Estimating Discount for Lack of Liquidity Using the Constant Spread Approach

A Short Actuarial Valuation

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Liquidity as a Valuation Discount

How much should the value of an asset be reduced when an investor must cross a bid–ask spread to sell it? The constant spread approach treats this one-sided trading cost as a direct measure of lack of liquidity.

Let the quoted bid and ask prices be P_b and P_a. Their midpoint is

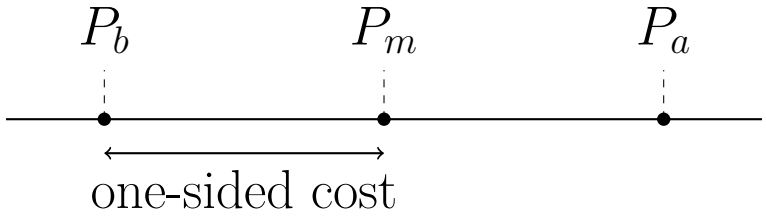
$$P_m = \frac{P_a + P_b}{2},$$

and the relative bid–ask spread is

$$Spread = \frac{P_a - P_b}{P_m}.$$

If the midpoint represents the liquid reference value, selling at the bid reduces value by one-half of the quoted round-trip spread. The discount for lack of liquidity (DLOL) is therefore

$$\boxed{DLOL_{\text{Constant}} = 0.5 \times Spread.}$$



The approach isolates the quoted-spread component of liquidity risk. It does not require a return distribution, a confidence level or a holding-period loss model. The constant-spread liquidity-cost framework follows Dowd (2005) [1], while its expression as a DLOL follows the valuation framing in Polanitzer (2026) [2].

Approach Assumptions

The illustration adopts six assumptions:

1. The asset has observable bid and ask prices around a reference midpoint.
2. The quoted bid–ask spread is constant over the transaction being valued.
3. The midpoint is the liquid reference value before the liquidity adjustment.
4. The investor is assumed to sell the asset; the adjustment is not a full round trip.
5. The position is small enough that the sale does not itself widen the spread or move the market price.
6. No separate adjustment is made for market depth, execution delay, commissions, taxes or other transaction costs.

The fifth assumption makes the approach effectively exogenous: the quoted spread is taken as given rather than being a function of the investor's own trade size.

The method therefore measures a specific component of lack of liquidity. A wider quoted spread implies a larger DLOL, while a narrower spread implies a smaller DLOL. The approach is most transparent when the asset can be described by a stable bid, ask and midpoint.

The Constant Spread Formula

For a position with liquid reference value V, the one-sided liquidity cost is

$$LC = 0.5 \times V \times Spread.$$

Expressing that cost as a percentage of the liquid reference value gives

$$DLOL_{\text{Constant}} = \frac{LC}{V} = 0.5 \times Spread.$$

The spread itself is measured relative to the bid–ask midpoint:

$$Spread = \frac{P_a - P_b}{(P_a + P_b)/2}.$$

Definitions

P_a is the quoted ask price and P_b is the quoted bid price. Their average, $P_m = (P_a + P_b)/2$, is the midpoint.

V is the asset or position value measured at the midpoint. LC is the dollar liquidity cost of selling the position at the bid rather than at the midpoint.

$DLOL_{\text{Constant}}$ is the percentage discount for lack of liquidity implied by the constant spread approach. The spread and DLOL are entered as decimals in calculations and may be reported as percentages.

Numerical Illustration

Consider the ABC stock example supplied with the constant spread approach. The current stock price is \$100 and the quoted bid–ask spread is 1%.

Taking \$100 as the midpoint, a symmetric 1% spread is consistent with

$$P_b = \$99.50, \qquad P_m = \$100.00, \qquad P_a = \$100.50.$$

The one-sided liquidity cost on a \$100 position is

$$LC = 0.5 \times 100 \times 0.01 = \$0.50.$$

Therefore,

$$DLOL_{\text{Constant}} = \frac{0.50}{100} = 0.005 = 0.5\%.$$

Equivalently, the same result follows directly from

$$\boxed{DLOL_{\text{Constant}} = 0.5 \times 1\% = 0.5\%.}$$

The liquidity-adjusted value implied by this one-sided spread cost is \$99.50 for a position whose liquid reference value is \$100.00.

Interpreting the DLOL

The estimated DLOL for ABC is 0.5%. This result has a direct market interpretation: a holder valuing the stock at the $100 midpoint would receive $99.50 by selling immediately at the bid.

$$\frac{100.00 - 99.50}{100.00} = 0.5\%.$$

The full quoted spread is 1%, but the valuation adjustment uses only one-half because the investor is assumed to exit an existing position. A full bid-to-ask round trip would involve the entire spread; a one-sided sale does not. [1]

Thus, under the stated assumptions,

$$\text{wider spread} \quad \Longrightarrow \quad \text{higher DLOL}.$$

The relationship is linear. Doubling the spread doubles the estimated DLOL; halving the spread halves it.

The 0.5% result should be interpreted as the quoted-spread component of lack of liquidity, not as a universal discount for every liquidity constraint affecting the asset.

Python Implementation

The following implementation computes the midpoint, relative bid–ask spread, dollar liquidity cost and DLOL. Prices must be positive and the ask must exceed the bid.

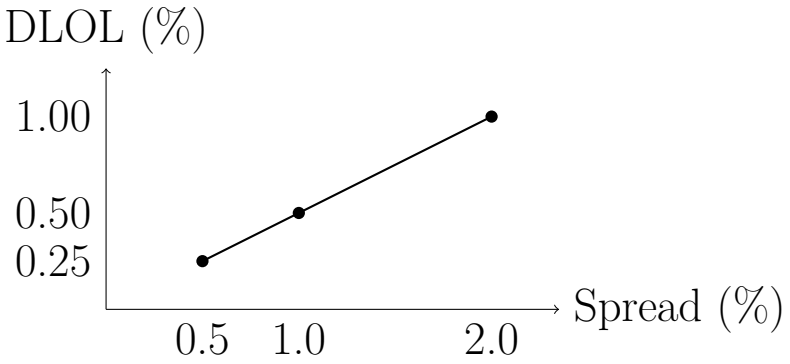
```
def DLOLConstant(bid, ask, value=None):
    if bid <= 0 or ask <= bid:
        raise ValueError("Require 0 < bid < ask")

    midpoint = 0.5 * (ask + bid)
    spread = (ask - bid) / midpoint
    dlol = 0.5 * spread

    if value is None:
        value = midpoint
    liquidity_cost = value * dlol

    return midpoint, spread, liquidity_cost, dlol

mid, spread, lc, dlol = DLOLConstant(
    99.50, 100.50, 100.00)

print(f"Midpoint: mid:.2f")
print(f"Spread: 100*spread:.3f%")
print(f"Liquidity cost: lc:.2f")
print(f"DLOL: 100*dlol:.3f%")
```

The output is a midpoint of 100.00, a spread of 1.000%, a liquidity cost of 0.50, and a DLOL of 0.500%. The code contains no return-volatility or confidence-level inputs because this valuation isolates only the constant-spread liquidity component.

Sensitivity and Limitations

With all other assumptions fixed, the DLOL moves one-for-two with the quoted spread:

Bid–ask spread	$DLOL_{\text{Constant}}$
0.5%	0.25%
1.0%	0.50%
2.0%	1.00%



The approach is deliberately simple. It assumes a constant, observable spread and no price impact from the investor's own trade. It does not capture stochastic spread widening, limited market depth, block-size effects, execution delay, trading halts or other liquidity restrictions.

For assets whose sale materially changes market conditions, a constant quoted spread may understate the economic cost of liquidation. The method is therefore best viewed as a transparent baseline DLOL based solely on the bid–ask spread.

References

[1] Dowd, K. (2005). *Measuring Market Risk*, 2nd ed., Chapter 14: "Estimating Liquidity Risks," pp. 309–320. John Wiley & Sons.

[2] Polanitzer, R. (2026). "It's Not a DLOM, It's a DLOL!" *The Valuator*, August 3, 2026. (In Hebrew).

Source and implementation note

This article uses Dowd's constant-spread liquidity-cost framework [1] only for the one-sided cost of crossing the bid–ask spread and expresses that cost as a DLOL in the valuation sense discussed by Polanitzer [2]. The broader risk-measurement framework is intentionally not carried into the DLOL calculation.

The numerical illustration retains Dowd's ABC example: a \$100 stock value and a 1% bid–ask spread. A symmetric quote around the \$100 midpoint gives a bid of \$99.50 and an ask of \$100.50, producing a one-sided liquidity cost of \$0.50 and a DLOL of 0.5%.

Computerized calculations retain full precision; displayed figures may show immaterial rounding differences.