second, we perform an empirical option-based study of corporate voting rights in European firms and examine their determinants.

In the proposed method, the value of corporate voting rights is modeled explicitly by introducing voting-right parameters (as yields or discrete constant values) that directly affect the price dynamics of the underlying stock. The method uses an optimization step to jointly solve for (i) voting-right values, (ii) expected volatilities, and (iii) the optimal exercise rule and thereby accounts for the interdependencies among these factors. Simulation experiments show that the proposed method reduces the measurement error of existing approaches from 17.2% to 1.57% on average and almost eliminates their bias.

In the empirical analysis, we extract monthly voting yields from 40 French, 72 German, 26 Dutch, and 50 Swiss companies in the period between January 2003 and December 2010. The annualized average voting-right value extracted from options written on common shares amounts to 0.37% of the share price. The fact that the voting yields of a control sample of options written on non-voting stocks are close to zero lets us be confident that our approach indeed measures the effect corporate voting rights have on options.

Several further empirical results are worth mentioning. First, companies in French-civil-law countries (France and the Netherlands) are found to have higher voting yields than firms in German-civil-law countries (Germany and Switzerland). This result is consistent with the weaker outside-investor protection of French-civil-law countries, which facilitates the extraction of private benefits of control (La Porta et al., 1998, 2000). Second, voting values are significantly higher during months in which ordinary and extraordinary general meetings take place. Third, we find evidence for an inversely u-shaped relation between ownership concentration and voting values. While voting values are largest when ownership has an intermediate concentration, firms with a large controlling shareholder and companies with an atomistic ownership structure have the lowest voting values. In particular, voting values in companies with a majority shareholder are close to zero and not statistically significant. Finally, the measured voting yields are positively linked with financial leverage, which can be explained by the lower capital requirements for accessing a given share of control in highly levered companies.

The remainder of this paper is structured as follows. Section 2 provides an overview of existing approaches to measure the value of corporate voting rights and discusses their advantages and shortcomings. Section 3 motivates and describes the new method to measure the value of voting rights from prices of American options. Section 4 evaluates the performance of the proposed method by means of simulation experiments and provides a comparison with existing methods. In Section 5, empirical voting-right values are extracted from prices of options written on a sample of European stocks and their determinants are analyzed. Finally, Section 6 concludes.

2. Literature review on the measurement of corporate voting rights

2.1. Dual-class approach

The dual-class approach is the most common method to measure the value of control rights for the marginal investor. It compares market prices of different classes of shares with equal cash-flow but different voting rights.[5] If all other share characteristics are equal, the price gap can be fully attributed to the difference in voting rights.

Panel A of Table 1 provides a list of papers that employ the dual-class approach. Even within these studies, the average voting-right values are remarkably heterogeneous ranging from 4.0% in a sample of Swedish firms (Rydqvist, 1996) to 81.50% in Italy, which Zingales (1994) attributes to the poor protection of minority shareholders from the expropriation by major blockholders. The importance of investor protection as a determinant of voting-right values is further illustrated in Doidge (2004): By dividing a dataset of non-US firms in two groups depending on their cross-listing on US-exchanges, he shows that

[3] Christoffersen et al. (2007) suggest that the value of corporate voting rights should also be reflected in stock lending fees. While their approach is conceptually appealing, they do not find evidence for the existence of positive voting-right values.

[4] See Kalay and Pant (2009), Karakas (2009), and Kalay et al. (2012).

[5] Some dual-class shares have identical voting rights but differ with respect to their par values, thus providing the respective holders with different cash-flow claims per share. Clearly, even in this case one can consider an appropriate portfolio of low-par-value shares with the same cash-flow rights as the high-par-value shares but a higher number of voting rights.