

Overcoming Challenges in Counterparty Risk Management Introducing the Capture-Analyze-Manage Framework

ABSTRACT

We introduce a capture-analyze-manage framework to counterparty risk management. The constant risk aversion principle and a credit risk scoring system may help organizations establish a target risk level and proactively manage their positions as conditions change.

INTRODUCTION

Although it's been five years since the Lehman Brothers' bankruptcy, many corporate treasurers continue to feel uneasy about their exposure to financial counterparties which has become more complicated and weakened by the financial crisis of 2008 and government interventions thereafter. The crisis also resulted in fewer worthy counterparties and higher exposures for corporations. Adding to these difficulties is the age-old question of how to quantify, aggregate, analyze and proactively manage counterparty risk across an entire organization.

In this paper, we introduce a capture-analyze-manage framework of counterparty risk management to help corporations gain more insight on this topic and manage through volatile counterparty characteristics. We hope this framework, when combined with a credit scoring system, will simplify and standardize the risk management process to better effect.

Much of the material in the paper has been covered in our previous research papers.¹ We refer our readers to these publications for more in-depth discussions. We believe the process discussed here will be especially helpful for treasury organizations with limited resources or capital markets expertise in a complex and interconnected world of finance.

COUNTERPARTY RISK AND ITS EVOLUTION

What is Counterparty Risk?

Counterparty risk refers to the risk that a party in a contract may not fulfill its contractual obligations. In essence, counterparty risk is a form of credit risk.

Corporate treasury organizations face significant counterparty challenges. In the last two decades, businesses have become more global and multifaceted, resulting in various trade finance agreements, support agreements and hedging activities with multiple financial intermediaries. Corporate treasury departments may feel particularly challenged to identify, track, manage and mitigate risk with complex financial

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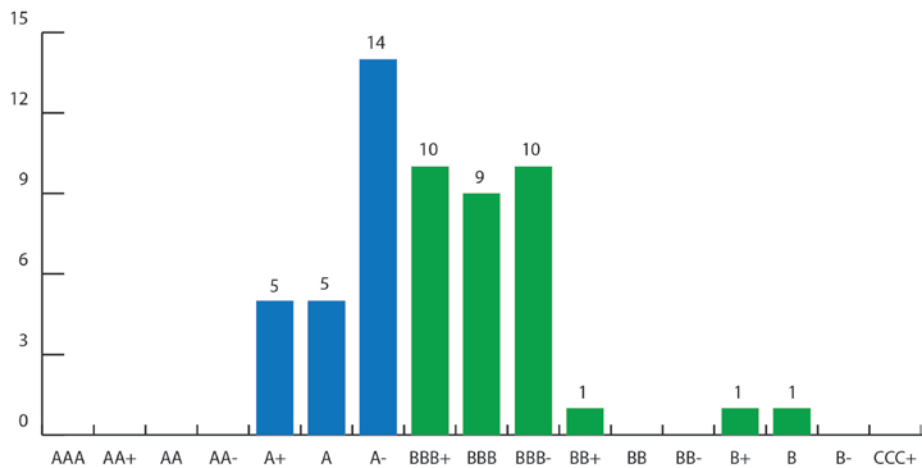
institutions due to a lack of expertise or resources as compared to their financial counterparts.

Credit Evolution of Banks

As many treasury practitioners are aware, underlying credit strength at large financial institutions has deteriorated dramatically in recent years; largely due to poor loan quality, capital markets volatility and lax risk management practices. In February 2012, Moody’s put 120 financial firms worldwide on review for downgrade, noting that the average ratings at the 17 global banks with significant capital markets operations were moving to “the Baa range.”² The rating agency subsequently took action and lowered the ratings of these 17 banks. Similarly, Figure 1 shows the majority of the 56 banks rated by Standard & Poor’s are concentrated between A- and BBB-. Today, the median credit ratings for the largest banks in the U.S. are in the BBB ratings category.

Rating challenges are not unique to U.S. banks and, as many practitioners are keenly aware, financial situations at Eurozone banks are perhaps more challenging than their stateside counterparts.

Figure 1: S&P Bank Ratings Distribution



Source: S&P Ratings Services, as of Q4 2011³

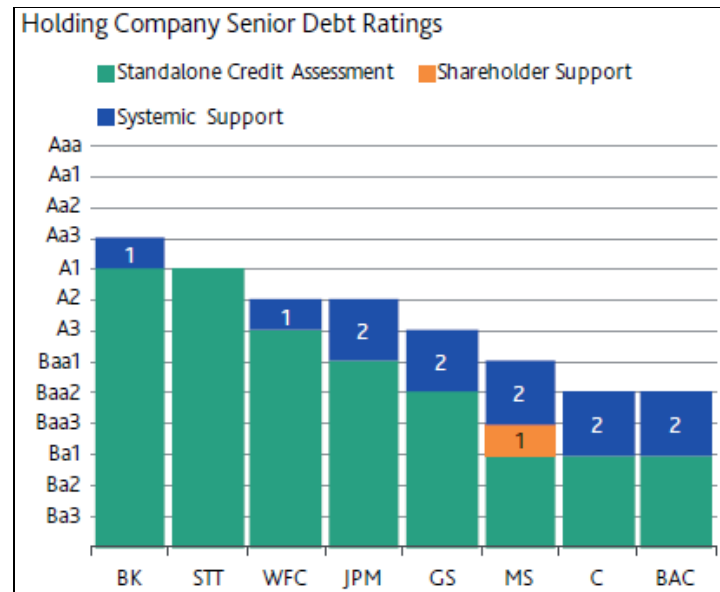
Regulatory Steps to Preserve Too-Big-To-Fail

Counterparty concerns also may stem from regulators’ zeal to resolve systemic risk posed by large financial firms. The counterparty strength of these firms weakens further as authorities move to impose capital surcharges, living wills, bail-ins and resolution authority which can force losses on unsecured creditors. Built in ratings uplifts, something that kept bank ratings higher than implied by their standalone profile, have started to collapse, which results in further downward ratings pressure.

In the U.S., the FDIC and the Federal Reserve are near a decision to finalize the orderly liquidation authority (OLA) under the Dodd-Frank Act’s Title II provision. A specific

model called the single entry receivership (SER) will allow the FDIC to shut down any failing, systemically important financial institution while keeping the operating part of the institution functional. The outcome may result in significant losses to creditors, including counterparties, at the holding company level without disrupting essential services at the operating subsidiary level. Counterparty risk management will become even more important once OLA becomes official.

Figure 2: Moody's Bank Holding Company Ratings Uplift



Source: See Endnote 1.

CAPTURING COUNTERPARTY RISK

As an important first step, capturing counterparty risk requires a streamlined process of identifying potential sources of risk, recording and categorizing the risks and repeating the process periodically for further analysis and monitoring.

Types of Transactions

Listed below are some of the common transactions that may involve counterparty risk:

- Deposits - liquid investments, money market fund shares
- Repurchase and reverse repurchase agreements - securities lending
- Business and trade - receivables /payables through financial intermediaries
- Trade guarantees and short-term lending - including letters of credit, bankers acceptances, unfunded commitments and revolving credit lines
- Derivatives - including futures, forwards, options and swap agreements
- Insurance policies - including surety bonds, property and casualty, maritime, directors' and officers' liability, and errors and omissions insurance

Stable vs. Dynamic Positions

Capturing risk must not be a static exercise. Exposures may be divided into stable and dynamic categories. Stable positions generally include term deposits, letters of credit, insurance policies and long-term derivatives contracts that, once executed, will remain in force until their maturity or expiration date.

Dynamic positions include checking and savings account balances, securities portfolios, repurchase agreements and money market fund shares that may change from time to time. When it is impractical to capture daily changes in the dynamic positions, a monthly schedule of assessing overall counterparty exposures may be more manageable.

Capturing and Consolidating

Modern accounting systems and treasury workstations have made data collection easier. However, comprehensive counterparty risk assessment across business and product lines invariably will involve a combination of automated and manual mechanisms to combine stable and dynamic positions for aggregate analysis.

Automated Downloads: For direct exposures, such as bank accounts and securities portfolios, data collection is relatively easy, as service vendors and treasury workstations generally have the capacity to export position and transaction data. Some even allow automated processes so that files are downloaded without human intervention.

Manual Processing: A bigger challenge involves the capture of risk positions that do not exist in any accounting or recordkeeping systems. Sometimes, these exposures require subjective amount and duration estimates that are based on certain assumptions. The difficulty in combining these positions with the rest of the firm’s exposures is a major reason why many professionals feel it is impossible to get their arms around the subject. Therefore, a counterparty risk capturing system should have manual processing capabilities to record the amount, duration and nature of these exposures. The good news is that many of the positions tend to be illiquid and stable, and, therefore, do not require frequent updates once recorded.

Figure 3: An Example of Captured Account Data

Ticker	Type	Orig. Book Value	Wght. Book Value	% MV
CAGXX	Bank Deposit	\$50,000,000.00	\$50,000,000.00	23.63%
CAGXX	Letter of Credit	\$50,000,000.00	\$50,000,000.00	23.63%
CAGXX	Money Fund Within Separate Account	\$9,956,171.05	\$9,956,171.05	4.71%
CAGXX	Separate Account Holding	\$101,616,848.39	\$101,616,848.39	48.03%

Source: A demo account with multiple sources of counterparty risk in CounterpartyIQ™.⁴

ANALYZING RISK

Risk analysis needs to resolve the transparency issue of the ultimate support entity. Multiple exposures to the same entity should be combined. In addition, one should focus on both the amount and the duration of risk. Sometimes, a relative weight is helpful to convert a notional amount to a more relevant “value-at-risk” concept.

Risk Look-through: While categorizing risk exposures, one should conduct a risk look-through exercise to properly attribute risk to the ultimate risk obligor or “risk parent.” This is especially important for an entity with support of credit enhancement or liquidity guarantees from a sponsoring entity which bears the ultimate credit risk.

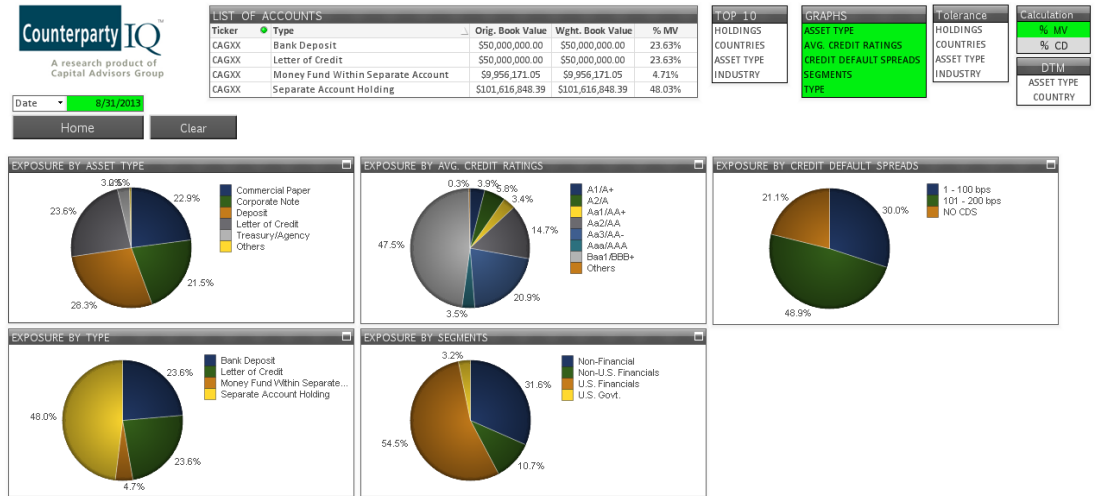
Aggregate Exposures: Non-financial firms may find it difficult to aggregate exposures from the same risk parent across product lines. An analytical system should help facilitate risk aggregation so that risk can be managed in its totality. When built with a well-designed capturing process, a versatile analytical tool may help to accomplish this task.

Risk in the Context of Time: Another concept to understand is that a longer exposure to the same unit of risk means higher risk. Although not always intuitive, using a duration-adjusted amount at risk is a better way to assess counterparty risk since it incorporates a time element into the quantity of risk.

Relative Risk Weighting: At times, firms need to adjust counterparty exposures expressed in notional terms. For example, if a firm believes that it will realistically withdraw \$10 million from a \$100 million letter of credit its counterparty exposure should be recorded as \$10 million, not \$100 million. Thus, a good analytical system should allow the application of a “risk-weighted” adjustment to the notional amount.

Risk Dashboard: The dashboard concept of combining all relevant information on a single computer screen gained popularity in recent years. With proper file structures, data aggregation and risk attribution, the risk dashboard may provide a comprehensive view of a firm’s overall risk exposures as well as sectionalized data that includes, but is not limited to: a) country risk; b) asset categories; c) credit ratings; and d) secured or unsecured risk; to name a few.

Figure 4: An Example of a Counterparty Risk Dashboard



Source: CounterpartyIQ™.

MANAGING RISK

Once risk is identified, categorized, aggregated and analyzed, the next step is to manage it. In our experience, putting risk management into action is difficult when risk is not quantifiable and an absolute level of accepted risk is undefined. We introduce a proactive risk management method based on the constant risk aversion (CRA) principle guided by a fundamental credit scoring system.

Constant Risk Aversion

There rarely is consensus on what is an acceptable level of risk. Also, organizations often do not have a consistent solution for adjusting counterparty exposures as external conditions change. We introduced the CRA concept in an earlier research paper¹ to define a “risk quotient” consistent with the organization’s risk tolerance, business and financial conditions, and return expectations. As levels of risk change, a certain “quantity” of exposure to that risk may be adjusted accordingly to reach an optimal target. An effective risk quotient may help organizations steer through risk cycles and help to avoid getting caught by surprise.

One way to think of CRA is to build a scenario with one risky asset and one risk-free asset. As the generic “risk” in the risky asset increases, one may reduce exposure to this asset and add the corresponding amount to the risk-free asset to maintain a “constant” risk profile. We illustrated this concept of CRA with the use of single name credit default swaps (CDS) for a portfolio of counterparties. Once a target weighted average CDS level of 100, for example, is achieved for the overall aggregate position, one can periodically adjust the exposures to individual names, either by concentration or duration exposures, to rebalance the portfolio CDS level back to the target level of 100.

Credit Risk Scoring System

A more systematic and accurate approach to CRA works in much the same way, except that a more meaningful credit risk score replaces the CDS indicator as the basis for optimal portfolio readjustment.

The actual construction of a credit scoring system is beyond the scope of this paper, but, in summary, a counterparty's credit score may combine fundamental credit data and market signals to arrive at a standardized numeric score much like credit ratings for relative comparison. This system simplifies the decision-making process since qualitative assessment and analyst projections are reflected in the score. Macroeconomic and credit conditions also influence credit scores. A weighted average approach to credit scoring also allows users to evaluate each score component in making individual assessments and adjustments.

CRA with Portfolio Scores

Using an aggregated portfolio of exposures in conjunction with a credit scoring system will enable an organization to calculate a weighted average portfolio credit score. The organization then may decide on a score that represents the constant level of portfolio risk it wishes to maintain. For example, a scoring system from one through five may roughly correspond to credit ratings of below investment grade, BBB, A, AA and AAA, respectively. For an organization with a target portfolio score of A (or 3.0), the positive or negative score gap from the actual portfolio score indicates the adjustment needed to bring the portfolio back to the optimal score.

Adjustment with What-if Analysis

The last step in proactive counterparty risk management is to keep the portfolio score constant by fine-tuning an organization's exposures to specific counterparties based on credit score signals. In a non-trading account, it may not be easy to change certain exposures until maturity, expiration or contract renegotiation, but exposure to the same counterparties in a different part of the organization may be changed to counterbalance the risk level. The liquid part of the overall positions that would allow the organization to adjust positions quickly may include: a) savings and checking account balances; b) money market fund positions; and c) separately managed cash portfolios.

An important part of this dynamic process may be a what-if analysis tool that helps the organization increase or decrease specific counterparty exposures to see the impact on the overall portfolio score. With this *pro forma* data, the new preferred allocation may be executed in a gradual process to minimize trading or disruption in the firm's business relationships with its preferred vendors.

CONCLUSION: PROACTIVE MANAGEMENT WITH CREDIT SCORING

In this paper, we introduce a capture-analyze-manage framework to counterparty risk management. The constant risk aversion principle and a credit risk scoring system may

help organizations establish a target risk level and proactively manage their positions as conditions change.

We emphasize the importance of proactive counterparty risk management rather than reacting to headline risk. Manually capturing illiquid positions, data aggregation and a credit scoring system may offer a streamlined solution to this important, but often difficult, process.

¹ Refer to these publications from Capital Advisors Group for discussions related to this paper: [Bank Ratings Headed for BBBs: How the Megatrend May Impact Corporate Cash Investors](#), March 1, 2012; [The New Normal of Riskier Mega Banks: Why Size May Not Mean Safety under OLA](#), March 1, 2013; [Applying Constant Risk Aversion to Cash Investment Management](#), April 1, 2013; [The Final Step to End Too-Big-To-Fail? How Additional Bank Rating Downgrades May Impact Institutional Cash Investors](#), May 1, 2013; and [Counterparty Risk Management for Corporate Treasury Functions](#), June 3, 2013.

² See “Special Comment: Challenges for firms with global capital markets operations: Moody’s rating reviews and rationale,” Moody’s Investors Service, February 15, 2012.

³ See “U.S. banking sector: 4Q ’11 earnings summary,” Standard & Poor’s Ratings Services, February 15, 2012.

⁴ CounterpartyIQ™ is a powerful risk management platform that captures, analyzes and manages counterparty risk within your organization. CounterpartyIQ™ features a proprietary credit model that assigns a credit score to specific counterparties and also to your organization’s aggregated portfolio of counterparties, allowing you to quantify and adjust existing risk exposures while managing your counterparty relationships. CounterpartyIQ™ is currently in beta testing.

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