

LEHMAN BROTHERS

Single Transaction Limit Framework

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Introduction

The Firm has developed a comprehensive regime of limits for risk and liquidity. Individual transactions need to be accommodated within:

- Business and divisional risk appetite limits
- Divisional Cash Capital and Balance sheet limits
- Divisional Less Liquid Asset limits

Even if a transaction can be accommodated within these limits there is an additional concern about very large exposures to individual issuers in a single transaction, which if things go wrong could result in large potential loss i.e. “tail events”.

That could result in:

- Large P&L loss
- Negative publicity
- Scrutiny from ratings agencies, investors, and creditors of the Firm.

We propose setting limits to mitigate these risks.

These limits are in line with the Firm’s risk tolerance, as described below. Transactions in excess of these limits will be viewed as exceptional, would require Executive Committee approval, and should be hedged down to these suggested levels.

Setting Single Transaction Limits

Setting limits for single transaction requires deciding

- Loss tolerance to a single transaction
- The confidence level (probability) to apply to that potential loss
- How to measure the potential loss

We propose the following:

- Set the single transaction potential quarterly loss threshold at \$250 million (revenue) – 10% of pre-tax revenue.
- Measure the potential loss at a 99.5 percent confidence level, which is consistent with Lehman's risk equity model and equates to a catastrophic loss.
- Establish, for each transaction type, the size of transaction that at 99.5 percent confidence level will not have a \$250 million or greater loss
- Establish, for each transaction type, the risk factor that corresponds to a quarterly loss at 99.5 percent confidence level
- Potential loss of a transaction with multi tranche and type would be calculated based on the risk factor table to determine whether the entire transaction would pass the \$250mm quarterly loss threshold
 - Fixed income transactions are segmented by the nature of the commitment and our ability to syndicate
 - Bought Deals (best effort bond underwriting would not be subject to this framework)
 - Credit Facilities (FRLs, recaps)
 - Acquisition Financing (M&A, LBOs)
 - They are further divided by:

- For Investment Grade companies: Rating and Duration of instrument
 - For Non- Investment Grade companies: Secured / Unsecured
 - We propose a further breakdown of Acquisition Financing deals based on expected time to close. Specifically, we differentiate risk associated with deals expected to close shorter than 2 months vs. longer than 2 months. Within each category, we consider three scenarios: with Business and Market MACs, with one MAC, No MAC.
- Equity block transactions are divided into common equity and convertible positions.
 - For common equity the loss estimate is based on the volatility of the stock and the estimated time required to liquidate the position, based upon historical volume
 - For convertibles the risk is decomposed into its equity and debt components using the methods described above (downgrade event risk for IG, and default event risk for non-IG)

Methodology

The framework methodology, which is consistent with the methodology adopted for the Firm's risk equity and risk appetite usage models, considers the major sources of risk that could impact any transaction.

Our starting point is we assume our exposure is the amount we expect to syndicate once getting paired up with co's. This is different from the potentially larger amount which we could commit to on a legal basis i.e., what we "paper." To the extent we have an M&A role, we assume the expected amounts; where we have no M&A role we start with the papered amount.

Many leveraged finance commitments have market MACs, Flex Pricing, and / or Flex Structuring; some have business MACs. These provisions mitigate our risk if we cannot syndicate our position down pre-closing.

- If the high yield transaction has both MACs and/or Flex provisions, we assume that Lehman would be able to use those protections to mitigate 50% of the total risk.

- As a result, the single transaction limits are doubled for transaction with both MACs and/or Flex provisions.
- In situations where only one MAC applies, transactions are deemed to have the benefit of 10% of risk mitigation with only a Market MAC and 30% risk reduction with a Business MAC which is viewed as the more material of the two. Therefore, limits are 11% and 42.8% higher respectively than limits for transactions without any MAC provision.
- For back-stop bank/loan deal, we should consider the back-stop as exposure and factor it in the loss calculation, as in the extreme market movement, the back-stop bank/loan would most likely get exercised
- For normal put bond, potential risk would be mitigated partially by the difference of put bond level and prevailing market rates. Only the excess loss beyond put bond level should be considered. For change of control bond that trades at a premium, only the excess loss beyond the change of control level should be considered.

While we have calculated the potential exposure at a high confidence level, worst case exposure could exceed our loss tolerance.

We propose a maximum cap of \$2.1 billion face amount for all transactions.

- This 15% cap limit, which is increasingly applied to investment banks by the rating agencies, is set at 15 percent of the Firm's tangible common equity plus preferred shares.
- In practice, this cap limit would apply to some investment grade exposures and equity block trades given their lower potential loss relative to leveraged finance transactions.

For off-market transactions (typically high grade CP backstops) limits will be reduced by the amount of the underpricing. (As an example, for a loan being marked initially at a dollar price of 95, the limit will be reduced by 5%)

For fixed income transactions we consider:

- Spread risk: the risk of spread widening
- Interest rate risk: the risk of change in the overall level, shape and slope of the curve

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- Specific risk: the risk that the transaction return will deviate from the average return of its rating and duration band
- Event risk: the risk of a ratings downgrade or default

For equity transactions we consider:

- Equity price risk: The risk that the market price of the underlying will fall as a block trade or syndicate position is unwound. It is driven by underlying stock, its liquidity, and our assumed distribution capability, which determines how fast a block trade or syndicate position is unwound.

Comments

1. Limits are derived based on a \$250mm quarterly loss at 99.5% C.L.
2. With Business and Market MACs - deals with both market and business MAC, and/or pricing flex
3. With Business MAC or Market MAC - deals with Business MAC or Market MAC, and/or pricing flex
4. Credit facility refers to most of FRL, refin, recap deals
5. Deals with expected closing in more than 2 months are usually deals that need lengthy regulatory, or share holder approval
6. In general, acquisition financing (AF) deals (new borrowers) demonstrate smaller default probability (1% per Lehman research) than that of credit facility (CF, mature borrowers), but longer lead time due to due diligence, regulatory approval etc. All these are accounted for in the proposal
7. Limits are floored at \$350mm for unsecured deals as loss given default is 250mm assuming 29% recovery. Same is true for secured deals with 65% recovery assumption. Recovery assumptions are based Moody's 2004 default and recovery study
8. Special cases can be requested for approval of deal sizes greater than listed when recovery rates are significantly higher than assumed base case. For sectors with higher recovery on average, e.g. utility sector, the limits could be bumped up by 15% for secured and 30% for unsecured on a case by case basis.
9. Due to the nature of Acquisition Financing the time from commitment through closing is typically 3 times longer than for Credit Facilities. Thus we differentiate the risk profile to reflect this timing difference.
Acquisition Financing (AF) limits = Credit Facility (CF) limits /sqrt(3) with lower default prob.
Bought deal limits = 2* limits for Credit facility (CF)
10. AF with expected closing less than 2 months = AF with expected closing more than 2 months x sqrt(2)
11. Limits with both MACs and/or flex = no MAC *2
12. Limits with Business MAC and/or flex = no MAC /0.7. With market MAC and/or flex = no MAC /0.9.
13. The limits derived from above are capped by 15% of tangible common equity plus pref shares as caps for unsec and sec. This comes out to be \$2.1Bn.

Equity

	Days to place				
Volatility	5 Days	10 Days	20 Days	40 Days	80 Days
25%	2,000	2,000	1,700	1,300	900
50%	1,500	1,200	900	700	500
75%	1,000	800	600	500	400

Convertibles

	Maturity		
Rating / Maturity	0-2 Years	2-5 Years	5+ Years
Aa+	2000	1500	1000
A	1500	1000	750
Baa	1200	1000	600
Ba		750	
B		600	
Caa		400	

Liquidation Assumptions:

Confidence level: 99.5%

Share prices decline as follows: $\exp(-2.576 * SD * \text{sqrt}(\text{time}))$

<= 10 days to place: sell 10% of average daily volume per day

> 10 days to place: sell 5% of average daily volume per day