Why Finnerty's Put Option Model is the DLOM Model of Choice

ROBERT E. DUFFY,
CPA/ABV, CFA, ASA

GRANT THORNTON LLP
Seattle, WA
robert.duffy@us.gt.com

Why is John Finnerty's put option model the discount for lack of marketability (DLOM) model of choice for many Big 4 practitioners? Is it because:

- Groupthink is alive and well;
- Finnerty uses an Asian option and people dig Asian options;
- Who cares about the Big 4, it's what that 5th firm does that counts; or
- Finnerty's model is often thought of as the "Goldilocks Solution"?

Before we can select the correct answer, we should quickly revisit the other DLOM put option models.

CHAFFE MODEL

David B. H. Chaffe III may have been the first one to publish a paper on using put option models as a proxy for DLOM. In his December 1993 article,[1] Chaffe posited that purchasing a European option on a restricted stock (i.e., one that is exercisable only at the end of the option period) would reasonably replicate the lapsing of Rule 144 restrictions. Therefore, his model assumes marketability is attained only at the end of the presumed holding period. Since an option that can be exercised only at the end of the holding period (versus one that can be exercised at any time during the period) is a less valuable option, the implied DLOM, as Chaffe put it, "Will therefore err to the less discount or the minimum applicable discount."

Chaffe's end-of-period assumption also highlights one of the main arguments against protective puts being a reasonable proxy for DLOM – that buying a put truncates downside risk and leaves an unrestricted upside. Subsequent articles have suggested that, to adjust for this, the discount implied by the put should be offset by the value of a "sold" call with the same terms as the put.

LONGSTAFF MODEL

Two years after Chaffe, Frances Longstaff published his 1995 article[2] on using option theory to estimate DLOMs. Longstaff took his model to the other extreme from Chaffe. Rather than using an end-of-period European option, Longstaff used what is referred to as a look-back option. His model presumed perfect market timing and perfect hindsight. Therefore, the holder of the option was presumed to have exercised it at the optimum point during the restriction/holding period. An option that allows its holder to look back over the restriction period and exercise the option at the optimum time is a very valuable option to own. Accordingly, Longstaff concluded that his put option model results in an estimate of the "upper bound" of the potential DLOM.

So, we have Chaffe promoting a DLOM model based on a European put option that results in what he believed was a minimum applicable DLOM. As mentioned, this might be further reduced by assuming the sale of a call. Then, we have Longstaff at the other end of the spectrum with a put option model that results in the "upper bound" of a reasonable DLOM. It seems like one bowl of porridge is too hot and one is too cold.

FINNERTY MODEL

In 2003, John D. Finnerty wrote a paper[3] on using an arithmetic average strike, Asian Put option as a means to estimate DLOM. His model presumes that the holder of the stock has no special timing ability (i.e., no ability to "look back") and is equally likely to sell the stock at anytime during the restriction/holding period. The exercise price of the option is equal to the arithmetic average stock price over the option term. The assumption of no special timing ability coupled with averaging the strike price results in DLOMs that fall in what many consider a reasonable range. The porridge may not be "just right" but it is a more comfortable temperature than the other choices, especially when the pre-IPO and restricted stock studies are considered. The feeling of comfort with Finnerty's arithmatic average strike model is also due to the fact that the payoffs from this type of put tend to correspond to the risks and opportunities faced during the holding period. Finnerty also tested his model against approximately 80 restricted stock transactions. This test demonstrated that, for relatively short holding periods and non-extreme volatilities, his model had reasonably predictive powers.

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expert TIP

While Finnerty's model may provide a more reasonable DLOM estimate than the other option models, it still suffers from the criticisms associated with all option models. Despite these criticisms, Finnerty's (and the other) option models are still one of the few available techniques to actually quantify a lack of marketability discount.

The profession has been using Finnertry's DLOM model for years, and it was not until 2009 that Stillian Ghaidarov (then at Grant Thornton) noticed there were at least two errors in Finnerty's model. Finnerty agreed that there was one error and published an updated model in 2009 at the Boston ASA conference. If you use Finnerty's model to bolster your DLOM analysis, make sure you are using the updated model.

We have now reviewed the three most popular DLOM option models. Based on the porridge analogy, you've probably guessed that the answer I am looking for is "D", the Goldilocks solution. Please remember, though, that while Finnerty's model may provide a more reasonable DLOM estimate than the other option models, it still suffers from the criticisms associated with all option models. These include:

- Put option models truncate downside risk but leave upside benefit unchanged. By purchasing a put option and holding the stock, you have changed the investment performance characteristics of what you own, not cured lack of marketability. Finnerty's model mitigates but does not eliminate this criticism.
- Options are short-term hedging instruments and are not meant to address long-term securities.
- For most subject securities, put options are not available; this approach to estimating DLOMs is theoretical and has a number of judgemental inputs.

Despite these criticisms, Finnerty's (and the other) option models are still one of the few available techniques to actually quantify a lack of marketability discount.

[1] Chaffe, David B. H. "Option Pricing as a Proxy for Discount for Lack of Marketability in Private Company Valuations," *Business Valuation Review,* December 1993.

[2] Longstaff, Francis A. "How Much Can Marketability Affect Security Values?" *The Journal of Finance,* Volume L, No. 5. December 1995.

[3] Finnerty, John D. "The Impact of Transfer Restrictions on Stock Prices," Unpublished working paper: Fordham University, 2003. Published: Financial Management Association International, 2008 FMA European Conference (revised November 2007 and corrected October 2009).