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Convertible securities in merger transactions

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ABSTRACT

This paper provides a rationale for the use of convertible securities as the medium of exchange in corporate change-of-control transactions. We argue that convertible securities can resolve the information asymmetry about the bidder's value while at the same time mitigating the information asymmetry about the target's value. In contrast, deals with cash or stock can only address one information asymmetry or the other but not both. Empirically, we find that a bidder is more likely to offer convertible securities, rather than all cash or all stock, when both the bidder and its target face large asymmetric information problems. We also find that both bidders and targets in convertible deals enjoy positive abnormal stock returns around takeover announcements. These findings provide empirical support for the use of convertible securities to resolve the double-sided asymmetric information problem. Finally, we find that bidder returns in convertible deals are larger than in all-cash and all-stock deals, but that target returns in convertible deals are smaller than in all-cash and all-stock deals.

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1. Introduction

The medium of exchange is a matter of indifference to both parties to a corporate change-of-control transaction in a perfect capital market. However, information asymmetry makes this choice relevant in practice. Both the bidder and the target could have private information about their own values that is not shared by the other party to the transaction even after they have conducted their due diligence. In this case, the choice of the medium of exchange can serve as a device for resolving the asymmetric information problem. Several theoretical papers focus on a bidder's choice between cash and stock in the presence of asymmetric information (Hansen, 1987; Fishman, 1989; Eckbo et al., 1990). They argue that a cash offer enables a bidder to avoid the mispricing arising from the information asymmetry concerning the bidder's value (the "bidder information asymmetry") and that a stock offer can help the bidder reduce the cost of overpayment arising from the information asymmetry concerning the target's value (the "target information asymmetry"). However, all-stock or all-cash offers cannot resolve both the bidder information asymmetry and the target information asymmetry simultaneously. We refer to this twin problem as the double-sided asymmetric information problem.[1]

Our paper extends the literature on the medium of exchange in merger transactions, by studying the use of convertible securities in this double-sided asymmetric information framework. We show that a convertible security is the preferred method of payment in merger transactions when a large information asymmetry exists on both the bidder and the target sides.

A convertible security is a hybrid comprising a debt payment and a stock payment. It has different consequences from cash and stock because of the feature of "forced conversion." In particular, the issuer of a convertible security can call the convertible for redemption when the conversion option is in-the-money (the conversion value exceeds the effective call price consisting of the optional redemption price plus the accrued interest). In this case, the rational convertible holders will convert the convertible into the underlying common stock rather than redeem it for cash at the lower optional redemption price. Thus, the entire consideration becomes common stock (like an all-stock bid) upon conversion, and the entire consideration is in the form of debt (like an

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[1] Our framework of double-sided asymmetric information is similar to Hansen (1987). Hansen (1987) studies the choice between cash and stock as the method of payment. In our paper, we introduce convertible securities as another method of payment.

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all-cash bid financed with debt) if the convertible is never called and converted.

We argue that the debt component and the equity component of a convertible security can help a higher-value bidder to reduce the cost of both the bidder information asymmetry and the target information asymmetry. The debt component of a convertible security enables the higher-value bidder to separate itself from the lower-value bidder, thereby signaling its true value to the target. A lower-value bidder will not mimic the higher-value bidder by offering the same convertible security because its convertibles are less likely to be converted into equity and more likely to remain as straight debt in the future. If a lower-value bidder offers convertibles, it could incur a bankruptcy cost from being unable to service the debt component of the convertibles. As a result, the debt component of a convertible security enables the higher-value bidder to resolve the bidder information asymmetry by avoiding the mimicry from the lower-value bidder. This signaling rationale for the debt component of a convertible security is similar to that in Stein (1992). On the other hand, the common equity component of a convertible security enables a higher-value bidder to share the cost of overpayment with the target's shareholders, when its convertibles are converted in the future. Note that in order for the convertibles to be converted to equity, the share price of the combined firm (of the bidder and the target) needs to be high in the future. This is not a problem for the higher-value bidder, since its intrinsic value is high. Thus, a convertible security, upon conversion to equity, helps the higher-value bidder mitigate the target information asymmetry by providing the bidder protection against the risk of overpaying for the target.

In sum, the debt component and the equity component of convertible securities together enable a higher-value bidder to mitigate the asymmetric information existing on both the bidder side and the target side, thereby reducing the mispricing of its takeover payment. This advantage of convertible securities over cash and stock implies that convertible securities should be preferred as the medium of exchange over all cash and all stock when the bidder and the target both have large information asymmetries regarding their values.

Our empirical results support the double-sided asymmetric information rationale for the use of convertible securities in merger transactions. First, we show that a corporate change-of-control transaction is more likely to involve convertible securities, rather than all cash or all common stock, as the medium of exchange when both the bidder and the target have large information asymmetries concerning their values. Second, we interact the degree of asymmetric information about the bidder's value with that about the target's value, and study how this interaction affects the likelihood of a convertible deal. We show that a bidder is more likely to offer convertible securities to deal with a large target information asymmetry only when the bidder recognizes that there is also a large bidder information asymmetry. Similarly, we also show that a bidder is more likely to offer convertibles to mitigate the effect of the bidder information asymmetry only when there is a large target information asymmetry. Third, we study merger announcement effects. We find that the bidder's abnormal equity returns are positive around takeover announcements. This finding supports our asymmetric information argument that convertibles in a takeover deal signal the higher-value bidder's firm type to the equity market. The target's abnormal equity returns are positive around takeover announcements as well, suggesting that the higher-value bidder on average still overpays for the target in convertible deals even though convertibles help reduce the overpayment cost. Finally, we also compare the bidder's and the target's announcement effects in convertible deals with those in cash and stock deals, though these comparisons are not part of the direct tests of our asymmetric information theory. We show that the bidder's abnormal equity returns around takeover announcements are the highest when convertible securities are the medium of exchange and are lowest when common stock is offered, with cash representing the in-between case. We also show that the target's abnormal equity returns around takeover announcements are lower when convertibles are the medium of exchange than when cash or common stock is offered.

Our paper contributes to the literature on the medium of exchange in merger transactions. In addition to the theoretical research discussed earlier, there is also a large body of empirical research on the choice between cash and common stock (see., e.g., Travlos, 1987; Berkovitch and Narayanan, 1989; Martin, 1996; Brown and Ryngaert, 1991; Ghosh and Ruland, 1998). However, the use of convertibles has not yet been analyzed either theoretically or empirically, even though convertible securities are frequently used as the medium of exchange.[2,3]

Our paper also contributes to the corporate finance literature concerning the rationale for issuing convertible securities. Constantinides and Grundy (1989) and Stein (1992) suggest that convertible bonds can signal information about a firm's value (see also Brennan and Kraus, 1987). Green (1984) and Mayers (1998) suggest that firms could issue convertible securities to reduce borrowers' agency costs or to gain tax shields that common stock issuance would not provide. Our paper provides another novel rationale for the issuance of convertible securities.

The paper is organized as follows. Section 2 introduces convertible securities into the double-sided asymmetric information framework. Section 3 develops our hypotheses. Section 4 describes our sample and specifies the variables we use in our empirical tests. Section 5 empirically investigates the relative likelihood of convertible deals versus cash and stock deals to pay for a merger. Section 6 studies the abnormal equity returns to the bidder and to the target around the takeover announcement for cash, stock, and convertible deals. Section 7 concludes.

2. Theoretical background

In this section, we discuss intuitively the rationale underlying the use of convertibles in takeovers, based on the double-sided asymmetric information setting in Hansen (1987). Consider a prospective merger where the bidder offers a payment package to acquire a target. The target's intrinsic value could be relatively high (as compared to other firms in the same industry) or relatively low. The target has private information about its own value, which the bidder can not fully discover through due diligence. Similarly, the bidder's intrinsic value could be relatively high or relatively low. The bidder also has private information about its own value, as well as about the synergy that can result from combining the two firms, but the target cannot find out all this information through its due diligence. We characterize this setting as a setting of double-sided asymmetric information: the bidder and the target each have incomplete information about the other's intrinsic value. We define the level of information asymmetry by the difference between the high and low values of possible firm types. Information asymmetry is large if this difference is large.

In this setting, due to the bidder information asymmetry, a bidder with a lower intrinsic value has an incentive to mimic a bidder with a higher intrinsic value by offering the same security

[2] Two recent papers examine the use of contingent claims. Kohers and Ang (2000) study the use of earnout payments, which are call options, and Chatterjee and Yan (2008) study the use of contingent value rights, which are put options.

[3] Our paper is also related to the general literature on M&As. See, e.g., Francis et al. (2008), Martynova and Renneboog (2008), Yan et al. (2010), Yan (2006) and Yawson and Owen (2010).

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