Introduction

There has been no shortage of lessons for banks stemming from the recent financial crisis. One of the fundamental lessons shared by banks is the importance of robust counterparty credit risk (CCR) management.

During the crisis, inadequate CCR capabilities hindered banks' ability to respond to the rapid changing market environment and exacerbated systemic risks across the financial industry. In addition, banks were challenged by the limitation of data availability and analytics tools, which obscured early warning signs of the crisis and resulted in losses from indirect exposures that were neither well-managed nor well-understood.

Since the crisis, banks and regulators have placed significant focus on improving the identification, measurement and management of CCR. While banks have been identifying deficiencies in their current CCR capabilities, regulators have also placed emphasis on improving such capabilities. As the global standard-setter for the prudential regulation of banks, the Basel Committee on Banking Supervision (“Basel Committee”) has introduced a series of new and revised methodologies to standardize how banks measure and report their CCR exposures in recent years. Many banks are gradually adapting to new regulatory standards, not only to assess emerging risks and prevent future loss events, but also as a way to better manage risk-weighted assets (RWAs) and optimize capital.

The improved methodologies provided better guidance on CCR exposure models to accommodate the increased complexity of derivatives instruments under banks’ management, but did not fully address banks’ deficiencies in analytics capabilities. Such deficiencies were highlighted by the Basel Committee in a January 2013 advisory paper, noting that banks were incapable of aggregating risk exposures and identifying concentrations quickly, accurately and completely during the crisis, hindering bank management’s ability to make informed business decisions.

In our view, to help improve management’s ability to make prudent business decisions under both normal and stressed market conditions, banks need access to accurate CCR exposure data and comprehensive CCR reporting practices with respect to the complexity of their operations. Accurate and complete risk data can provide increased visibility to counterparties’ overall health, allowing the banks’ management to make better strategic planning and resource allocation decisions.

In addition, our experience indicates enhanced analytics and predictive capabilities are essential elements of a proactive CCR management approach that facilitate the calculation of key CCR measures such as potential exposure (PE), expected positive exposure (EPE), effective expected positive exposure (EEPE) and RWAs. These CCR measures are used to determine banks’ economic and regulatory capital, which have a direct impact on banks’ profitability.

As regulatory expectation around counterparty exposure limits control and capital reserves increases, we have observed many large banks moving to more active CCR management models that resemble market risk management models in terms of methodology and complexity. To remain relevant within a changing regulatory environment, banks may want to assess the current state of their CCR analytics capabilities and determine a feasible target state, given regulatory expectations around risk data aggregation and risk reporting. Banks will likely also want to assess the data currently available for CCR reporting, as well as additional data and quality measures needed to reach the target state.
The primary objective of most CCR analytics functions is to provide accessible information that enable risk executives and credit risk officers to make better decisions. Those decisions can include:

- Determining the limits based on specific dimensions (such as industry, geography, product type, asset class, risk rating, or credit officer) to monitor over-exposure;
- Identifying risk-focused portfolio trends to highlight correlations, inform forecasts, and support future business emphasis;
- Considering the effects that portfolio segments have on risk-weighted assets, and therefore, on capital requirements to inform risk/reward front office decisions; and
- Identifying portfolio segments that require investigation, active monitoring, and mitigation strategies in order to protect against portfolio deterioration.

In addition to facing business-driven decisions, banks may also want to manage the expectations of their regulators. Regulatory exams may result in routine requests that banks are prepared to deliver, but they may also lead to ad hoc requests that must be prepared with short notice. These ad hoc requests can require different metrics, levels of granularity and frequencies of historical CCR data than those that are typically considered business as usual for banks. So it is important to remain flexible and have appropriate data and reporting tools readily available when needed.

In Accenture's experience, risk leaders and managers are challenged by three key issues around counterparty credit risk: 1) getting the most useful views of information to make effective decisions, 2) being confident in decisions taken, and 3) gaining agility quickly to capture deeper insights from new credit data, new dimensions, and new correlations.
The Barriers to Helping Achieve Best-in-Class CCR Analytics

Having a distinct CCR management function is now a common practice for high-performance banks, supported by reporting and at least a basic level of analytics. However, there is a large disparity in terms of capabilities between banks operating at a basic level and those capable of supporting key CCR decisions more effectively and efficiently. In order to 'move the dial' towards a more advanced CCR analytics function, there are a few challenges to be addressed:

1. Maintaining high quality data and effective control
   Banks may be equipped with advanced analytics capabilities; however, if the underlying data are inaccurate, incomplete, or not available in a timely manner, the benefits of having an advanced analytics function can be limited.

2. Storing, maintaining, and accessing historical CCR data with granular views
   Lack of sufficient historical data can limit banks' ability to effectively identify trends and assess the viability of those trends. Additionally, without the right level of granularity on the supporting data, a large amount of manual support may be required to 'connect the dots' between high level aggregated observations and detailed granular findings.

3. Identifying the right set of views, and enabling those views
   High-performance banks’ CCR exposure reporting processes were typically built upon incremental changes. This has resulted in a patchwork of exposure reports that may include duplicative coverage and information gaps. While the reports are often generated from the reporting tools, the exposure analysis may be performed without the use of any analytics tool. The lack of adequate analytical process and support not only created concerns around data control, but also resulted in less repeatable and methodical analyses.
Gaining the Edge: The Core Attributes of the Target State

Banks that have developed industry-leading CCR analytics capabilities have typically approached the challenge in a strategic way, addressing the capability from multiple angles.

Many high-performance banks, driven by a need to monitor counterparties in various industries, use a range of products in different geographies to focus on coverage and ensure that exposures are both well-managed and well-understood. In order to understand common occurrences and themes in the analysis of movements, these banks generally also use historical data trending to provide insight into portfolio changes period-over-period, giving them the ability to discern typical changes from uncharacteristic movements. Finally, leading banks have used analytics to help them predict and prepare for future movements. While the use of predictive analytics is still improving, it is a central focus for many of the high-performance banks.

Coverage and Dimensionality

Banks with mature reporting capabilities generally have multiple sets of reports that are designed to support the various business decisions of the company’s CCR function. Each report typically has a specific purpose and an intended audience, and the data presented in the report are appropriately gathered and displayed to serve that purpose. The reports can cover different time periods, different levels of data granularity and aggregations, and different populations of trades and counterparties. Ad hoc reports exist, but the majority of reports are recurring for effective monitoring and comparison purposes. When possible, reporting is automated with minimal manual interference.

Reports not only can provide a snapshot of a trade population at a given point in time but they can help determine a bank’s health by combining current and historical snapshots. Comparing current data to the same data at various historical points in time is necessary for benchmarking, which gives a point of reference as to what is “normal” or business as usual at a bank versus what is unusual and may require investigation or escalation.

Advanced CCR reporting capabilities can enable the production of many types of reports at multiple frequencies. The following report inventory lists one example of standard reporting requirements that banks may follow. While it is not necessary to generate all the reports at all their listed frequencies, banks may want to have the ability to produce each report should it become necessary, either going forward or as a historical look-back.

In our view, banks should consider reporting for sub-categories that are typically requested for management reporting. Sub-categories that do not require reporting (and only require data capture) are generally too detailed to be helpful in regular reporting to management. However, because of their granularity, they can be extremely useful in investigating data movement.

Reporting tools should be flexible to help produce different types of reports from various data sets, depending on the business uses of reports. CCR exposure is managed at the portfolio/netting set level, while other controls related to CCR, such as exposure model coverage and performance, are often organized by asset class and/or trade type.

Most high-performance banks perform historical data trending to establish benchmarks and what can be considered business as usual, as well as to allow for investigations of unusual movements in data. Trending is generally performed for a sufficient length of time and frequency to properly determine a normal level of data or activity, so that any long-term cyclical movement can be “smoothed over” and any short-term cyclical movements can be captured.

To conduct investigations into data movements, drill-down capabilities may be needed. Drill-down capabilities refer to the ability to move from a summary view of data to more granular views of a specific set of the data. Unusual movements are generally one-time spikes or drops in trended data that can indicate issues with data quality, data feeds, CCR models, and technology (or even front office (FO) data issues). It should be noted that movement in trended data can indicate legitimate changes that are non-issues due to fixes implemented by the bank; therefore, increases and decreases can both be good or bad, depending on the fix.
### Sample Report Inventory:

<table>
<thead>
<tr>
<th>Category</th>
<th>Sub-category</th>
<th>Reporting Recommended</th>
<th>Reporting Frequency</th>
<th>Primary Purpose</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Counterparty Populations</strong></td>
<td>All Counterparties</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Third Party Counterparties</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Internal Counterparties</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Credit Counterparties</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Capital Counterparties</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Top X Counterparties (by $ amount, $ change, and % change)</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Counterparties with Rating Downgrades</td>
<td>Yes</td>
<td>W or M, depending</td>
<td>Monitoring</td>
<td>Management</td>
</tr>
<tr>
<td><strong>Aggregation Levels</strong></td>
<td>Ultimate Counterparty</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management, Credit Analyst</td>
</tr>
<tr>
<td></td>
<td>Counterparty</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management, Credit Analyst</td>
</tr>
<tr>
<td></td>
<td>Legal Entity</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management, Credit Analyst</td>
</tr>
<tr>
<td></td>
<td>Master ID</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting</td>
<td>Management, Credit Analyst</td>
</tr>
<tr>
<td></td>
<td>Netting Set</td>
<td>Just data capture</td>
<td>D</td>
<td>Investigation</td>
<td>Credit Analyst</td>
</tr>
<tr>
<td></td>
<td>Trade</td>
<td>Just data capture</td>
<td>D</td>
<td>Investigation</td>
<td>Credit Analyst</td>
</tr>
<tr>
<td><strong>Groupings / Dimensions</strong></td>
<td>Product Type (OTC Derivatives, Financing)</td>
<td>Yes</td>
<td>W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Asset Class (e.g., Credit, IR, FX, Equity)</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Instrument (e.g., CDS, IR Swap, FX Forward)</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Reporting, Investigation</td>
<td>Management, Credit Analyst</td>
</tr>
<tr>
<td></td>
<td>Region (US, EMEA, LATAM, APAC)</td>
<td>Yes</td>
<td>W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Country of Risk / Domicile</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>GIIPS (Greece, Italy, Ireland, Portugal, Spain)</td>
<td>Yes</td>
<td>W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Currency</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Industry / Sector</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Risk Rating</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Investment Grade vs. Non-investment Grade</td>
<td>Yes</td>
<td>W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Business Unit / Book</td>
<td>Yes</td>
<td>W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Credit Analyst / CPO</td>
<td>Yes</td>
<td>W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>Maturity</td>
<td>Yes</td>
<td>D, W, M, Q</td>
<td>Monitoring, Reporting</td>
<td>Management</td>
</tr>
</tbody>
</table>

**Key:** (D) Daily, (W) Weekly, (M) Monthly, (Q) Quarterly

Source: Accenture report for 2013, based upon Accenture internal data analysis.

Note: Reports can allow for the layering of the three criteria categories in order to produce various cuts of data. For example, a weekly report might show data aggregated by master ID and grouped by industry, for all third party counterparties. Additionally for regulatory reporting, reporting tools can have capabilities to aggregate data across multiple groupings/dimensions (e.g., Country x Industry x Instrument x Currency x Maturity).

At a minimum to satisfy regulators’ expectations, some believe banks must report on the following metrics: Principal amounts, Gross mark-to-market (MTM) exposures (after netting), Collateral, Net MTM exposures (Gross MTM – credit hedges – collateral held + excess collateral posted), and Potential Future Exposure (PFE).
Predictive Analytics

Movement in data is often not predictable due to the number and variety of issues that can occur at any point in the pricing process, but some changes can be anticipated, quantified and explained through CCR reporting outputs.

Historical trending and analytics can help the bank anticipate changes in data related to:

- Patterns or cycles, including:
  - Trading behavior
  - Pricing tendencies
- Implemented fixes for existing issues around pricing models, such as:
  - New model for a previously unmodeled trade type
  - Adjustment to a model with a known deficiency
- Other types of technology releases related to data, including:
  - Known data quality issues
  - Known feed issues
  - New tools

However, other changes cannot be anticipated and therefore may require investigation. Historical trending can help identify unusual movements, while drill-down capabilities can start the investigation and lead to the resolution of the causes of unusual movements.

Additional Considerations

The suggested frequency of reporting is generally based on the typical significance of change in data for each sub-category over various periods of time. Banks with advanced reporting abilities often produce reports on a frequent basis comparing current data to rolling historical data such as data trending. Depending on the metrics being tracked and the purpose of the report, the frequency of trending can vary from daily to weekly comparisons, usually to assist with data investigations. Reporting frequency can also be determined by the likelihood that significant data changes are already covered by other (more common) reports and the general expectations of management for having certain views of data available in the reporting. For higher level management reporting, monthly or quarterly comparisons can be sufficient.

As discussed earlier, CCR reporting can help a bank’s management team make better and more informed business decisions related to its risk concentrations and capital allocation. Banks generally utilize reports that cover not only their exposure and capital numbers but also the performance acceptability of their CCR models. Exposure and capital figures are only as accurate as the underlying data and calculators, so comparisons of metrics like CCR mark-to-market (MTM) to FO MTM over time (in addition to standard back-testing) are common comparisons used for reliable reporting.

Additionally, data analytics can be performed around project releases affecting CCR exposure and capital numbers. These releases typically occur twice per project, once in a user-acceptance test (UAT) environment (also known as “pre-release”) and once in the production environment (or “post-release”).

Pre-release impact analyses can be used to anticipate changes in data due to fixes and releases when projects hit the production environment. Larger banks with several CCR projects may require multiple, robust test environments to allow users access to base and impact data for reporting purposes. Separate releases are often tested in separate environments to eliminate noise and conflated results. End-to-end testing may also be performed in a separate environment if multiple releases will be in production at the same time, to understand and anticipate noise and deliver a final set of results.

Post-release impact analyses can be used to confirm that actual changes in data during the production phase are consistent with what was anticipated in pre-release impact analyses. Project releases, particularly in UAT, may require heavy credit risk technology support and involvement by quantitative analysts and modelers to analyze testing results and provide sign-off before the release of the projects into production.
A bank seeking to enable advanced analytics can start by creating an inventory of the reports and views that are being used in production by various groups, making note of the frequency, usage, and history of the data contained within each.

The bank can then perform a gap assessment on the reports and views of data listed above, ensuring that there is proper coverage, with an ability to move seamlessly from granular data to aggregated views (and vice versa). Along with the gaps identified, inputs from credit product officers, counterparty credit risk executives and managers can also be collected to form the key components for analytic enablement.

Conclusion

A strong and reliable counterparty credit risk analytics function is a fundamental element of an effective CCR management program.
About the Authors

Chris Thompson

Chris is a managing director, Accenture Finance & Risk Services, Capital Markets lead. Based in New York, Chris is specializing in complex, large-scale finance and risk programs. He works with some of the world’s leading retail, commercial and investment banks. Chris brings his nearly 20 years of broad-based experience in financial architecture, risk management, performance management and trading to organizations determined to become high-performance businesses.

Amit Gupta

Amit is a managing director, Accenture Finance & Risk Services. Based in India, Amit has over 15 years of risk consulting and capital markets industry experience delivering strategic solutions in a wide variety of client situations. He has extensive experience in assessing market risk and credit risk capabilities and helping clients enhance their risk governance, risk processes, analytics and implementing risk systems. Amit helps clients in their efforts to increase their organizational focus on proactive risk measures and to better leverage their enterprise risk management capabilities.

Jeff Jamison

Jeff is a senior manager, Accenture Finance & Risk Services. Based in Philadelphia, Jeff has over 10 years of consulting and industry experience in the financial services industry and the risk management space with clients across North America. His extensive experience leading strategic assessments of risk management functions, enhancing credit risk and compliance capabilities, defining business architecture and operating model strategy, and improving risk controls, reporting and governance helps executives and their firms become high-performance businesses.

Harpreet Behl

Harpreet is a senior manager, Accenture Finance & Risk Services, based in San Francisco. Harpreet has over 10 years of consulting and capital markets industry experience delivering strategic solutions in a wide variety of client situations across North America. He has extensive experience in counterparty credit risk and Basel II/III and helping clients enhance their risk capabilities, processes, and systems implementation.

The authors would like to thank Accenture employee Rita Luo for her contribution to this document.
Notes


Disclaimer: This document is intended for general informational purposes only and does not take into account the reader’s specific circumstances, and may not reflect the most current developments. Accenture disclaims, to the fullest extent permitted by applicable law, any and all liability for the accuracy and completeness of the information in this document and for any acts or omissions made based on such information. Accenture does not provide legal, regulatory, audit, or tax advice. Readers are responsible for obtaining such advice from their own legal counsel or other licensed professionals.

About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with approximately 289,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world’s most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$28.6 billion for the fiscal year ended Aug. 31, 2013. Its home page is www.accenture.com.

Stay Connected

Join Us
https://www.facebook.com/accenturestrategy

Follow Us
http://twitter.com/strategy

Watch Us
www.youtube.com/strategy

Connect With Us
http://www.linkedin.com/groups/Accenture-Finance-Risk-Services-3753715?gid=3753715

Copyright © 2014 Accenture
All rights reserved.
Accenture, its logo, and High Performance Delivered are trademarks of Accenture.