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Running the numbers

The critical factors necessary to develop relatively reliable measures of premiums

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Merger-related litigation often centers on the value being offered to the target company's shareholders. Frequently, there is some sort of disagreement about the premium, which is a measure of how much is being offered to target stockholders over and above the target company's preoffer stock price.

A premium may be considered a crude measure of the "richness" of the offer being made. It also reflects any additional value the acquiring firm expects to realize by taking control of the target firm's assets—for example, the synergies it may gain in operations or sales.

From 2000-2010, the median one-day premiums (percentage difference between the successful offer price and the stock price of the target one day before a public offer was made for that target) of relatively large, completed cash deals (exceeding $250 million in value) involving nondistressed, publicly traded U.S. targets has varied between just over 20% and more than 35%.

The proponents of a merger are likely to argue that the value being offered is fair and that the premium built into the offer price compares favorably to industry or market benchmarks. Those opposing the merger, however, will attempt to demonstrate that the premium is too low.

Most economists would agree there is no one right way to compute premiums; however, those undertaking such efforts need to take a few critical factors into account in order to develop relatively reliable measures of premiums. One such factor is run-ups in the target's stock price prior to the public announcement of an offer. Those run-ups represent the extent to which a target's stock price increased in anticipation of a merger or acquisition announcement.

For example, the stock prices of Applied Signal Technology Inc. and **ZymoGenetics Inc.** increased by more than 25% during the two months leading up to the announcement that these firms were being targeted for acquisition. These price increases were significantly higher than marketwide or industrywide stock returns during the same period.

That being the case, it should come as no surprise that median two-month premiums (the percentage difference between the successful offer price and the price of a target's stock two months prior to a disclosure of a takeover bid for the target) are considerably higher on large, completed cash deals involving publicly traded U.S. targets from 2000-2010. For example, in 2003, the two-month premium is close to 40%, compared with the one-day premium of around 20%. Thus to ignore run-ups is likely, at least on an absolute basis, to bias premium estimates downward.

Failure to consider run-ups while benchmarking premiums may also lead to unreliable results in assessing premium value. An increase in the target firm's stock price in anticipation of a merger is likely to vary across firms. This is, in part, because the selling process varies across targets. For example, while Applied Signal's stock price increased by 46% during the two-month period prior to the announcement of the acquisition by **Raytheon Co.**, the stock price of Martek Biosciences Corp. increased by only 1% over the same period preceding the announcement of its acquisition by **Royal DSM NV**. Several studies of merger-related premiums suggest using premiums that are based on a target's stock price two months prior to the announcement of a merger.

A review of premiums following a steep decline in stock markets shows that, on average, targets demanded higher premiums. In 2009 and 2010 (the years following the 2008 market crash), premiums were much higher than those in 2007. The rise in premiums during and following market corrections suggests that, at least for firms that are not distressed, the target companies' boards negotiate relatively higher premiums during such periods to adjust for lower market valuations.

Another factor we should consider in calculating premiums is stock price declines. Here, we may want to adjust premium calculations to account for any temporary price declines in a target's stock price, especially decreases that may have happened close to the announcement of the proposed transaction. Given the widely accepted assumption that U.S. stock markets are efficient (that is, all public information is reflected in the stock price of a security), it is likely to be relatively difficult to categorize any decline in the value of a stock as either temporary or permanent.

Again, the impact of temporary price declines prior to the announcement of a merger on premiums can be reduced by computing premiums based on a target's stock price that is unaffect-

ed by the temporary price decline in question—such as the stock price one or two months prior to the announcement.

Furthermore, the sharp increase in premiums since 2008, in comparison to those in 2005 through 2007, indicates that it may not be appropriate to compare the premiums of deals in 2011 to those of deals in years prior to 2008. Comparing the premium of an offer made in 2011 to those associated with 2006 or 2007 deals is likely to bias results toward finding that the premium of the 2011 offer is relatively high.

The market's reaction to takeover announcements is another factor to consider, as it provides useful information regarding the premium being offered to a target. In particular, we can look at the arbitrage spread immediately following a merger announcement to discern the market's assessment of the premium being offered.

The arbitrage spread is the percentage difference between the offer price and target's stock price on a given day following the announcement of a merger. In general, the arbitrage spread of successful, uncontested deals follows a typical pattern: In recent years the arbitrage spread has been around 2% to 3% a few days after a merger is announced and slowly declines toward zero as uncertainty regarding the closure of the deal is resolved. Conversely, deals where the market expects the offer price to increase have, in general, negative arbitrage spreads, indicating that the target's price is higher than the offer price.

The premium being offered to target shareholders is likely to be driven by the acquirer's expectations about how much additional value it can extract from the target's assets. Thus, to an extent the premium being offered or demanded may be driven by circumstances that are relatively particular to the transaction at issue. Analyzing the market's reaction to the premium would reduce the need to control for such acquisition-specific factors.

For example, the one-day premium for **General Motors Co.**'s offer to AmeriCredit Corp. on July 22 was 24%. Simply comparing 24% to the median one-day premium of deals in 2009 (32%) and 2010 (38%) would suggest that the offer was not relatively rich. However, the arbitrage spread related to the offer was under 3%, indicating that the market consensus right after the announcement of the deal was that General Motors' offer would be accepted by AmeriCredit's stockholders. And, indeed, as expected, General Motors completed the acquisition of AmeriCredit on Oct. 1.

Similarly, there are instances where the premium being offered to the target shareholders is considerably above the median premium of deals in the same year, but a review of the market reaction indicates that the market expected the offer price to be increased.

For example, the one-day premium for **Astellas Pharma Inc.**'s $52 per share offer on March 1, 2010, for OSI Pharmaceuticals Inc. was 40%, which is higher than the median one-day premium of deals announced in 2009 and 2010. However, the arbitrage spread right after the announcement of Astellas Pharma's offer was -7%, indicating that the market expected the offer price to increase—which, in fact, did happen.

There are several ways to compute premiums. However, in order to draw robust conclusions regarding the absolute or relative "richness" of a deal, premium computations should always take into account both run-ups and temporary declines in stock price. Further, an analysis of arbitrage spreads can provide useful information regarding market consensus on the extent to which the premium offered in a particular deal is sufficient to complete the transaction successfully. ■

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