Asymmetric Information And Acquisition Of Closely Held Firms

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ABSTRACT

This paper analyzes the problem of asymmetric information in the process of acquisition of closely held firms. It shows that the changes in the acquirer stock price during the takeover negotiation allow the acquire firm to receive additional information about the target. The paper predicts that the asymmetric information problem is less severe when the major shareholder of the target firm is wealthier, the ownership of the target firm is less concentrated, or both.

INTRODUCTION

One of the most important issues that affect merger and acquisition decisions is the problem of asymmetric information. When the value of target firm, the value of acquirer, or the potential synergy generated by acquisition can be observed by one party only, the acquirer has to pay a substantial premium to the shareholders of the target firm to persuade them to accept the offer. Thus, the potential acquirer may decide not to make any tender offers even if the potential acquisition can be mutually beneficial.

Grossman and Hart (1980) and Shleifer and Vishny (1986) consider the free riding problem among the shareholders of the target firm. In particular, when only the acquirer knows the potential value of the synergy generated by the acquisition, shareholders of the target firm will never accept an offer that is only slightly higher than the target's "stand alone" value. This response is so because in a successful acquisition, each individual shareholder of the target firm will receive higher payoff if he will keep his shares. Thus, the acquirer that can generate only a small synergy will never succeed in its takeover attempt.

As a solution to this free riding problem, many articles (e.g., Hansen, 1987; Berkovich and Narayanan, 1990; Eckbo, Giammarino and Heinkel, 1990) consider the role of the medium of exchange. In particular, when the value of the synergy is known only to the acquirer, the acquirer that can generate low synergy can distinguish itself from the acquirer that can generate high synergy by offering its own equity as a method of payment. Indeed, when shareholders of the target firm are paid in shares of the acquirer, their realized payoff increases with the level of synergy generated by acquisition. However, as Eckbo, Giammarino and Heinkel (1990) noticed, the equity offers are not very useful when there is also asymmetric information about the value of the target firms. Indeed, when the acquirer does not know the true value of the target firm, it hesitates to make equity offers because it rationally predicts that only low-valued targets will accept them. When target firms have more information about the potential synergy than the acquirer (as in Hansen, 1987), the acquirer needs to take into account the adverse selection problem among the target firms when deciding between cash and equity offers.

Following Hansen (1987), in this paper I assume that the synergy depends on the value of the target firm, and the value of the target firm is known only to the target itself. I consider only cash offers; however, I allow the potential acquirer to change its target during the process of acquisition. Such change may be beneficial for the acquirer if it receives additional information about the target during the negotiation process. In particular, I look at the acquirer stock price as a source of this information. I argue that when the owner of the target firm thinks that his firm is a chosen target, he can explore his private information about his firm by trading the acquirer's shares on the market. Thus, such informed trader can reveal his private information to the acquirer, who in turn may decide to chose another target if the revealed information is not satisfactory. Because mimicking the expected trading behavior of the owner or

the high-valued target may be expensive for the owner of the low-valued target, such informed trading may be helpful in resolving the asymmetric information problem and increase the social welfare.[1]

Asymmetric information about the target firm also affects the takeover process when several potential acquirers are biding for the same target[2]. Ignoring the free riding problem of Grossman and Hart (1980), such information asymmetry is similar to the information asymmetry in any English auction with private or affiliated values. The specifics of takeover auctions, however, make the analysis of optimal bidding behavior differ from the optimal bidding behavior in English auctions analyzed by Vickrey (1961). Fishman (1988), P'ng (1986), Hirshleifer and P'ng (1989), and Daniel and Hirshleifer (1998) note that potential acquirers need to spend some resources to investigate the value of the target firm. Thus, the first bidder may be wiling to place jump bid to signal his value and deter potential competition. This theory explains the average 20% first-bid premium in takeover auctions (Bradley, 1980). Dodonova and Khoroshilov (2006) continue to investigate jump bidding in takeover auctions. Contrary to the previous studies, they show that when the target firm actively participates in the auction process by negotiation with the winning bidder, signaling arguments cannot be used to explain jump bidding. Singh (1998), Burkart (1995) and Bullow, Huang and Klemperer (1999) argue that bidders in takeover auctions usually already own some shares of the target firm (i.e., have a toehold), and therefore bid more aggressively than bidders in standard English auctions. Dasgupta and Tsui (2004) noted that in if there is a cross-ownership among potential acquirers, the bidders shade their bids because low sale price, which leads to the higher winner's profit, is beneficial for all bidders.

The rest of this paper is organized as follows. In part 2, I develop a dynamic model of acquisitions with one acquirer and several potential target firms. I assume that the type of the target firm is not known to the acquirer before the acquisition. In part 3, I analyze how the owner of the target firm may use his private information to trade the acquirer's equity on the stock market and how such inside trading may help to solve the problem of the asymmetric information. In part 4, I conclude.

THE MODEL

Consider a potential acquire with stand-alone value of P_0 that plans to expand its operations to other markets or to consolidate its business by acquiring one of the possible target firms. There is infinite number of possible targets, each of which can be either "good" (G) or "bad" (B). Good target has a stand-alone value of V_G, and, if acquired, helps to generate a synergy of S_G. Bad target has a stand-alone value of V_B, and, if acquired, helps to generate a synergy of S_B, where $V_G > V_B$ and $S_G > S_B$. There are an equal number of bad and good targets, and the type of the target is known to the target itself only.

The sequence of events is as follows:

- At time t = 0, the acquirer chooses a target firm at random and agrees on the price.
- At time t = 1, the acquirer observes the effect that its choice had on its stock price and may change its potential target if desired.
- At time t = 2, the acquisition takes place.

I assume that the target firms accept the takeover offer as long as it is above its stand-alone value and that the acquirer is better off by acquiring a randomly chosen target than by acquiring a bad target. Because good targets do not accept any offer below V_G, the latter condition can be written as follows:

$$\frac{1}{2}(V_G + S_G) + \frac{1}{2}(V_B + S_B) - V_G > V_B + S_B - V_B, \quad (1)$$

[1] For other examples when informed trading increases social welfare, see Manne (1966), Carton and Fischel (1983), and Dye (1984).
[2] See Betton and Eckbo (2000) for a comprehensive empirical study of takeover auctions.

and can be rewritten as follows:

$$S_G - S_B > V_G - V_B. \tag{2}$$

ANALYSIS

When the owner of the target firm does not trade acquirer's equity, no information about the type of the target firm is revealed at t = 1. Thus, the acquirer does not change its target at t = 1, and the acquirer's expected benefit $\Pi_{no\,trade}$ and social welfare $W_{no\,trade}$ will be given by (3) and (4), respectively.

$$\Pi_{no\,trade} = \frac{1}{2}(V_G + S_G) + \frac{1}{2}(V_B + S_B) - V_G. \tag{3}$$

$$W_{no\,trade} = P_0 + \frac{1}{2}(V_G + S_G) + \frac{1}{2}(V_B + S_B). \tag{4}$$

Now, let's assume that the owner of the target firm can trade acquirer's equity. To simplify algebra, assume that the owner of the target firm owns α shares of its firm and has \$K to invest in the acquirer's shares if he wishes. Also assume that the order placed by the target firm's manager is observable to the acquirer and consider a pooling equilibrium (if one exists) when both good and bad target firm owners invest the same amount into the acquirer's equity. In this example, the acquirer does not receive any information at t = 1 and does not change its target. The price of the acquirer at time t = 1 is equal to its future expected value and is given by (5):

$$P_{1,\,pool} = \frac{1}{2}(P_0 + V_G + S_G) + \frac{1}{2}(P_0 + V_B + S_B) - V_G = P_0 + \frac{1}{2}(S_G + S_B) - \frac{1}{2}(V_G - V_B). \tag{5}$$

The acquirer's value at t = 2 depends on the type of the chosen target and is given by (6) and (7) when the target is good or bad, respectively:

$$P_{2,\,pool,\,good} = (P_0 + V_G + S_G) - V_G = P_0 + S_G. \tag{6}$$

$$P_{2,\,pool,\,bad} = (P_0 + V_B + S_B) - V_G = P_0 + S_B - (V_G - V_B). \tag{7}$$

Because $P_{2,\,pool,\,good} > P_{1,\,pool}$, the owner of the good target invests the entire \$K into the acquirer's equity. To mimic his behavior, the owner of the bad target also needs to invest \$K into the acquirer's equity, in which case his benefit at time t = 2 is equal to

$$\pi_{bad} = \alpha(V_G - V_B) - \frac{K}{P_{1,\,pool}}(P_{1,\,pool} - P_{2,\,pool,\,bad}), \tag{8}$$

where the first term in (8) is the profit that he makes by selling his firm, and the second term is the loss that he incurs from investing into the acquirer's shares to mimic the behavior of the owner of the good target. For the pooling equilibrium to exist, the expected profit of the owner of the bad target should be non-negative. Using (8), this condition can be written as follows:[3]

[3] Note that the right-hand side of equation (9) does not depend on α and K.

$$\frac{\alpha}{K} \geq \frac{P_{1,\,pool} - P_{2,\,pool,\,bad}}{P_{1,\,pool}\left(V_G - V_B\right)}. \tag{9}$$

If condition (9) is satisfied, the pooling equilibrium may exist, in which case the stock price at t = 1 does not provide any information to the acquirer firm. Thus, both the acquirer's expected benefit Π_{pool} and social welfare W_{pool} are the same as in the case with no trading, i.e.,

$$\Pi_{pool} = \Pi_{no\,trade}. \tag{10}$$

$$W_{pool} = W_{no\,trade}. \tag{11}$$

If, however, the owner of the target firm does not own a large portion of his company (α is low) or has a large amount of capital that he can invest into the acquirer's equity (K is large), then condition (9) will be violated, and no pooling equilibrium exists. When the pooling equilibrium does not exist, the acquirer may determine whether its potential target is good or bad and change the target at t = 1. In particular, in a separating equilibrium only the owner of the good target will demand acquirer's shares, which will worth

$$P_{1,\,sep,\,demand} = P_0 + V_G + S_G - V_G = P_0 + S_G, \tag{12}$$

if there is a demand for them from the target's owner (which will imply that the target is good), or

$$P_{1,\,sep,\,no\,demand} = P_{1,\,pool}, \tag{13}$$

if there is no demand for them from the target's owner (which will imply that the target is bad). The latter is true because, after observing no demand for its shares in separating equilibrium, the acquirer changes its target, and the new target is either good or bad with equal probabilities. Therefore, in separating equilibrium, the acquirer is able to change the bad target at t = 1. Because the new target can be either good or bad with equal probabilities, there is 75% chance that the acquired firm will be good and only 25% chance that it will be bad. Thus, the acquirer's expected benefit Π_{separ} and social welfare W_{separ} are given by (14) and (15):

$$\Pi_{separ} = \frac{1}{2} S_G + \frac{1}{2}\Pi_{no\,trade} > \Pi_{no\,trade}. \tag{14}$$

$$W_{separ} = \frac{1}{2}\left(P_0 + V_G + S_G\right) + \frac{1}{2} W_{no\,trade} > W_{no\,trade}. \tag{15}$$

The discussion above can be summarized in the following theorem.

Theorem

When the ownership concentration of the target firm is small or when the main shareholder of the target firm has little available resources to trade on the market, the asymmetric information problem regarding the type of the target firm can be partially resolved and a higher acquirer's profit and social welfare can be achieved.

One of the implications that can be drawn from Theorem 1 deals with the way a potential acquirer chooses its target. In particular, Theorem 1 predicts that when a potential acquirer search for a target firm (e.g., to expand his

operations to new markets or to add a distribution chain to its production facilities), it is better to chose a target with diverse ownership, with an owner who has large amount of liquid resources to invest, or both. Furthermore, because $P_{1,\,sep,\,demand} > P_{1,\,sep,\,no\,demand} > P_0$, one can expect the positive correlation between the change in the acquirer's share prices during the takeover negotiation and the probability that the takeover attempt will succeed.

CONCLUSION

This paper presents a model of a takeover process of closely held firms under asymmetric information. It shows that the problem of asymmetric information about the type of the potential target can be partially resolved when there is low degree of concentration of the ownership of the target firm, when the owner of the target firm has substantial amount to resources to affect the stock price of the potential acquirer, or both.

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