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Guest Article:

Hedging and the estimation of marketability discounts

By David Tabak*



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This article creates a link between risk hedging and discounts for lack of marketability. Owners of assets with restricted liquidity might be able to hedge this risk by either short selling the asset or using a cashless collar. Hedging the illiquidity risk potentially allows the owner to bear less than the full costs of illiquidity. Estimates of the discount for lack of marketability suffer from well-known upward biases as well as downward biases that are not generally discussed in valuation literature. Analysts must exercise caution in applying empirical estimates when trying to calculate the proper discount for lack of marketability. — AN

When estimating discounts for lack of marketability, many analysts do not consider the differences between various types of restrictions on marketability. Sometimes these restrictions can be difficult, if not impossible, to overcome, in which case the buyer or owner of the underlying business or stock must bear the full risk of the relatively illiquid investment. Other times, the owner can circumvent the restriction, in which case the discount for lack of marketability cannot be greater than the costs of neutralizing the restriction. Just as an analyst who does not understand the subject company may make inappropriate assumptions, an analyst who does not understand lack of marketability might miscalculate the

appropriate discount.

Monetizing an asset can be impossible or merely cumbersome

The first question to ask when determining the discount for lack of marketability is why the owner cannot convert the asset to cash. In some cases, such as a private company, no liquid market exists; instead, there are only a limited set of potential buyers for the company, each of whom would have to engage in due diligence before deciding whether to make an offer. In other cases, such as restricted stock, there is a liquid market for assets providing similar or identical cash flows, but the particular asset in question cannot be sold easily. In these lat-

ter cases the question about the degree of lack of marketability is most likely to be relevant.

The most obvious way to defeat a marketability restriction is to eliminate it directly, for example, by registering unregistered stock. But this can be a costly and time-consuming process. Instead, the owner of restricted stock may be able to effectively monetize the asset through another financial transaction.¹

Short sale or cashless collar may be used

The simplest of these possibilities is to sell an equivalent amount of the stock short. At one extreme, if the market for the underlying stock is liquid, the amount of stock is not large relative to the size of that market, and shares are available to borrow for short selling, then the costs of this transaction will be quite modest, essentially equaling the difference between the transaction costs of a short sale and those of a (long) sale of unrestricted stock.

There may be times, however, when a short sale is difficult or the owner is uncertain whether she can maintain the short position.² The owner may then consider more sophisticated means of effectively selling the stock. One of the most popular is a

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¹ The transactions discussed here are to eliminate the risk of owning the nonmarketable asset. They do not necessarily provide the full value of the asset in cash immediately. To the extent that the owner needs the value in cash, she would have to borrow the remaining funds, and the additional transaction costs of that borrowing would be a cost she incurred because her asset was not readily marketable. Because the transactions discussed eliminate any price risk from the restricted asset, in theory the owner of the asset should be able to borrow against its full, unrestricted value. In practice, however, there may be impediments to borrowing without having other collateral available.

² This may depend on the ability to use the restricted stock as collateral to avoid margin calls and on the likelihood that the borrowed shares will have to be returned, leading to the need to borrow other shares or even establish a new short position.

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zero-cost or cashless collar. With a zero-cost collar, the owner sells a call option and buys a put option on the underlying stock with maturities equal to the period over which the stock will be restricted. Hypothetically, the owner could set the strike prices of these options equal to the current market price, effectively insulating herself from any further price movements. In reality, the strike prices typically are set sufficiently far from the current market price so that the IRS does not consider this a constructive sale of the underlying stock, allowing the owner to limit her price exposure significantly but still not incur a capital gains tax if one would otherwise be imposed.

Valuation analysts need to know whether the owner can hedge

When valuing a nonmarketable security, valuation analysts need to know whether the owner can effectively sell the asset via a short sale or other financial transaction. In some cases, the owner will not be able to do so because of a formal restriction.³ Other times, the restriction on an effective sale might be less explicit, such as an officer or director who agrees to maintain an equity interest in her company to align her interests with those of shareholders; technically, she would still be holding the restricted stock after implementing a hedge, but, realistically, she might not be able to engage in a hedging transaction that violates the spirit of her agreement. Thus, the effectiveness of a restriction on marketability should be determined by investigating both the formal rules and the particular position of the owner.

Hedging has to be effective

Holders of a restricted security also may be able to partially hedge their positions through transactions that eliminate some but not all of the risk. One of the more common is an equity swap. Under this transaction, the cash flows of the restricted security are exchanged either for the cash

flows from an equivalent investment in a market index or for a share of the flows from a pool of investments (generally of other restricted stock) into which the investor contributes her asset. While not providing complete diversification, these strategies do convert the potentially volatile returns of the individual investment into those of a more stable group of stocks.⁴

Another strategy is simply to hedge the market or industry risk of an investment by either shorting an appropriate index or buying a put on that index. One benefit of these strategies is that they can almost always be done relatively inexpensively. If done properly, shorting an index can eliminate market or industry risks. However, the owner must be able to identify the proper hedging strategy. For example, if the restricted stock is to be hedged shortly around the time the company goes public, the owner may not know how many units of the index are needed to hedge one share of stock; if she misestimates, she could end up with more risk than she started with (e.g., if the stock were uncorrelated with the index or simply had a lower-than-expected beta so that the index tended to move more than the stock). While buying a put on an index would never expose the investor to more risk than the cost of the put, if the index ends up being only slightly correlated with the stock or if the beta is lower than expected, the overall effect of the attempted hedging transaction would be to increase the risks faced by the owner of the restricted stock. Even when the hedge looks good initially, changes in the relationship between the index and the hedged security over time might make this strategy worse than not hedging at all.

What does this mean for marketability discounts?

The discussion above on effective hedg-

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³ Sometimes a restriction against hedging may be part of the deal in which someone receives a nonmarketable security. Alternatively, there may be external constraints. For example, when pooling of interests accounting was allowed, key insiders and affiliates could not change their equity positions in the acquiring company during certain periods around a merger without disallowing pooling of interests accounting.

⁴ One should also be careful on the tax treatment of this and other derivative transactions. Depending on the exact structure of the transaction, there may be an immediate tax liability when the transaction is entered into, thereby raising the effective cost of hedging (and consequently increasing the costs of a lack of marketability).

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ing implies two things about discounts for lack of marketability. The more obvious is that not all marketability restrictions impose the full costs of nonmarketability on the owner. Let us take the NASD 5% Policy literally and assume that it costs the owner of a restricted stock 5% of the face value of the stock to buy a zero-cost collar. For simplicity, we will also assume that if the stock had no restrictions, she could sell the stock in the market with virtually zero transaction costs. Under these assumptions, the difference in value between the restricted stock and similar, unrestricted stock is the lesser of 5% and the costs of holding the illiquid asset. The discount for marketability would then be no more than 5%. If such a direct hedge is not possible, the analyst would

have to investigate whether a partial hedge is practical and likely to be effective.

Hedging and the DLOM—an example

Consider the following example. Suppose that to compensate an investor for holding some restricted stock, she has to be offered the stock at a price 30% below market price. That is, the 43% gain (from 70% to the full market price) she earns from purchasing at a discount is just enough to compensate her for the risks she takes by not being able to sell the stock when she wants. Now suppose that it would cost her 5% of the undiscounted value of the stock to implement a hedge. If the hedge would completely eliminate all risk, then her options are to hold the restricted stock unhedged,

which has an implicit cost of 30%, or to pay 5% to implement the hedge. Clearly, she should purchase the hedge so that her true cost of holding the restricted stock is only 5%. Alternatively, suppose that the hedge only eliminates half of the risk she faces in holding the restricted stock. She now can either hold the stock unhedged, which again has an implicit cost of 30%, or pay 5% of the undiscounted price for a hedge and bear half the risk, which has an implicit cost of 15% to her, for a total cost of 20% of the undiscounted price. Now, the proper discount for lack of marketability is 20% of the undiscounted price, because that would represent the true cost to the investor of properly dealing with the risk she assumes in acquiring the restricted stock.

DICTIONARY OF REFERENCED TERMS

❖ Short sale

A sale in which an investor borrows shares from a broker and sells them. The investor will later purchase shares to replace (cover) the borrowed shares. She therefore earns a dollar for each dollar that the share price declines between the time of her sale and her later purchase.

❖ Derivative instrument

A contract whose value is based on the performance of an underlying financial asset, index, or other investment.

❖ Call option

A derivative product that gives an investor the right, but not the obligation, to buy stock either on or by a fixed date at a specified price known as the strike price. For example, a call option with a strike price of \$20 would let an investor buy a certain number of shares at \$20 per share.

❖ Put option

A derivative product that gives an investor the right, but not the obligation, to sell stock at a certain strike price either on or by a fixed date.

❖ Zero-cost or cashless collar

A derivative product that is the combination of selling (writing) a call option and using the proceeds to buy a put option on the same stock. A collar has zero cost if the proceeds of the call are just enough to purchase the put and pay for any brokerage fees to implement the transaction.

❖ Hedging transaction

The purchase or sale of securities or derivative products to reduce or eliminate the risk of another investment. A perfect hedge, such as a short sale of an equivalent amount of stock, eliminates all risk; a partial hedge is a transaction that reduces risk but does not completely eliminate it.

❖ Margin call

An SEC and brokerage firm requirement that an investor provide additional capital (margin) for a brokerage account that has lost sufficient value and could potentially end up with a negative balance.

❖ Equity swap

A transaction in which an investor trades the total returns (capital gains and dividend payments) of one stock for those of another or for those of a pool of other stocks.

❖ Shorting an index

A transaction in which an investor effectively sells an index (i.e., receives proceeds equal to the level of the index) and is required to close the position by later effectively buying the index (i.e., providing cash equal to the level of the index). The investor profits if the index falls during this time.

❖ NASD 5% Policy

Rule 2440 of the National Association of Securities Dealers requires brokers to charge customers fair markups or spreads. This rule is unofficially known as the 5% Policy because 5% is often used as the rule of thumb for a fair charge; it should be noted that 5% is a rough guide and not a rule or definitive measure of the fairness of a markup or spread.

Further implications of hedging

The second implication of hedging is that these transactions affect the data on marketability discounts. Suppose that someone performed a study on sales of restricted stock, and we continue the assumption that, when possible, owners of restricted stock can buy a zero-cost collar for about 5%, while it would cost them nothing to sell unrestricted stock. Using the numbers from our previous example, those investors who could not implement a hedge would require a 30% discount (as per our earlier assumption) before purchasing restricted stock. Those who could partially hedge would purchase only if they received a discount of at least 20%, while those who could create a perfect hedge would be willing to accept a discount as low as 5%. When we look at the results of the hypothetical study of discounts on placements of shares of restricted stock, we would find numbers like 5%, 20%, and 30% (and, of course, other figures for cases in which the costs of the risks, the cost of hedging, or the effectiveness of the hedge are different). The weighted average of the observed discounts in this example would have to be below 30% and therefore would understate the costs of actually bearing the risk of holding an unhedged illiquid asset.⁵ Because such a

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⁵ For a discussion of other reasons why the observed discounts may overstate the discount for lack of marketability, see Mukesh Bajaj, David J. Denis, Stephen P. Ferris, and Atulya Sarin, "Firm Value and Marketability Discounts," *Journal of Corporation Law*, Fall 2001.

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study is virtually impossible (without knowing whether the restricted stock holders in each transaction could have hedged and what they would have paid for the restricted stock had they been able to hedge), the amount of this upward bias in estimates of the discount for lack of marketability is indeterminate. Analysts should still be aware, however, that the average discounts observed in restricted stock studies contain various biases. Some, as discussed by Bajaj, et al., push the estimated discounts up, while others, like the one discussed above, push the estimated discounts down; the net effect is not clearly discernable.

This result is also consistent with data showing that the measured restricted stock discounts have been falling over time.⁶ While the changing SEC requirements are primarily responsible for the decline in measured discounts, the increased availability of financial hedging techniques may have contributed to this trend. That is, if the increase in option trading and the greater availability of custom-designed hedges made institutions or other investors more willing to accept smaller discounts on their acquisitions of restricted stock, we would see more of the smaller figures like 5% in the data, which would drive down the average measured discount. In applying the data to a particular investment, the analyst should know whether the investor can take advantage of these hedging possibilities.

Conclusion

When calculating a discount for lack of marketability, a valuation analyst needs to gather certain data. Some data, such as the nature of the illiquid asset and the likely period of illiquidity, relate to the costs of bearing the risk of holding an illiquid asset. Other data, however, are needed to know whether that cost must be borne or can be reduced or eliminated through some financial transaction. When such a transaction is possible and likely to be effective, the cost of the lack of marketability is the lesser of the transaction costs and the costs of bearing the risk of holding the asset. In measuring those holding risks, the analyst should also be aware that data on the size of reported discounts for certain transac-

tions may contain biases that push the measured values to both underestimate and overestimate that cost.

***Editor's note:** Dr. Tabak published a paper entitled "A CAPM-Based Approach to Calculating Illiquidity Discounts" which can be downloaded for free from www.nera.com. The paper presents a quantitative approach to determine marketability discounts for illiquid business interests.*

SP Comment:** This article specifically addresses ways of dealing with marketability restrictions of restricted, yet still public stock. The discounts for private interests should always enjoy a higher marketability discount than reflected by the restricted stock studies because there is no established market for privately held business interests. **BVU

⁶ Shannon P. Pratt, See, for example, "Empirical evidence shows holding period major determinant of marketability discount," *Shannon Pratt's Business Valuation Update*® (April 2003): 1-3.

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