



Aptivaa
Risk Newsletter

The background of the entire page is a close-up, high-angle shot of an antique clock face. The clock is circular with a dark blue or black dial. It features gold-colored hour markers and hands. Overlaid on the clock face are various zodiac signs in gold, including Aries, Taurus, Gemini, Cancer, Leo, and Virgo. The clock is set against a light, textured background.

Enhancing the **Risk Disclosure of Banks**

A transparency regime to thwart financial crises?

SPECIAL REPORT

Structural Model for Sovereign Risk

Reducing reliance on market information



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Units of Measurement

It is common knowledge that units of measurement were probably among the earliest tools invented by humans. Over the course of history weights and measures have taken a great variety of forms, and evolved into an elaborate state and supranational systems that integrate measures of many different kinds.

As units of measurement evolved, the metric system became the dominant system worldwide, with the largest exception being the United States. Basel evolution happened in a similar way. Was this by coincidence or design?

On one hand it is encouraging to receive the final go ahead from the U.S. Fed on the Basel III with higher (twice) capital requirements for the largest banks. On the other side, RWA the main measure of bank safety is already facing questions about its reliability by the Basel Committee.

We have covered this topic in detail in our previous edition and thought that it is important to continue the discussion and forms the first article. The cover story talks about the efforts being made to improve the risk related disclosures, stemming from the seeming lack of transparency. The other topics discussed are the Recovery and Resolution Plans and related framework espoused by the FSB to counter contagion risk for the globally interconnected large banks (G-SIFIs), an article on Fraud Management Framework and some more insights into the ever-shifting regulatory landscape with focus on Liquidity Risk and Leverage Ratio definitions this time around.

This issues also contains a special feature on a Structural model for assessing Sovereign risk from Northfield and Emilian Belev. Presented is a synopsis of the award winning paper which puts forth a model that addresses the inter-correlation between the banks and the Sovereign bonds and provides flexibility to capture the typical Government responses in times of economic turmoil.

We hope you find this latest issue thought provoking and engaging. We thank you once again for the enormous response for the earlier issue. We would love to hear your feedback on this issue of the magazine.



A handwritten signature in black ink.

Alok Tiwari - CEO



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Material Drivers of Differences

A round-up of the RWA Variation topic

Are RWA variations justified? Can these variations be measured? What are the causes for these variations? Banking Regulators across the world are trying to demystify the furore around the inconsistency & variation in RWAs. We take a quick review of this topic and the research undertaken in the past year with a special focus on European Banking Authority's (EBA) report and recently released Basel Committee paper

Introduction

In our September 2012 issue, we covered an article on the growing debate on the RWA variations across geographies and outlined the issues and the factors which were causing the differences in RWAs across and within geographies.

In the last few months, the RWA variations issue in the trading and banking books have further accentuated the need for convergence of supervisory standards and consistent usage of the flexibility and discretion available to various banks and regulators. The Standards Implementation Group (SIG) of the BCBS completed their comparison and analysis on the differences in RWAs (arising out of market risk) in Jan 2013 and published its review in "Regulatory Consistency Assessment Programme (RCAP) – Analysis of risk-weighted assets for market risk". In July 2013, SIG released a paper "RCAP – Analysis of risk-weighted assets for credit risk in the banking book (BB)". We take a deeper look at the analysis, findings and conclusions from this paper.

One of the key challenges facing the market and analysts is the reliability and comparability of RWAs of the Banks across geographies and whether the capital requirements so set based on Basel II/III requirements are sensitive to the portfolio risk of banks.

Another challenge is that the banks can optimize their capital by measuring the banking book risks using internal methods in an attempt to minimize regulatory capital. Basel II was a step in this direction to make RWAs more risk sensitive by introducing a new range of approaches (Standardised and Internal ratings based). However the implementation of these guidelines fell short of market expectations as the global financial crisis set in just after regulators in the EU had approved internal models and approaches of these banks and it was observed that banks which were well capitalized and had higher RWA performed worse during the crisis. The increasing defaults and losses post 2009 has increased the RWAs across the banks globally, however they were compounded by poor model risk assessment by regulators and the entire Internal Ratings

The issue of RWA differences among banks in different geographies has been primarily between the US and EU whereby most banks in US follow the Standardized Approach while their EU counterparts have already been following the AIRB Approach for a few years.



BCBS RCAP of RWA variation in Trading Book revealed inconsistencies in average RWAs across Banks, however similar analysis for Banking Book has further demonstrated the differences in RWAs

based approach became questionable. However, the BCBS in late 2010 introduced Basel III capital norms to ensure institutions have adequate capital buffers to counter the cyclical effects.

The issue of RWA differences across banks in the same geographies and among banks in different geographies has been primarily between the US and the EU whereby few large banks in the US have recently started to calculate and report their AIRB numbers while banks in the EU have already been doing the same for a few years now.

Also, current evidence regarding RWA inconsistency is being reviewed in countries such as Germany, UK, Italy, Spain and Australia as these countries have adopted the internal ratings based approach and there is a range of approaches available across portfolios for undertaking credit risk modeling and estimation of risk components. Non-standardization of Pillar III disclosures has also resulted in non-comparability of RWA estimates across geographies; however there are a few industry studies which have focused on comparisons with Europe.

Other G20 participants such as Argentina, China, India, Indonesia, Saudi Arabia & Turkey have issued guidelines on Basel II IRB approaches but are yet to accredit any bank as an IRB bank. Hence, these RWA variation issues are yet to be encountered and discussed in other advanced/emerging markets.

Metric for RWA Measure

In the many research papers available on the RWA variation topic, various measures have been used to identify and analyse the differences in RWAs. Some of the metrics used are shown overleaf.

Other business mix, model and market risk measures such as corporate portfolio to total assets, residential real estate to total assets, external ratings, CDS spreads, other accounting based risk measures (such as past cumulative charge-offs), past average non-accrual loans etc have been used to measure the portfolio risk and check for their relationship with the institution's RWAs and their consistency across portfolios. However, one of the major challenges of the various studies has been the insufficient amount of data available for drawing meaningful conclusions on this subject.

Vallascas and Hagendorff (2011) use a measure of RWA to assets and asset volatility (expected to measure portfolio risk using option pricing

Metrics for Analysing Differences in RWAs

Metric used	Details
Comparison of total assets and RWAs	Most basic measure used by analysts and research studies
Ratio of RWA to total assets or RWA density	Measure used by Leslé and Sofiya Avramova in their IMF Working Paper "Revisiting RWAs"
Ratio of RWA to Total Exposure (banking book only)	Common measure used by Banks internally and base numbers reported to Central Banks as part of Basel II Pillar I and Pillar III disclosures. Called as RWA density by Basel Committee in their RCAP Analysis for credit risk in banking book paper Exposure includes outstanding exposure and unused commitments or EAD
Expected Loss (EL) to Total Exposure (banking book only).	Metric used by Irina Barakova and Ajay Palvia, OCC as an average loss measure (alternative to RWA) and has easy comparability with realised losses.
Global Charge	Concept used by EBA which takes into account both the RWAs or unexpected losses (arising from standardised and IRB approach) and the expected losses (EL).
Core Tier 1 ratio to RWAs	Used in IMF Working Papers
Tangible Common Equity (TCE) over tangible total assets	Used in IMF Working Papers
Tangible Common Equity over RWAs	Used in IMF Working Papers
Leverage Ratio (Tier 1 capital over un-weighted on and off-balance sheet assets)	Proposed by Basel III

theory) for a sample of international banks and find a statistically positive relation but argue that the economic relation is small and the effect on capital limited. They have also undertaken an analysis of the risk sensitivity by testing the univariate relationship between asset volatility and RWA and regression of the impact of portfolio risk on RWA/TA ratio. They found that the banks which increased their regulatory capital ratios during the crisis without government support displayed a risk sensitivity which was not significantly different from the rest of the banks in their sample. Based on the results of their study, they question whether the Basel III proposals are sufficient to ensure that banks have adequate capital in line with their portfolio risk.

Identifying a common and consistent metric for RWA comparison has been the topic of heavy research in the last couple of years

Similarly, Sonali Das and Amadou Sy (2012), in their paper "How Risky are Banks' Risk Weighted Assets? Evidence from the Financial Crisis" tried to see the relevance and importance attached to RWA pre-crisis and post crisis and how investors/analysts perceive the relationship between stock prices and RWA. As part of their findings, they observe a negative relationship between RWA and stock returns over the periods of financial crisis for European and US Banks; however this association is found to be weaker where there is discretion in the calculation of RWA (such as countries that had implemented Basel II). They conclude by highlighting the asymmetry of information among banks, supervisors and market participants regarding RWAs which during periods of financial crisis may lead to uncertainty about a bank's capital adequacy.

In the IMF Working Paper by Irina "Revisiting Risk-Weighted Assets - Why Do RWAs Differ Across Countries and What Can Be Done About It?" published by Vanessa Le Leslé and Sofiya Avramova in March 2012, the authors discuss the RWA variation issue and highlight the concerns, drivers and concludes on the range of options that could be considered to restore confidence in bank's RWA numbers.

In the IMF working paper, the authors have used a choice of leverage ratio and RWA density across geographies, banks and time to analyse the cause of differences in RWAs, however in an EBA analysis, they have used the Global Charge (discussed later) to identify the causes of differences in RWAs. In a similar analysis carried out by Irina Barakova and Ajay Pavlia in their paper titled "Are Basel II Risk Weights Aligned with Risk?", they use the RWA measure as computed under Basel II and Basel I and its ratio to Total Assets and Outstanding exposure & unused commitment.

EBA RWA Variation Study – A step in the right direction?

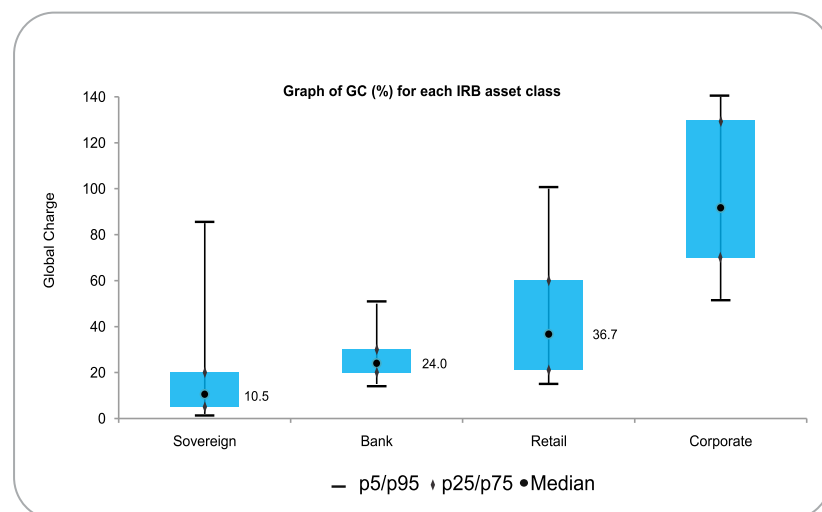
On 26th February 2013, the European Banking Authority (EBA) released the interim report of its top-down investigation into the differences in RWAs in the Banking Book aimed at identifying 1) the material differences in RWA outcomes, 2) sources of these differences and 3) whether they are justified by fundamentals or are related to differences between banks and supervisory practices. The objective was to formulate if necessary policy solutions to enhance the convergence among banks and to improve the disclosures.

The report is part of a wider EBA analysis on the consistency of RWAs and is broken into 2 phases

- Top Down phase – where the EBA would aim at understanding the differences at a bank wide or portfolio level and
- Bottom Up phase – where the EBA would aim to understand and analyse the differences at each bank level.

The 'Top Down' analysis was carried out using the European supervisory reporting data covering 89 banks from 16 European countries as at Dec 2011. Various indicators were identified and discussed for measuring the risk taken by a bank relative to the exposure associated with this risk.

Ratio	Measure	Description
Ratio 1	RWA / EAD	Widely used by analysts, main drawback being that EL is not included
Ratio 2	$(RWA + 12.5 \cdot RCD) / EAD$ where Regulatory Capital Difference (RCD) = Expected Loss (EL) – Provisions	One of the variants discussed by EBA but not used as provisions considered are not based on regulatory parameters and is not comparable in several countries
Ratio 3	$Global\ Charge = \frac{RWA + (12.5 \cdot EL)}{EAD}$ Where EL = Expected Loss as per IRB Approach.	Variant used by EBA for undertaking the Top-Down analysis as EL is relevant for explaining the differences between banks' regulatory requirements, mainly due to the stock of defaulted assets.



The results confirm that there are material differences among banks in the calculation of the Global Charge (GC), which is considered to take into account both the RWAs or unexpected losses (arising from the Standardised and IRB approach) and the Expected Losses (EL).

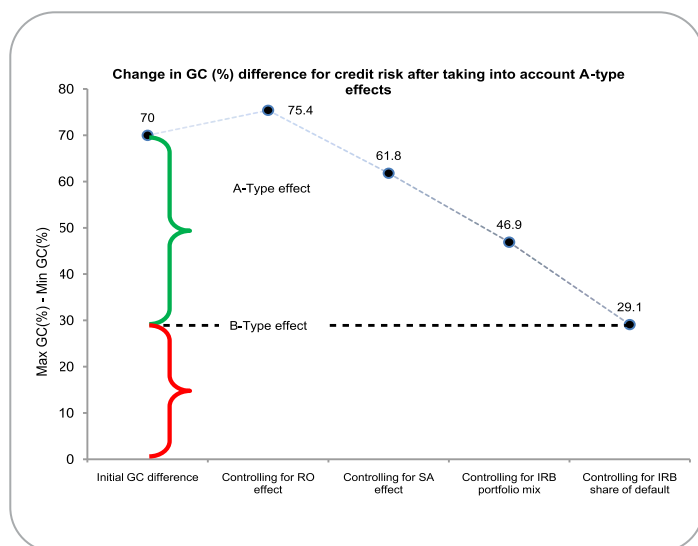
Detailed analysis of the credit risk on the different portfolios (sovereign, bank, corporate, retail) confirmed the existence of a significant difference in the GC among the Banks. The chart on the left presents the GC (%) for each IRB asset class¹.

The EBA has developed a specific methodology that identifies a representative benchmark and uses that to measure what part of the global differences among banks can be explained by what they have termed 'A-type' and 'B-type' differences. The Global Charge difference is described as A-type differences plus the B-type differences.

- **A-type differences** which can be attributed to specific drivers relating to structure of the balance-sheet and the reliance on different regulatory approaches (such as the type of method in use (SA or IRB), portfolio composition, roll-out effect, standard risk weight effect, IRB portfolio mix structure and the share of defaulted assets).
- **B-type differences** which stem from the IRB risk parameters applied which are caused by idiosyncratic variations in the riskiness of exposures and credit risk mitigation, and the use of Foundation versus Advanced IRB.

¹ Excluding SA (Standardised Approach) exposures

Simulation analysis run on different samples suggests that the A-type factors account for about 50% of the differences across banks as shown in the figure below.



The analysis demonstrated that starting from an initial observed difference in the GC of 70% points for the whole sample (5th and 95th percentile) it reached a value of 29.1% points after taking into account the A-type drivers. That means an overall decrease in the GC dispersion by 58%. The reduction and the residual dispersion from the GC benchmark have been observed to be heterogeneous across banks. The same exercise when applied to the 20 largest banks produced a reduction in the GC dispersion by 48%. This led to a conclusion that the remaining 50% residual difference in the GC is not clearly captured by the A-type drivers and would require EBA to undertake further 'bottom-up' research (where specific data from individual banks will be drawn to capture specific situations) to understand whether the residual difference is justifiable and is driven by different risk profiles of banks portfolios or by different interpretations or practical application of the regulation. It was also concluded from this top-down analysis that the B-type differences appear mainly in two portfolios – corporate and retail. In the Bank, sovereign and other portfolios, only a minor part of the GC variation is being explained due to their relatively low RWA levels.

Though the EBA has made no policy conclusions from this exercise, it has been fairly identified that half of the differences (A-type) are fairly easy to understand and would require disclosures (in Pillar 3 information) to improve the confidence in the IRB approach results.

Regulatory Consistency Assessment Programme (RCAP) Analysis of RWAs for credit risk in BB – can national level practices and associated questions be answered by global studies?

The Basel Committee's Capital Monitoring Group (CMG) collected data (available since 2008) and undertook an analysis of the following areas: i) Top-down RWA analysis – focusing on analyzing RWA differences using supervisory data at the country, bank and portfolio levels, ii) bottom-up portfolio benchmarking – hypothetical portfolio exercise (HPE) using a test portfolio (data as of June 2012 only) comprising a subset of common wholesale obligors (of 32 large international banking groups) to identify differences in banks' IRB risk parameters iii) range of practices – to overlay the analytical work with an assessment of differences in bank and regulatory practices (for this, a list of potentially important practice-based drivers of RWA differences was developed and thematic reviews of selected risk measures were conducted) and iv) On-site visits - On-site visits were made to 12 banks that participated in the bottom-up HPE to verify the robustness of the off-site analysis and to gain a better understanding of the drivers of observed cross-bank deviations.

Basel Committee in its RWA consistency review and hypothetical portfolio exercise has brought out the many differences in the estimation methodologies for PD and LGDs across Asia, Australia, Europe and North America for the wholesale credit portfolio leading to RWA variations.

Credit Risk is the major contributor to overall RWA variations as shown below.

Risk Type	Variance Share
Credit Risk	77%
Market Risk	11%
Operational Risk	9%
Capital Floor Adjustments	3%

It was analyzed that within the banking book, up to three quarters of the variability in risk weights for credit risk is driven by differences in underlying risk arising from the banks' asset composition, i.e. variation across banks in the relative share of different asset classes (corporate, sovereign, bank, retail, others) and differences in asset composition (low risk vs high risk, rating grades etc) within asset classes. Top-down analysis suggests that based on the data for 67 banks, the average risk weight for individual banks' exposures varied between 11% and 62% under Basel II. However, there are also important practice-based drivers that contribute to the remaining RWA variation. The differences in practices also result from banks' choices under the IRB framework, i.e. varying

² Practice-based drivers such as supervisory choices at the national level, due either to national discretion permitted under the Basel framework, or deviation in national implementation from Basel standards, adjustments made to reflect capital floors and partial use of the standardised approach, differential treatments of defaulted exposures and differential treatments of securitization exposures

IRB approaches used by banks, conservative adjustments to IRB parameter estimates, differences in banks' modeling choices (for example choice of reference data, or methodological differences, such as PD master scales, definition of default, adjustment for cyclical effects, and the treatment of low default portfolios) and differences in interpretation of the Basel framework.

The HPE³ revealed a notable dispersion in the estimates of PD and LGD assigned to the same exposures for the three wholesale asset classes (sovereign, bank, and corporate) which accounted on average for about 40% of the participating banks' total credit RWAs. The HPE also demonstrated that the North American banks generally had above-average risk weights while banks in Asia, Australia and Europe did not exhibit any strong overall pattern, as banks from these regions were found at both ends of the scale. A rough translation of the implied risk weight variations into potential impact on banks' capital ratios suggests that the impact could be material; at the extremes, capital ratios could

	PD	LGD	Maturity
Corporate	***	*	-
Retail	**	***	n/a
Sovereign	**	*	-
Bank	**	**	*

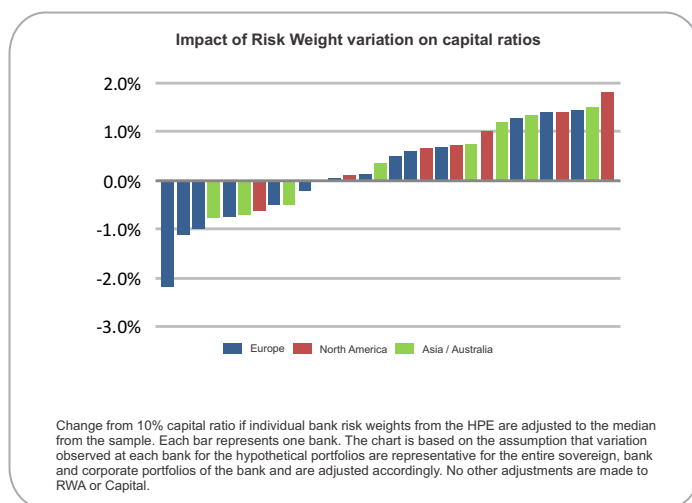
***very significant | ** Significant | *Some Impact | -No observed impact

Conclusion

With the introduction and implementation of Basel III from 2013, the BCBS and regulators around the world have addressed the numerator "Capital" of the Capital Adequacy Ratio formula but there needs to be a thorough review of the denominator "Risk Weighted Assets" to ensure consistency and comparability of the numerous outcomes/approaches that are possible. Unless RWAs are optimized / reduced or business models re-looked at, institutions will not be able to provide pre-2008 ROE levels to investors, subject to appropriate governance of RWA reduction schemes, balance between capital and liquidity measures and other acceptable levels/thresholds set by the Boards.

A number of solutions to the varying RWA problem can be proposed, similar to the conclusions drawn on the trading book RWA review conducted by BCBS.

- Regulators can be more vigorous in removing modeling approval, and could force banks to use the less risk-sensitive Standardised Approach on portfolios where model construction, associated validation and benchmarking are difficult
- The Basel Committee has also suggested that banks calculate and publish their standardised model RWA number alongside their internally modeled figure to enable a fair comparison across institutions.
- A crude flooring system has also been put forward that would prevent internally modeled RWAs falling below a certain percentage of their Standardised Approach calculations.
- Narrowing down the Bank's modeling choices by closely defining the modeling approaches and putting constraints on IRB parameter estimates and thereby reducing variability
- Additional standards / benchmarks around model review, approval, harmonization and the compliance with use test requirements, thereby ensuring consistent review by supervisors of internal models used for RWA computations



vary by as much as 1.5 to 2 percentage points (or 15 to 20% in relative terms) in either direction around the 10% benchmark used for this study. However, most of the banks (22 of the 32 participating banks) lie within one percentage point of that benchmark (see figure above). The HPE results indicated that differences in LGD may be a significant source of variation in RWAs across banks.

The relevant significance of IRB parameters in explaining RWA variations is shown to the left.

³ HPE Comprised of 46 of the largest sovereign debt issuers, 77 bank and 1287 unique corporates.



Enhancing the Risk Disclosure of Banks

Public confidence is the life line of any financial system. In its bid to improve public trust in the Banking system, FSB constituted EDTF to offer recommendations to improve the transparency in risk disclosure of key information and reduce information asymmetry. The article outlines the recommendations made by EDTF and also compares them with the recommendations made in previous studies.

The report “**Enhancing the Risk Disclosure of Banks**” of the EDTF (Enhanced Disclosure Task Force), from the **FSB** (Financial Stability Board), was issued on 29th Oct, 2012, amidst an atmosphere of distrust and acrimony between the Wall Street and the Main Street. Post crisis, there is a genuine concern among investors and stakeholders that it is difficult to understand the banks’ financial health from regulatory disclosures which lacked standardization and did not lend itself to any comparative analyses with peer banks. During the peak of the financial crisis, simple ratios like leverage levels of banks were not immediately apparent from published information. The Lehman Brothers saga made it clear that banks will not always be bailed out and the need to understand the banking industry’s risks gained significance evermore. The public perception of banking industry further deteriorated upon several instances of disingenuous reporting by banks, keeping not just investors but also Boards of directors in the dark about the real risks carried by the banks in their balance sheets. It is in this backdrop that the EDTF report on Risk disclosures gains particular significance. The EDTF report encourages banks to improve communications around their key risks and makes recommendations that, if adopted, will strengthen the quality of risk reporting and the greater transparency may even help improve the competitiveness of banks by reducing the cost of funds.

Background

The Basel Committee, via its Consultative Document on Pillar 3 (Market Discipline) in early 2001, was perhaps the first to come up with a concrete set of risk disclosure recommendations regarding market discipline for the banks. However, the financial crises brought into sharp focus the need to improve the disclosures being done by banks to stem the erosion of public support for banks. Many studies have been conducted since 2007 to analyze the existing risk disclosure practices of banks and other financial institutions. They have come up with more robust guidelines and recommendations of both a quantitative and a qualitative nature, striving to standardize them as much as possible. Some of the chief studies conducted include

1. Report on Leading Practice Disclosures for Selected Exposures by the Senior Supervisors Group, June 2008
2. Thematic Review on Risk Disclosure Practices: a Peer Review Report published by FSB on 18th March, 2011
3. Funding Agencies or Risk disclosure: Principles and Case Studies published by Eurofi in March 2012 among others.

All of the above reports mentioned the need for greater collaboration between the industry and the regulators in order to draft guidelines and best practices that were practical, effective, and implementable. It was with this aim that the Enhanced Disclosure Task Force (EDTF) was established by the FSB in May 2012 to bring together a broad spectrum of participants including standard setters, prudential authorities and market regulators, investors, accountants, auditors and economists. The stated objectives of the EDTF were to:

1. Develop fundamental principles for enhanced risk disclosures,
2. Recommend improvements to current risk disclosures, including ways to enhance their comparability and
3. Identify examples of best or leading practice risk disclosures presented by global financial institutions.

For this study, a sample set of banks were chosen whose annual and interim reports, Pillar 3 reports and other publicly available information, such as media releases and presentations to investors were reviewed, analyzed and extensively discussed. The EDTF found that the state of Financial Risk Management varies to a great magnitude across banks. Banks are at varying levels of sophistication in their risk measurement methodologies and hence this gets carried over into their reporting related processes as well. The level as well as contents of risk management disclosure varies greatly with type of bank under review. Another important factor is the Risk Culture existent among the people of a particular community or nation in which the bank is located. EDTF recommends the following seven fundamental principles that govern all reporting and disclosures by banks as shown in the chart below.



32 EDTF recommendations

The EDTF presented its 32 recommendations across six categories

1. Risk Governance
2. Capital Adequacy and Risk-Weighted Assets
3. Liquidity and Funding
4. Market Risk
5. Credit Risk
6. Other Risks

This article categorizes these recommendations into Major, Medium and Minor Enhancements on the basis of effort required for meeting these enhanced requirements. The recommendations have also been compared to three previous studies conducted namely Pillar 3 (Market Discipline), (BCBS, January 2001), Thematic Review on Risk Disclosure Practices (FSB, March 2011) and Financial Instruments: Disclosures (IFRS 7, May 2012).

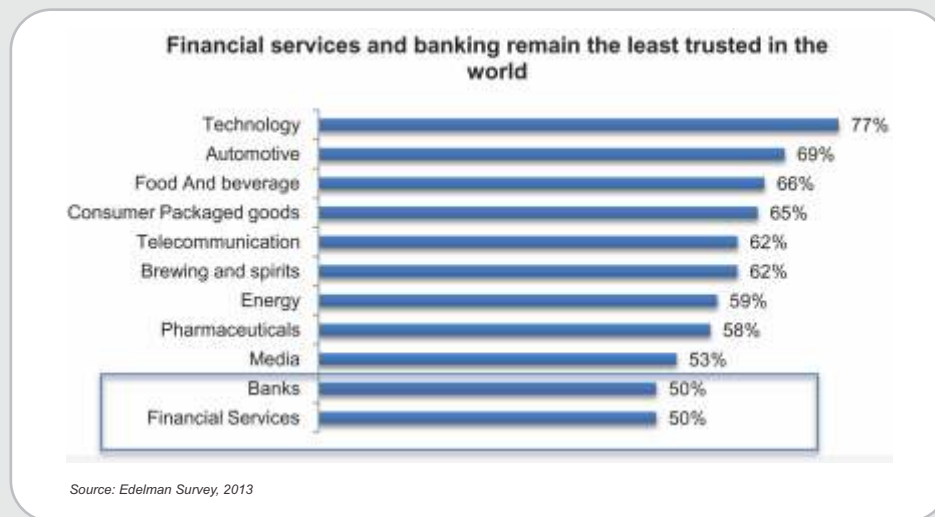
The table below shows the 32 EDTF recommendations, the typical implementation effort required, and also a comparison to other guidelines.

Category	Sr. no.	EDTF Recommendation		Implementation Effort	Similarity of intent under other guidelines		
		Major Enhancements	Minor Enhancements		Pillar 3	FSB March 2011	IFRS
General	1	Consolidate all Risk related information in one place		It is a matter of aggregating and presenting existing information and data, for greater coherence, from existing reports	✗	✗	✗
	2	Define the bank's risk terminology and present key parameter values used.		Banks will want to ensure significant alignment of business strategy and risk strategy and to ensure there is an enterprise wide view of risk management before disclosure. A common language of risk needs to be developed and disseminated at an enterprise level.	✗	✗	✗
	3	Describe and discuss top and emerging risks		Most banks and jurisdictions already require such a disclosure.	✓	✓	✓
	4	Outline plans to meet new key regulatory ratio, e.g. the net stable funding ratio, liquidity coverage ratio and leverage ratio.		While several jurisdictions already require the reporting of some of the ratios, banks will have to present a roadmap for meeting the minimum requirements. Banks that do not meet such minimum requirements will have to develop capital plans for the future and in some jurisdictions will have to get regulatory approval for such plans.	✗	✗	✗
Risk governance and risk management strategies/business model	5	Describe the bank's risk management organization, processes and key functions.		The extent of disclosures expected has increased however most banks are in a position to provide this information	✓	✓	✓
	6	Describe the banks risk culture and how processes are aligned		With greater scrutiny, the banks will have to ensure that the processes are consistent with its avowed business objectives. Banks will however have to link risk appetite to their balance sheet, and this increasing focus on risk appetite would mean that risk appetite statements are not just catch phrases but are well entrenched value systems within the bank.	✓	✓	✓
	7	Describe the bank's risk appetite and how it is managed and link it to balance sheet			✗	✗	✗
	8	Describe the stress testing framework		Banks will have to be prepared to make public the stress testing models being used, the assumptions, limitations and the contingency planning around stress tests. Banks will have to collect macroeconomic data and perform balance sheet forecasting to be able to demonstrate alignment with best practices.	✓	✗	✗
Capital adequacy and risk-weighted assets	9	Provide minimum Pillar 1 capital requirements		Currently being done, enhancements required are minimal	✓	✓	✗
	10	Reconcile the balance sheet to the regulatory balance sheet		Banks will have to improve the IT infrastructure to be able to reconcile and make public the same in a timely manner. Reconciliation between finance data and risk data needs to be done in a timely manner. Early adopters are moving towards an integrated risk and finance data mart.	✗	✓	✗
	11	Present a flow statement of movements to show changes in common equity tier 1, tier 1 and tier 2 capitals.		Such information should normally be readily available with most banks.	✗	✗	✗
	12	Qualitatively and quantitatively discuss capital planning		Several banks have capital planning processes that are not aligned with the budgeting and strategic planning process. There is a need to be able to forecast balance sheet growth not just in accounting terms but also in terms of regulatory capital and Basel Asset classes.	✗	✗	✗
	13	Explain how risk-weighted assets (RWAs) relate to business activities and related risks.		Closely linked to 10, this requires an ability to cross reference accounting figures to RWA numbers.	✓	✓	✗
	14	Disclosures should be accompanied by additional information about significant models used in computing RWAs e.g. data periods, downturn parameter thresholds and methodology for calculating loss given default (LGD).		While the Pillar 3 requirements do specify that model assumptions need to be disclosed, the EDTF reports mentions specific aspects of the models. This will lead to considerably more effort from the banks to be able to disclose such information since there is potential for the model to be questioned for reliability in certain cases.	✓	✗	✗
	15	Give details of PD, LGD and EAD at a granular level. For non-retail banking book credit portfolios, internal ratings grades and PD bands should be mapped against external credit ratings and the number of PD bands presented should match the number of notch-specific ratings used by credit rating agencies.		Mapping between internal and external grades is not always entirely empirical and a certain amount of judgment is used. The EDTF's insistence to focus on this mapping is surprising considering that with the Dodd Frank Act in the U.S., there is a shift away from the reliance on external rating agencies.	✓	✗	✗
	16	Present a flow statement that reconciles movements in RWAs for each RWA risk type.		Information is generally available with most banks, only needs to be aggregated.	✗	✗	✗
	17	Provide details of how the bank has assessed model performance and validated its models against default and loss.		Banks will want to have a rigorous validation process that will stand scrutiny. Significant efforts need to be taken with respect to model validation and its related processes. Stakeholders are aware of issues of model risk and its governance and banks need to have strong controls around all stages of model life cycle right from model development to implementation including model data monitoring	✗	✗	✗

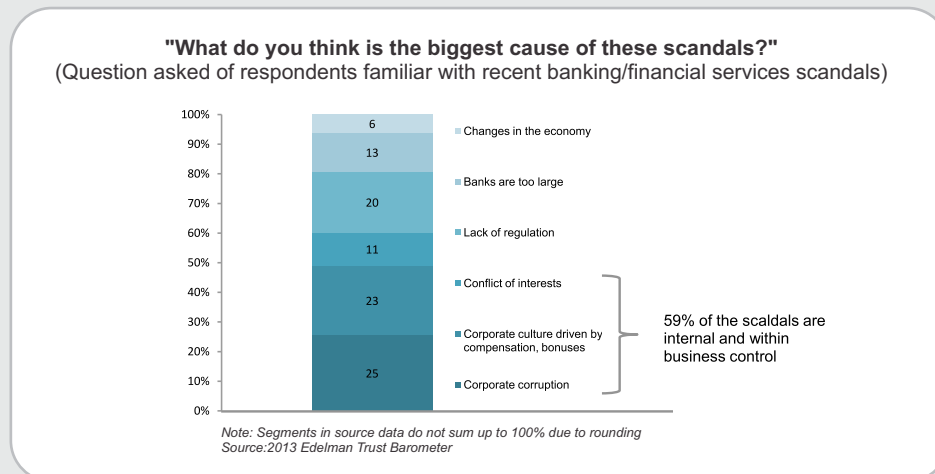
Liquidity	18	Describe how the bank manages its potential liquidity needs and provide a quantitative analysis of the components of the liquidity reserve held to meet these needs	Banks with reasonable IT infrastructure should not have too much of an issue meeting these requirements.	x	x	x
	19	Summarize encumbered and unencumbered assets in a tabular format by balance sheet categories, including collateral received that can be hypothecated again or otherwise redeployed.		x	x	x
Funding	20	Tabulate consolidated total assets, liabilities and off-balance sheet commitments by remaining contractual maturity at the balance sheet date. Banks should provide a narrative discussion of management's approach to determining the behavioral characteristics of financial assets and liabilities.	Banks will have to provide details of any behavioral models that are being used for managing liquidity. Banks will want to significantly improve their models prior to making public the details of such models.	x	x	✓
	21	Discuss the bank's funding strategy	Banks generally have such information readily available, should be able to provide such information easily	x	x	✓
Market risk	22	Provide information that facilitates users' understanding of the linkages between line items in the balance sheet and the income statement with positions included in the traded market risk disclosures	As with credit risk, banks will have to reconcile the regulatory reporting and balance sheets	x	✓	x
	23	Provide further qualitative and quantitative breakdowns of significant trading and nontrading market risk factors	Banks should have this information readily available	✓	x	x
	24	Measurement model limitations, assumptions, validation procedures and use of proxies,	While Pillar III guidelines also mentions the same, the EDTF guidelines refers to specific assumptions that need to be disclosed, which would mean that banks would want to significantly improve the modeling related processes to gear up to the enhanced disclosure requirements	✓	✓	x
	25	Provide a description of the primary risk management techniques employed by the bank to measure and assess the risk of loss beyond reported risk measures and parameters, such as VaR, earnings or economic value scenario results, through methods such as stress tests, expected shortfall, economic capital, scenario analysis, stressed VaR or other alternative approaches.	Business needs to be prepared to disclose market risk metrics that are coherent and consistent with their business goals and do not limit such disclosures just to banks under the Internal Models approach (IMA) which was the case under the Pillar 3 disclosures.	✓	✓	✓
Credit risk	26	This should include a quantitative summary of aggregate credit risk exposures that reconciles to the balance sheet, including detailed tables for both retail and corporate portfolios that segments them by relevant factors. The disclosure should also incorporate credit risk likely to arise from off-balance sheet commitments by type.	Existing information needs to be presented differently. However there is a need to demonstrate the reconciliation between regulatory reporting and balance sheet reporting.	✓	✓	✓
	27	Describe the policies for identifying impaired or non-performing loans, including how the bank defines impaired or non-performing.	Banks will want to ensure that the non-performing loan policies are in line with the best practices.	x	x	✓
	28	Provide a reconciliation of the opening and closing balances of non-performing or impaired loans in the period and the allowance for loan losses and also, qualitative and quantitative information about restructured loans	Banks will have to improve the IT infrastructure to be able to reconcile and make public the same in a timely manner	x	✓	x
	29	Provide a quantitative and qualitative analysis of the bank's counterparty credit risk that arises from its derivatives transactions.	Only a minor enhancement from current practices in large number of banks.	x	x	x
	30	Collateral disclosures should be sufficiently detailed to allow an assessment of the quality of collateral.	Banks should have this information readily available, however the intent of the EDTF guidelines is that collateral be more actively monitored. Banks would want to be in line with best practices in collateral management and would want to put up sufficient IT infrastructure for the same to get any capital benefits through credit risk mitigation.	✓	✓	x
Other risks	31	Describe 'other risk' types based on management's classifications and discuss how each one is identified, governed, measured and managed. In addition to risks such as operational risk, reputational risk, fraud risk and legal risk, it may be relevant to include topical risks such as business continuity, regulatory compliance, technology, and outsourcing.	Banks will want to ensure their other risks including the Pillar II risks are monitored actively and that the measurement techniques are in line with best practices	x	x	x
	32	Discuss publicly known risk events related to other risks, including operational, regulatory compliance and legal risks, where material or potentially material loss events have occurred. Such disclosures should concentrate on the effect on the business, the lessons learned and the resulting changes to risk processes already implemented or in progress.	Considerably greater qualitative disclosure is expected in relation to other risks.	x	x	x

Tiding Over A Trust Deficit

From Libor to money laundering and trading to executive compensation, it is no surprise that trust in banks, and the industry at large, remains low. Banking and financial services are the world's least-trusted industry for the second year in a row, according to an annual survey by public relations firm Edelman. The 'Edelman Trust Barometer' measures the state of trust around the world by exploring trust in institutions, industries, leaders and the impact of recent crises in the banking and financial service sectors. Shown below is the 2013 Edelman Trust barometer survey that sampled 26,000 general population respondents across 26 countries



2013 Edelman Trust barometer survey also found the perception was that the 59% of the reasons for scandals are internal and within business control and hence avoidable.



It also showed that business performance is now table-stakes. When asked to rank which attributes would build their trust in Financial Services, attributes relating to Integrity and Engagement ranked much higher than Profit related attributes. This further reinforces the importance for the banking industry to not just uphold high standards of integrity but also demonstrate the same through active engagements with all its stakeholders, both internal and external. Developing standardized reporting templates and guidelines is admittedly not a panacea for all future crises. However it is still a significant step in the right direction that can make the banks seem as less of a black box to help repose the public's confidence in them

Next Steps

Recent studies have shown how reporting quality is positively associated with banking stability. It has been seen that lower reporting quality before the crisis is associated with higher non-performing loans and lower profitability at the onset of the crisis. Going forward, as these guidelines evolve into best practices, banks will need to identify a roadmap for meeting with the guidelines starting with a gap analysis to identify the source systems and the data points it will need to collate to meet with the requirements. While a few of the recommendations may be easy to meet, some of the 'major enhancements' may require a significant overhaul of existing processes and may well necessitate additional system implementations. Some of the onerous among the recommendations include the need to reconcile between the risk and finance data. The early adopters among banks have foreseen this trend and have started moving towards an integrated risk and finance framework. On the technology side, this is an opportunity for vendors to develop reporting systems and data models that can accommodate such a fast pace of reforms and the first movers among them will stand to benefit a great deal. Banks that see this as an opportunity to engage with the stakeholders and that do not see this as yet another compliance burden stand to improve not just their reputations but also their competitiveness.

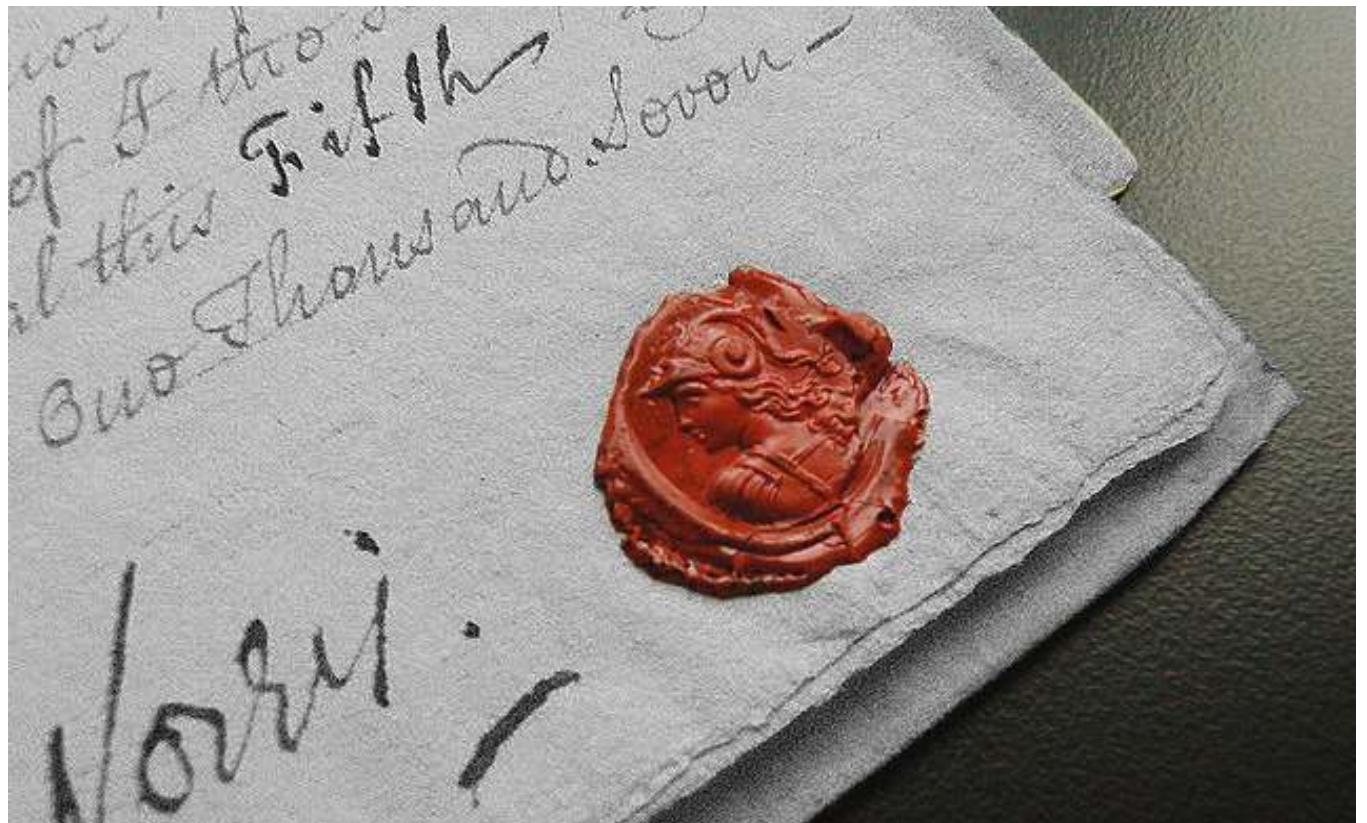
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Recovery & Resolution Plan

A challenge for financial institutions

Taking cognizance of the cascading impact generated by the G-SIFIs during the Financial crisis 2008 following the collapse of Lehman Brothers, the G20 leaders endorsed 'the Key Attributes' which would require G-SIFI to draw out, maintain and submit recovery and resolution plans



High level background

The financial crisis in 2007 sparked the development and introduction of a considerable number of regulations across the globe, seeking to address issues which led to the crisis.

It became clear that, as financial systems were interconnected, the failure of some of its key players could potentially trigger the collapse of the global financial system unless the government (i.e. taxpayers) bail out the failing institutions.

Coordination amongst authorities is taking place at the Financial Stability Board (FSB) which was created in 2009 from the Financial Stability Forum (founded in 1999 with the intent to enhance cooperation among national and international supervisory bodies and international financial institutions to promote stability in the international financial system). The FSB developed a legislative framework named 'Key attributes of effective resolution regimes for financial institutions' which has been the guidance for regulators across the globe to set domestic standards for supervisory bodies.

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The US and the UK, given the concentration of large financial institutions in those countries, have been developing strategies to allow those complex and large financial institutions (G-SIFIs) to be resolved without threatening the financial stability of home or host financial systems whilst protecting public funds. A top-down resolution strategy that involves a single resolution authority applying its powers to the top of the financial group was developed and implemented through the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 in the US and the Special Resolution Regime introduced by the Banking Act 2009 in the UK. Further guidance for the UK will be provided by the European Union Recovery and Resolution Directive which should be finalised by all European Union member states in the near future.

The result of these regulatory initiatives and subsequent legislation is 'Living Wills' or 'Recovery and Resolution Plans' (RRP or plan). Key financial institutions were selected by financial regulators to prepare and submit an RRP based on the systemic risk and threat of contagion that the failure of a firm might have on financial systems.

RRP development and challenges

The development and implementation of RRP requires substantial commitment of resources from the financial institution. Projects designed to facilitate the development of RRP are complex and require the full support of the Board of Directors (Board) which is ultimately responsible for the sign-off of the plan. The Board is also required to engage in on-going dialogue with local regulators who will ultimately test the plan for credibility.

In order to ensure firms have an RRP that is fit for purpose, a function dedicated to and responsible for the delivery and maintenance of the plan is created with the full support and approval from the Firm's Board. The complexity and interconnectedness of activities carried out by the financial institutions might make the approach and development of plans different from firm to firm, albeit some elements such as impediment identification and remediation are common amongst firms.

The 'RRP function', which reports to an Executive in Charge nominated by the Board, sets up the project involving key stakeholders from the various business functions, develops the Terms of Reference in line with regulatory requirements, drafts resources for the plan, prepares the budget and in general supports the business functions setting up controls and monitoring processes necessary to embed RRP into the business-as-usual activities of the firm.

The various regulations usually require firms to follow (to a different degree) a pre-defined Table of Content, however the format is usually left to financial institutions to develop. This allows a firm to tailor their plan to the specific nuances of their organisation. One potential draw-back to this is that regulators receive submissions which may vary significantly in style, complexity and structure which, in some cases, results in sub-standard plans which are rejected by the authorities and require re-submission.

Potential consequences of re-submission could be very costly including request from authorities for additional capital or liquidity levy until they are satisfied with the credibility of the new plan. In extreme case, it is also considered the restructuring or even the closure of the institution.

How to support financial institutions?

Methodologies and tools to support firms in their 'journey to RRP compliance' can be deployed, however it is important to note that this does not guarantee that the regulators will deem the plan to be complete or credible. External support in the form of deployment tools or

methodologies should provide financial institutions with a tested and structured approach, helping focus on key regulatory requirements and plan prioritisation.

RRP projects typically consist of a central project team, within the RRP function, supported by 'work-streams' where internal and sometimes external subject matter resources are integrated, providing key technical expertise (however this may vary depending on the complexity of the activities performed by the firm).

Identification of key areas in scope at the inception of the project is paramount to facilitate resource planning, budgeting and defining a roadmap which is understood and agreed by all stakeholders. Key areas typically include RRP governance, finance, tax, treasury, property, key IT systems and applications, payment infrastructures, HR, the operating model of the firm, the critical economic functions, etc. Firms are required to identify, map and validate key data, identify potential barriers to resolution (impediments), identify key management information systems, infrastructure analysis and separability of legal entities in order to develop a robust plan.

These are only few of the elements which financial institutions must consider when embarking on an RRP programme, however developing a strong internal team of expertise in RRP (which might be supported by external counsel) to guide through the project can make this journey less daunting. It is also important to remember that the RRP submission is not a one-off event but it is an ongoing activity for financial institutions.

Conclusions - It is not all bad...

Global regulatory reform continues to evolve and expand its reach into the financial regulation of G-SIFIs and also affecting non G-SIFIs. The ongoing nature of RRP means that they will need to develop in alignment with the regulatory landscape and incorporate new regulation, for example, to account for new retail ring-fencing regulation, further enhance on cross-border resolution and regulatory cooperation, bail-in etc. Since G-SIFIs have been demanded to develop their plans, they made progress towards resolvability. However, on the new guidance issued by the US regulator on the 15 April 2013, financial institutions are required to explain how they would overcome hurdles such as interconnectedness, counterparty, and funding and liquidity issues, hinting the previous submissions were not fully addressing those items. It is also expected, for 2013, the new guidance from the UK authority.

As mentioned above, those new guidances will require further enhancements when new regulation on retail ring-fencing etc., are defined. Despite the challenging tasks institutions may face to comply with this type of regulation, RRP could also be leveraged to generate strategic analysis providing cost/benefit considerations on the institution's investments. Moreover, rationalisation of legal entities, negotiation of third-party contracts and enhancement of risk management practices including governance are only few of the benefits that can be derived from an RRP programme.

Firms are required to identify, map and validate key data, identify potential barriers to resolution (impediments), identify key management information systems, infrastructure analysis and separability of legal entities in order to develop a robust plan.



Nick Ottogalli

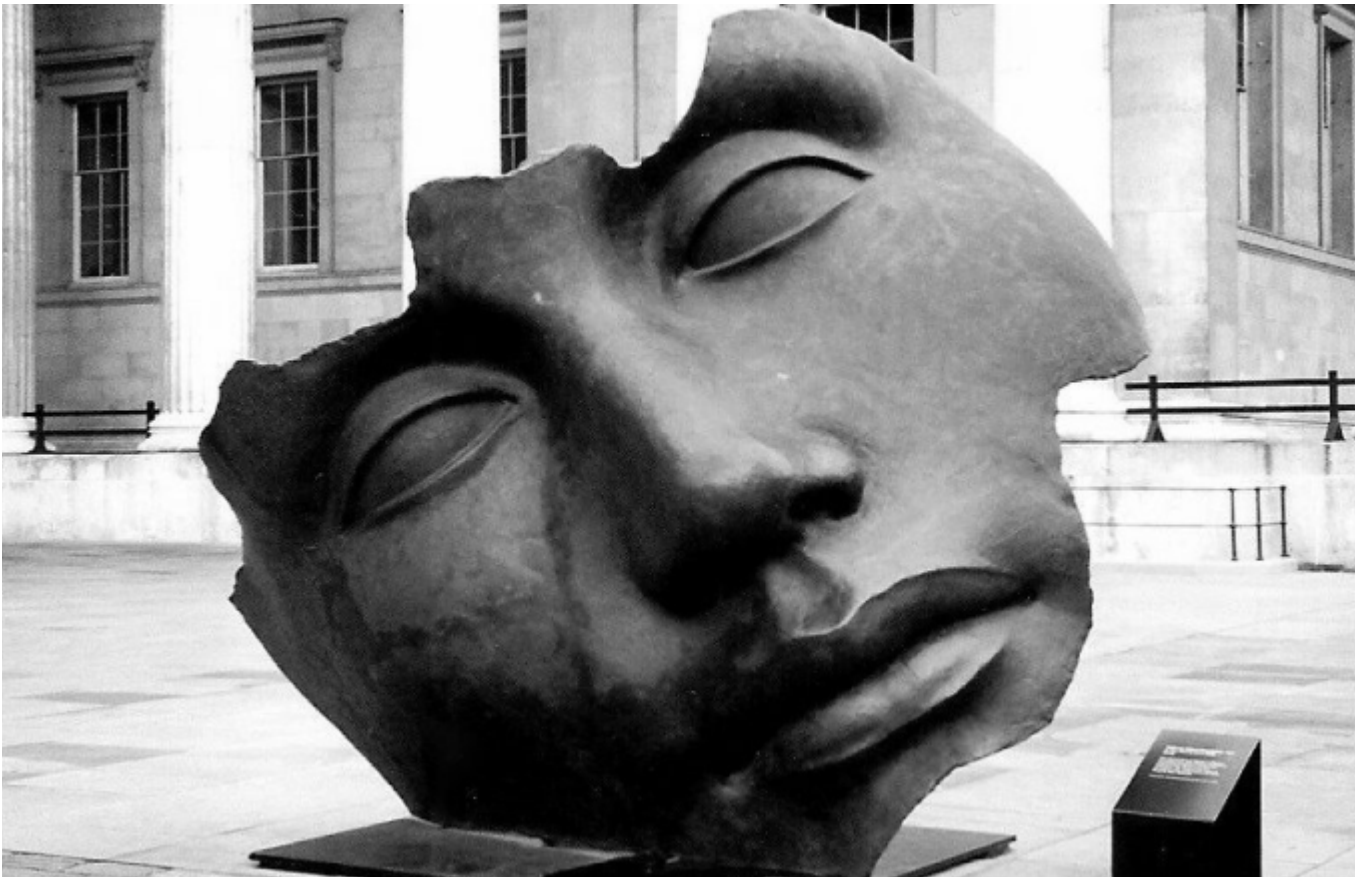
Nick is an experienced Risk consultant based in London. Before setting up his own firm, he worked at the Financial Services Risk Organisation of a world renowned consultancy firm where he advised clients in the enterprise risk space, specifically credit and operational risk. He also worked at the UK Financial Services Authority (now Prudential Regulatory Authority) reviewing Recovery and Resolution submissions from UK and International Financial Institutions and advising on credibility and potential for future enhancements in evolving regulatory requirements. Nick has also recently collaborated with a large US Investment Bank, helping to develop their resolution plan submission to the US Agencies.

Before embarking on a career in consulting, Nick worked as Credit Risk manager at a major, UK based International Financial Institution and as Head of Credit at a major multinational US Corporation where he led the Credit Risk team for Italy, the Middle East and Africa.

Nick is a qualified accountant who studied Economics at the University of Udine, Italy and is a PRINCE 2 certified professional.

Managing Fraud in Financial Institutions

The growing incidence of fraud and capabilities of the fraudsters urge financial institutions to revisit their existing fraud detection process. This article introduces a typical fraud management framework and discusses the capabilities required to manage it.



Introduction

The recent ATM fraud perpetrated in May 2013 leading to losses of USD 45 million underscored several realities that the world needs to take cognizance of:

- Fraud rings can coordinate activities globally, and manage precision in logistics yet retain an ability to stay below the radar of surveillance and monitoring agencies
- Fraudsters now bring together multiple capabilities such as hacking, skimming and card replication to improve their ability to penetrate multiple touch-points and use the information gained in a far more effective manner
- There is a lack of sophistication and uniformity in the security environments of institutions, which enables fraudsters to target lucrative targets within the weaker sub-set

The incident above was but one example of payment fraud. Figures for the UK indicate that fraud in the payments industry alone is expected to be in excess of USD 600 million per annum¹. This article introduces the key concepts relating to fraud in financial institutions, covering key categories, key issues, components of a fraud management framework and, most importantly, a fraud detection engine.

Some of the statistics, though intimidating, lend a measure of comfort to fraud management analysts. For example, while overall numbers may have grown, the proportion of fraud as a percentage of business activity has fallen. This indicates that fraud management efforts have resulted in a reduction of losses on a comparative basis. However, closer analysis reveals that fraudulent activity has rather moved from high monitoring zones to low monitoring zones. The movement to less monitored geographies and jurisdictions, or targets other industries, or industry participants is because such zones do not have the same level of sophistication in detection and control mechanisms as the more mature zones.

Today the proliferation of information has allowed impersonation and identity theft more possible. Generations of bloggers and social networking site users may realize in coming years that they have become entries in a database which contains key personal details such as date of birth, name of their first pet, mother's maiden name.

The financial services industry has always been more prone to fraud, since the assets dealt with are easily convertible to cash. In addition, the competitiveness in retail services as well as the increasing sophistication of the financial services industry has allowed fraud to rise rapidly:

- Advancements in and adoption of leading technology has ensured that the payment industry (plastic cards, cheque and e-channel payments) has the ability and the responsibility to process payments instantly; this is combined with the increasing adoption of electronic payment channels by consumers
- Institutionalization of the different stakeholders in the credit approval process and the insurance policy issuance process has opened the sector to new variants of fraudulent activity
- Pressure on retail players to leverage technology and rapidly perform certain activities (e.g. extend loans or issue policies)

Richard McFeely of the FBI's Criminal, Cyber, Response, and Services Branch believes that criminals are increasingly migrating their fraudulent activities from the physical world to the Internet². As security mechanisms are strengthened, the sophistication of fraudsters has also improved. Institutions have learned that even two factor authentication is not a guaranteed mechanism to avoid fraud events.

Key Fraud Categories

There are several categories of fraud, of which, the following are the key categories that draw the most attention in financial institutions:

Fraud Type	Industries Impacted	Description
Claim Fraud	Insurance	Excessive, abusive and fraudulent claims are made under an insurance policy by individuals or in collusion
Credit Fraud	Banking, Mortgage, Cards, Finance	Loans and credit lines are acquired by fraudulent means, which enable fraudsters to withdraw funds
Payment Fraud	Banking, Cards	Payment channels are compromised to fraudulently embezzle customer funds at point of payment (ATM, Point of Sale, e-commerce portal) Includes both 'Card Present' and 'Card Not Present' cases
Employee Fraud	All	Embezzlement, manipulation of procurements and expenses for personal financial benefit

¹ Financial Fraud Action UK Report "Fraud – The Facts 2012: The Definitive Overview of Payments Industry Fraud and Measures to Prevent It"

² IC3 2012 Internet Crime Report - <http://www.ic3.gov/media/2013/130514.aspx>

Fraud Management Issues

Fraud Management Issues – ‘Defining’ Issues:

The issues relating to fraud management begin with an organizational definition of what constitutes fraud, and this is aptly highlighted using the following examples:

- Fraud versus mis-selling: mis-selling is particularly sensitive for an insurance entity as it results in a contract with asymmetry between anticipated and committed benefits
- Fraud for profit and fraud for credit: credit applicants may indulge in fraudulent mis-representation to receive credit facilities from an institution, and there may be no intention to defraud the institution of its funds (fraud for credit). On the other hand, there may be borrowers who have falsified documents with the sole objective of receiving credit facilities and subsequently willfully default (fraud for profit).
- Moral and other irregularities: moral irregularities, which may militate against the ethical standards of the institution may not fit the definition of fraud. For example, fast tracking a policy of a known party by an underwriting specialist may be improper but not mala-fide, and the intention of neither the applicant nor the underwriting specialist may be to defraud the institution.
- Negative and positive variants of fraud: failure to disclose could be as damaging as misrepresentation of material facts, and organizations often have positive affirmations to ensure that fraudsters cannot resort to non-declaration of facts, or ignore consequences of such acts

The issue confronting the institution is, on the one hand, whether cracking down on fraud using the expanded definitions will result in a very restrictive operational atmosphere. On the other hand, identifying fraudsters using the expanded definition enables analytics to profile the entire fraud ecosystem in a far superior manner. For example, agents engaging in mis-selling financial products to investors are more likely to falsify records to ensure the policy is sold, and this enables us to add data of such agents and their related documentation to the fraud analytics database, and analysts can better visualize inter-linkages between entities that were hitherto not visible to the naked eye (we will discuss this further when we touch upon link analytics). Mis-selling also signifies a more ‘permissive culture’ which is ideal for perpetration of fraud.

Fraud Management Issues - Categorization and Reporting

Some of the key issues faced by institutions in fraud categorization and reporting:

- Internal, External or Collusive: a large number of frauds reported start off as purely internal fraud or external fraud transforms into collusive fraud upon investigation. This confounds the regulatory reporting of fraud, as a segregation of internal versus external fraud is required under some regulation, and opens up the question as to how losses under the same event could be segregated across internal and external fraud.
- Reporting Amount: In certain categories of early stage detection of fraud (i.e. when the fraud has not been successful, such as in credit origination fraud or insurance claim fraud, in the policy approval stage), the amount of the fraud is questionable, since it has not actually taken place. Here conservativeness demands that the full potential value of the loan or policy should be recognized by the organization as the potential loss. However, it may be in the organization’s interest to understand how the industry is doing its reporting, lest this organizations numbers end up reflecting an above than industry position and generating uncalled for regulatory interest.
- Near Misses: A large number of frauds being averted due to rigorous prevention and control mechanisms, and nowadays also by using automated detection mechanisms. In certain cases the fraud event does take place, but early detection and investigation enables the institution to get a complete recovery from the perpetrators. Frauds that are unsuccessfully attempted still constitute a key component of



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the operational risk and fraud loss modeling datasets. Different institutions follow different conventions in inclusion of such fraud events in their modeling procedures. For example, some institutions include near misses for generating frequency distributions of fraud events as the events did take place, but drop these events in severity modeling. However, many analysts believe such events need to be included for severity modeling, as 'zero loss' events, since frequency and severity are both eventually combined to create a loss distribution. Eventually such issues need to be decided by the organization, based on a perception of 'which scenario better replicates reality' and even more importantly on regulatory guidelines.

Fraud Management Issues - Other Issues:

- **Real-time or Lagged:** Most categories of fraud allow some response time to analysts to run detection rules and also utilize the benefit of focused investigations. However, electronic payments, which increasingly constitute the bulk of fraud, do require real time decision making. In such cases, the benefits of investigations are ruled out, while there is pressure on the detection mechanisms to take into account recent events. For example, in the case of runaway fraud, the fraud detection mechanisms need to recognize the other recent payments that may have been made, and also factor in the information content of such payments, such as payment codes implying near cash purchases, location conflicts or payments not in line with the purchase behavior of the customer. **Suspected Fraud Communication:** Fraud detection is usually considered the starting point for investigation. Institutions may not be legally allowed to label candidates as 'Potentially Fraudulent' or 'Suspected Frauds' in external communication, unless investigation backs up the detection trigger. On the other hand, there may be legal requirements to investigate a fraudulent candidate, once a trigger has been generated in the detection machinery.
- **Collaboration Arrangements:** Unlike risk management, it makes sense for institutional participants to collaborate in managing fraud, and not sharing information may give a competitive advantage that is outweighed by the overall advantage gained by fraud rings and other linked unsavory elements. Any collaboration makes sense, and more collaboration makes more sense. Even basic collaboration mechanisms such as informal networks for sharing incidents and anecdotes have resulted in avoidance of frauds by other institutions. At the mature end of the continuum are closed user groups of industry participants maintaining shared databases for running analytics to detect potentially fraudulent cases. Usually fraudsters have migrated away from such environments into less safe environments.

Institutions require a comprehensive fraud management framework to execute and oversee fraud management activities.

Key Components in Fraud Management Framework

Institutions require a comprehensive fraud management framework to execute and oversee fraud management activities. A typical framework consists of the following key components, a brief description of each of which is outlined below:



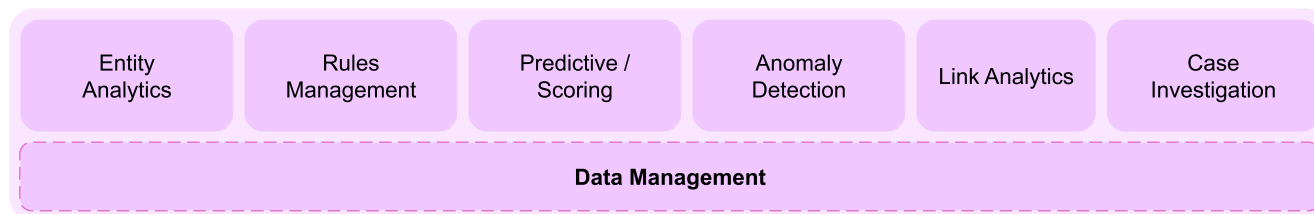
- **Fraud Governance:** The governance component covers design and operation of the fraud management organization, the policies and the processes. This ensures independence of the fraud management function, and precludes executive management override of fraud prevention or investigation activities. Fraud governance also includes a board level oversight of the fraud management activities within the institution.
- **Fraud Assessment:** Fraud assessments are carried out to generate a picture of the susceptibility of the institution to fraud. While this picture is generated using objective and subjective inputs from experts within the institution, it is a reliable tool to understand where the hotspots lie and also generate a better picture of the control weaknesses in those areas.
- **Fraud Identification:** Fraud identification processes are part of the operational processes which examine regular business activities with the objective of identifying fraud. For example, the Fraud Control Unit of a retail bank consists of analysts scrutinizing documentation linked to credit applications to identify potentially fraudulent applications.
- **Fraud Detection:** Fraud detection is usually based on sophisticated analytical techniques that sift through large volumes of data and generate alerts against suspicious candidates. More details on detection techniques are shared in a later section of this article.
- **Fraud Investigation:** Fraud investigation begins when either the fraud identification team or the detection team has generated an alert regarding a suspicious case, or if a complaint has been received by a whistle blower. The fraud investigation unit typically has extensive

access to information, and power to proceed against senior executives.

- **Fraud Reporting:** The fraud reporting team generates internal and external reports covering the fraud management activities and also collates and presents analysis to the management. This team also ensures information is available to relevant executives in dashboards.

Fraud Management Capabilities and Techniques

The range of capabilities required in managing fraud in an institution is very broad, but at a minimum it must encompass certain core capabilities:



- **Data Management:** The foundation of any fraud detection, analysis and investigation capability is a comprehensive database of data on both regular and fraudulent activity. While key constituents of the database include watch-lists of suspicious cases or known fraudulent entities, a large section of the database covers variables relating to the business activity being covered and descriptor characteristics, attributes and sub-populations of the population being analyzed. The feed to this database could be periodic (batch) or online/real time, and a large number of variables are created prior to the analytical components like rules and predictive models taking over. The database therefore periodically runs transformation rules to ensure that the shell of variables required for running the analytics is re-computed based on the latest data. This could include variables such as moving averages for transaction or application velocity bases. The fraud management database also covers the result of investigations. Increasingly, fraud management databases are being required to store and process unstructured data for the purpose of fraud identification. The fraud management database also is the vehicle for data sharing arrangements across consortia, closed user groups or co-regulated groups.
- **Entity Analytics:** Entity analytics utilize sophisticated analytical capabilities to identify unique members of the population. While this may not be required in certain sub-categories of fraud (e.g. 'off-us' card payments), other sub-categories (such as credit origination) require this capability. Solutions performing this function cover various capabilities, such as name recognition, entity resolution, and relationship resolution. Once the candidate is identified as a unique case, the rest of the analytical techniques can be run. In the initial stage, entity analytics matches the set of unique cases with datasets of known frauds and suspicious entity.
- **Business Rules:** Business rules are the primary key techniques for identifying potential fraudulent candidates. Rules are heuristic and experiential, but learning can be extended across different institutions. Rules are essentially of three categories, not all of which can be leveraged for all fraud detection objectives. There are (a) profiling rules, which combine various criteria to identify profiles of candidates who are prone to being fraudulent, (b) velocity rules, which identify when activities increases above a certain level, and (c) mismatch rules, when profile characteristics differ from expected characteristics. Since rules are heuristic in nature, it takes a lot of titration to ensure a balance between false positives and true positives, which enable the organization to maintain a corresponding balance between the cost of investigation of identified potential frauds due false positives and the fraud loss sustained on account of false negatives ignored. The titration of rules can also be designed to take place simultaneously, with champion/challenger rules being constructed on each decision node.
- **Predictive Techniques and Scoring:** Data mining or statistical predictive analytics include a range of techniques, both of the 'black box' variety such as neural networks or support vector machines, or 'white box' techniques such as logistic regression and decision trees to help identify high probability fraudulent candidates. The challenge with predictive techniques is that while they require a large number of independent/predictor variables, they are particularly sensitive to availability of outcome or performance data (i.e. in this case 'actual frauds'). Unfortunately, in the initial stages there is always a paucity of performance data, and model discriminatory power is usually weak. In addition, models that help identify different sub-categories of fraud within a category of activities (e.g. credit origination) are based on different fraud drivers, and hence a single model for all sub-categories is inappropriate. Also, as fraud trends become known, there are process and control changes that take place, and also rejection of a large number of identified suspicious candidates, which impairs model efficacy over a period of time. Most

Business rules are the primary key techniques for identifying potential fraudulent candidates. Rules are heuristic and experiential, but learning can be extended across different institutions.

importantly, as fraud perpetrators try to build profiles which are similar to good profiles, predictive models are intrinsically weak and generate a large number of false positives. Model performance improves gradually over a long period of time, though consortium data help the model performance improve considerably. However, institutions need to thoroughly test models based on consortium data to ensure compatibility prior to operationalization of such models. Also, most institutions also look to test the statistical efficacy of the rules in fraud identification, and use the same as characteristics or independent parameters in predictive or scoring models, which underscores the synergistic nature of rules and models.

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- **Anomaly Detection:** Anomaly detection is an extension of business rules. It is based upon (a) identifying natural clusters within the overall population and then (b) building profiles of exhibited behaviors and (c) identifying outliers, or candidates who demonstrate anomalous behaviors vis-à-vis the average behavior for the cluster. In the initial stages organizations design these clusters and the parameters for benchmarking behaviors based on heuristic or experiential principles. More evolved organizations leverage data mining clustering techniques (such as 'K Means') for designing cluster definitions which help decide cluster membership. A little more effort goes into determining outlier behavior, and this involves heuristics and experience, and evolves over time. Anomaly detection is a powerful technique, and it is critical when performance or outcome data on confirmed frauds is not large enough to build a quality predictive model.
- **Link or Network Analytics:** Once there is a reasonable dataset of information of potential fraudulent candidate, link analytics enables visualization of correlated information and navigation across information bases, and helps discover many more relationships that lead us to discover other potential frauds, and also build up a stronger case during the investigation. Due to the exponential nature of relationships, link analytics can be progressively computing power hungry as data being analyzed gets built up, hence it is important to carefully build the foundation or feeding layer to the link analysis solution, and the manner in which relationships are built up. Link analysis also enables analysts to collate related information about potential or flagged candidates from multiple internal and external sources. The outcome of link analysis can also be cycled back into the fraud management data base, to assist in easier identification of future fraudulent candidates.
- **Case Investigation:** All data of suspicious fraudulent entities gets generated and fed into a case investigation layer in the organization. Analysts who manage this layer often use the outputs of the triggered candidates across all techniques (rules, scoring, anomaly detection and link analysis) to the case investigation. A critical component in the investigation is the prioritization mechanism, to ensure that investigators focus efforts on high impact items. Case investigators usually also have access to the link analysis work-bench to help gather and document evidence. Case investigators also need to trigger field investigations and confirmations by other agencies involved in the original transaction.

Conclusion

All organizations are susceptible to fraud in varying degrees. Most organizations have some elements of a fraud management framework in place, but significant ground needs to be covered given the increasing sophistication of fraud perpetrators globally. So far, there has been no incidence of an institutional collapse due to a fraud, but the days may not be far when that becomes a reality. And destiny favors the prepared.



Sanjeev Shukla

Sanjeev is a Principal Consultant with Aptivaa Consulting. Previously he led the Risk and Advanced Analytics Practice in IBM Global Business Services for India and South Asia, which had a key focus on fraud and financial crime. Sanjeev began his professional career in two very large Asian banks where he was exposed across diverse banking functions. Subsequently he worked with various consulting companies and technology majors such as Experian, Risk Technologies, KPMG and Oracle, providing consulting services to financial services clients in the areas of risk and fraud. Sanjeev has authored various articles pertaining to financial services in the areas of risk management, and has presented on subjects related to risk and fraud in various prestigious forums. He is an Economics Honours graduate from SRCC (Delhi University), and a MBA from the NUS Business School (Singapore), where he was an ADB scholar and recipient of the Ernst & Young and Inchcape prizes for academic excellence.

Liquidity Risk & Leverage Ratios

The Basel III Liquidity Coverage and Leverage Standards are changing. This article highlights the main changes and their impact on banks.

On the 7th of January 2013, the Basel Committee on Banking Supervision (BCBS) issued its final guidance on the Liquidity Coverage Ratio (LCR) and on 26th of June, issued a consultative document on the non-risk based leverage ratio. These documents include significant changes to the original documents on Liquidity and Capital issued in 2010.

Liquidity Coverage

The LCR and its long-term counterpart Net Stable Funding Ratio (NSFR) form a key part of the Basel III measures that were designed to bring in more stability to the Banking system in the light of the 2008 crisis. These liquidity measures were meant to ensure that in the future, Banks would have sufficient liquidity to survive a stress on the banking system and not collapse like some banks in 2008. The LCR requires banks to have a stock of high quality and highly liquid assets that can be easily converted to cash so that they can survive a 30 day stress in the credit markets.

The original LCR and NSFR measures were said to be extremely stringent by some industry bodies and they lobbied hard to reduce the impact. Banks had said that these new liquidity measures will lead to a large increase in their stock of High Quality Liquid Assets (HQLA) which in most countries are typically government bonds. These stocks of government bonds provide lower yields than other assets such as loans and hence would impact the profitability of banks to an extent. This would also mean a lower amount of funds would be available for lending to businesses and individuals, and the reduction in fresh credit may lead to a prolonging of the recession or almost zero economic growth witnessed in most developed countries. Another reason for the bankers worry was that the Euro Zone crisis showed that the long-held notions of Sovereigns being extremely solvent and creditworthy were no longer true, and by keeping on adding to their government bond pile, they may not be making their banks more resilient.

All throughout 2011 and 2012, the BCBS studied these suggestions along with empirical data and in its final guidance, incorporated some of the industry suggestions. It also clarified some of the points mentioned in the earlier guidelines so as to make the implementation more consistent and transparent. Some observers saw the changes as a weakening of the standards and a caving in to the demands of large global lenders. However, the head of the Group of Governors and Heads of Supervision (GHOS), which decides on global bank regulations- the then Bank of England Governor Mervyn King, said that the final guidance was "a compromise between competing views from around the world", "a realistic approach" and "certainly did not emanate from an attempt to weaken the standard".

The banks got a four year window to meet the 100% LCR requirement, will be able to pick from a longer list of approved assets including equities and securitized mortgage debt for building up their buffers of liquidity for use in a stress scenario and would be able to use lower run-off percentages for some of their deposits and wholesale market borrowings.

Applicability of LCR

The minimum LCR in 2015 would be 60% and increase by 10 percentage points per year to reach 100% in 2019

The new guidance keeps the original LCR start date of 2015 but has lowered the minimum requirement at the start from 100% to 60%. An

incremental approach which is similar to the one adopted for the Basel III capital requirements, has been adopted due to the potentially significant implications on credit expansion and economic recovery of a one shot introduction of 100% LCR in 2015. The table below illustrates the timelines and the minimum requirement at each stage.

	1 January - 2015	1 January - 2016	1 January - 2017	1 January - 2018	1 January - 2019
Minimum LCR	60%	70%	80%	90%	100%

The revised LCR standard clarifies that a bank may use its stock of HQLA in times of stress and due to this usage, the LCR can fall below the required minimum.

Central Bank Reserves

Supervisors have national discretion to include or exclude required central bank reserves as HQLA as they consider appropriate

The new standards have confirmed that supervisors have national discretion to include or exclude required central bank reserves (as well as overnight and certain term deposits) as High Quality Liquid Assets (HQLA) as they consider appropriate. In many jurisdictions, the original purpose of asking Banks to keep central bank reserves was to ensure that banks set aside a certain portion of their outside liabilities, with the Central Bank, so that they could use it in any liquidity crisis. This change in the language will allow the national supervisors in those jurisdictions to ensure consistency between the current liquidity regime and Basel III LCR.

HQLA Items

HQLA to include Corporate Bonds rated A+ to BBB-, main index equities and residential mortgage backed securities rated higher than AA

The basket of items that can be included in HQLA has been increased. A new category of HQLA called Level 2B has been introduced with a sub-limit of 15% of HQLA. The items included will have higher haircuts than other assets & will include corporate debt securities rated A+ to BBB- with a 50% haircut, unencumbered equities that are issued by non-financial institutions and are part of the main stock market index in a jurisdiction subject to a 50% haircut and certain residential mortgage-backed securities rated AA or higher with a 25% haircut.

For deciding the rating of a security and its eligibility for inclusion under HQLA, the new standards permit the use of local rating scales also. The condition for the use of local scales is that the debt securities must be held by a bank for its local currency liquidity needs.

The operational requirements for the high-quality liquid assets have been clarified and the new language used seems to have made them slightly more stringent. There is also a new requirement that the stock of HQLA be well diversified within the assets classes (except for sovereign or central bank debt and central bank reserves). Banks are expected to have policies and limits in place to ensure diversification.

Cash Inflows and Outflows

Interbank draw down rates on unused facilities reduced from 100 to 40%

The new standards have revised some of the run-off



rates for the inflows and outflows. On the retail funding side, the rate has gone down to 3% from the earlier 5% if the deposits are fully insured and are considered “stable”. On the wholesale funding side, the run-off rate for non-operational deposits provided by non-financial corporates, sovereigns, central banks and public sector entities (“PSEs”) is reduced from 75% to 40% and to an even lower 20% in case the additional criteria of full deposit insurance is met.

The rates of draw downs on credit and liquidity facilities have also been reduced in some cases. For the unused portion of committed liquidity facilities to non-financial corporates, sovereigns, central banks and PSEs the draw down rate has been reduced from 100% to 30%. For draw downs on credit and liquidity facilities given to financial institutions, a distinction has been made between banks and other financial institutions and the rate for banks has been reduced from 100% to 40%.

On trade finance transactions, there is a mention that a low run-off rate (less than 5%) would be applied on the funding obligations that may arise.

There are some additional 100% outflows that have been introduced relating to treatment of collateral such as collateral substitution, and excess collateral that the bank is contractually obligated to return/provide if required by a counterparty because the collateral is in excess of the counterparty’s current collateral requirements.

In the original 2010 guidance, one area that was of specific concern for Islamic Banks was whether Islamic assets like Sukuks would qualify as HQLA. The revised guidance has addressed this question and said that national supervisors would be able to include Shariah compliant assets like Sukuks in HQLA for Islamic Banks.

Impact on Banks

Banks have got some benefits from the new standards. They will have a longer period to comply and need not build up their stock of liquid assets very quickly. They will also have a wider basket of assets to choose from. With the lowering of some of the outflow percentages reserves, the net requirement for liquid assets is likely to be lower. In effect, most banks, at least in the emerging markets, will be able to comply with the LCR standards without much disruption to their current business models and current levels of profitability.

The area where all banks will face challenges will be in the actual computation and reporting of the LCR and the NSFR. The new LCR standards have reiterated the original proposal requiring Banks to produce the LCR and NSFR reports on a monthly basis and in times of stress even on weekly or daily basis. This poses a lot of data, system and operational issues for the banks, especially those that operate in multiple jurisdictions.

Banks will need to have a robust ALM engine in place and identify the LCR line item that each transaction will be classified under. This degree of identification is generally not present in most Banks that are currently operating using their regular regulatory liquidity reporting templates (Gap reports). Typically Banks would need to have two or more reporting sets coming out of their ALM systems to cover the regular liquidity reports submitted to supervisors, the LCR report and any internal MIS reports and have a full reconciliation between these three sets.

In jurisdictions that have already introduced some form of Basel III liquidity measures, banks have spent 2-3 years already on programs to meet those requirements. These programs have turned out to be more complex and consequently lengthier and costlier than earlier envisaged.

Leverage Ratio

The Basel III package for the first time introduced a leverage ratio into the global regulatory framework. The leverage ratio, forms of which have been already been present in some jurisdictions for some time, was designed to serve as an important backstop to the risk-based capital measures by constraining the build-up of leverage in the banking system and providing an extra layer of protection against model risk and measurement error. As was the case with the LCR requirements, over the past 2 years, the BCBS has been working to design a harmonized leverage ratio requirement that is robust enough to meet its desired purpose of strengthening the Banking system without harming the growth of credit flow into the economy. The task was further complicated by the widely differing standards in accounting across the world.

Stefan Ingves, Chairman of the Basel Committee and Governor of SverigesRiks bank, said that the leverage ratio measure proposed was simple but “achieves international consistency in exposure measurement” and “ensures investors and other stakeholders will have a comparable measure of bank leverage, regardless of domestic accounting standards”. The two main areas where the proposed changes will happen are in the Exposure Measure, which is the denominator of the leverage ratio, and the disclosure requirements.



Exposure Measure

The BCBS through its modifications to the Exposure measure is trying to ensure that all forms of instruments which could give rise to leverage are included in the measure. Its original guidance in some areas like derivatives, Securities Financing Transactions (SFT's) was not very detailed and has been expanded significantly this time. Some of the changes to the Exposure Measure include:

- specification of a broad scope of consolidation for the inclusion of exposures;
- clarification of the general treatment of derivatives and related collateral (for example, collateral received by a bank in connection with a derivatives contract would not be allowed to offset the leverage that the derivatives exposure represents),
- enhanced treatment of "written credit derivatives",
- enhanced treatment of Securities Financing Transactions ("SFTs").

Disclosure Requirements

The original timeline of January 1, 2015 for banks to publicly disclose their leverage ratios has been maintained. The disclosure requirements have been increased by outlining specific disclosure requirements including a summary comparison table which would compare a bank's total accounting assets and leverage ratio exposures; a common disclosure template that banks must use to disclose the breakdown of the main leverage ratio regulatory elements and a reconciliation requirement by which banks must disclose and detail the source of material differences between on-balance sheet exposures in the common disclosure template and total on-balance sheet assets in their financial statements.

Impact on Banks

The measures are being generally seen as increasing the Exposure Measure and consequently capital requirements for Banks which have large derivative portfolios. In a way, the new measure is designed to bring back some simplicity to banks' portfolios.

The increase in the disclosure requirements brings with it more demands on the reporting infrastructure of banks. The reporting requirements from the risk function will increase, interactions between the risk and finance functions will have to be strengthened, common data formats across the functions will have to be developed, and processes and controls to ensure integrity of data built.

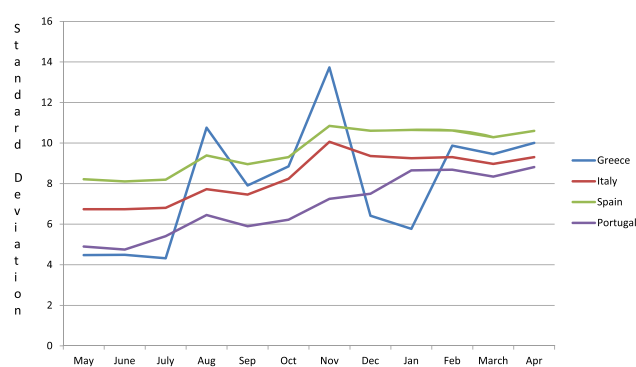
Structural Model for Sovereign Risk

High volatility in yields on bonds of some of European economies suggests that the prior Sovereign credit risk models have underestimated the potential risk associated to Sovereign bonds. This paper briefly postulates a new approach to measuring sovereign risk covering most of the practical considerations faced at the event of default.



The long enduring Sovereign crisis in Europe has drawn attention towards assessment of Sovereign risk. Gone are those days when Government bonds were considered to be absolutely riskless. The significant drift in the market yield in Sovereign bonds of some major European economies hints at underestimation of Sovereign risk by the credit risk models used to analyze the Sovereign risk raising serious concerns over 'model risk'. This motivated Northfield to develop its variant of the sovereign credit risk model based on the 'contingent claims' structural credit model pioneered in Merton (1974). This analytical approach developed by us is described in a research paper "A Structural Model of Sovereign Credit and Bank Risk".

Previous Model Performance during the Sovereign Credit Crisis



One of the key improvements of this structural model over the other models is that it reduces reliance on market information, addresses the issue of inter-correlation between the Banks and the Sovereign bonds and provides flexibility to capture the typical Government responses in times of economic turmoil. The Global Financial Crisis of 2007-2009 and the ongoing problems of the European financial system leave little doubt in our minds that the health of the Sovereign bonds to a large extent depend on the health of the Financial and Banking institutions in the country. National governments have no choice but to keep large banks and financial institutions intact as demonstrated in major countries like the US, UK and smaller countries like Ireland, and Iceland.

On the other hand, banks invest very heavily in Sovereign bonds. If a Sovereign nation defaults on their debts (e.g. the Greek write-down), the banks are the big losers as was recently seen in Cyprus. The end result is more bank bailouts, potentially leading to a "death spiral." To the extent that investors seek safety in government bonds during times of crisis, the potential impact on investment portfolio outcomes typically increases.

Framework of the Structural Model on Sovereign Credit

The structural model for a Sovereign entity, similar to a corporate bond, is an option pricing model which requires three primary inputs: underlying price, underlying volatility and exercise price. The exercise price is represented by the market value of the outstanding debt of the government. The underlying price is represented by the present value of all future government receipts like taxes, fees, tariffs, exploration rights, etc net of the present value of all future government expenditure. In order to arrive at total government assets, all current assets comprising of cash at hand, foreign currency reserves, bank deposits and receivables, commodities reserves and others need to be added to the present value of net receipt/expenditure.

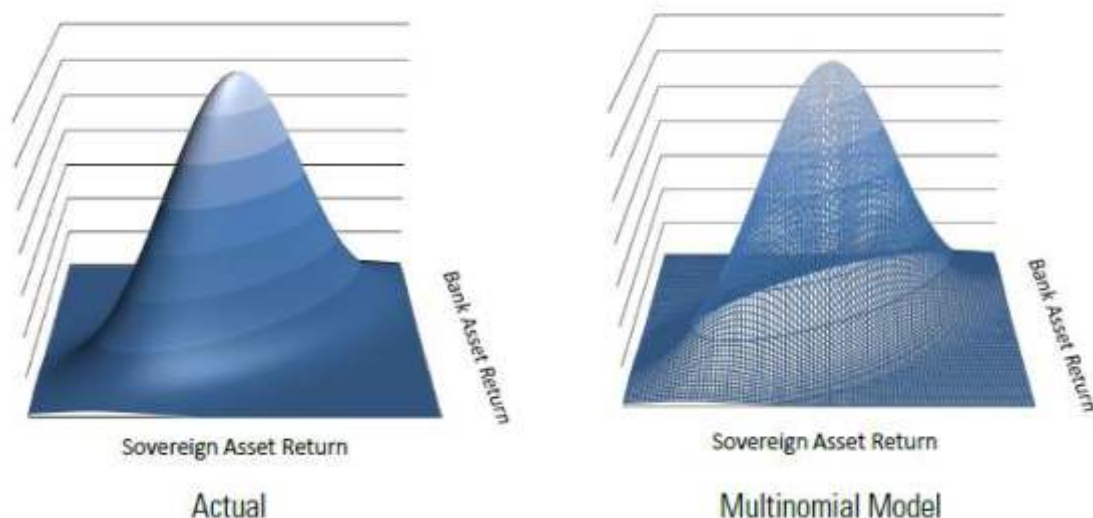
One of the key improvements of the structural model developed by Belev over the other models is that it reduces reliance on market information, addresses the issue of inter-correlation between the Banks and the Sovereign bonds and provides flexibility to capture the typical Government responses in times of economic turmoil.

The next step involves estimation of the volatility which is the standard deviation of the proportional change in the present value of government assets. Sovereign asset volatility is very closely related to stock market volatility. Tax receipts are a major source of revenues to the central government which largely depends upon the performance of the corporate sector. Variability in the corporate contribution to the exchequer will be a possible gauge for volatility in the Sovereign asset. Secondly, the contribution of the individual tax payers is also closely related to the outlook of the economy and the corporate sector. Market Capitalization is the future corporate profit stream discounted to the present moment. A fixed tax rate applied to corporate profits results in the same volatility number for the corporation and the corporate tax stream.

The analysis of volatility cannot be complete without developing an integrated approach towards analyzing the propensity for joint default between the Sovereign credit and the banking system, which is different for banks' holding Sovereign debt in domestic or foreign currency. Therefore, factor models are used to estimate the return of

the bank and Sovereign assets. The advantage of using the factor models is that they allow estimation of the joint return distribution of any number of assets provided all the assets are driven by the same number of factors. Further, in order to analyze the joint behavior of defaults, we can consider a combined portfolio of Sovereign and bank assets to produce combined asset values and volatility. The default event can be analyzed by applying the Merton's option pricing model with exercise price as the combined debt of Sovereign and Banks. We can integrate the joint distribution of the Sovereign and bank assets to estimate the Probability of Default and expected Loss Given Default of joint default events.

Joint Distribution of Sovereign and Bank Assets



Types of Sovereign Responses

Governments have a few options about what they do to manage their economies in difficult times. There are three ways in which Sovereigns can react to a crisis in the banking / government finance sector which are as follows

- **Fiscally responsive Sovereigns:** Respond via fiscal means - increase taxation / divert tax revenues to prop banking capital and infrastructure investment. (Italy, 2011)
- **Monetarily Responsive Sovereigns:** React 'responsibly' with monetary means increase supply of credit to support banking liquidity and assure Sovereign financing. (United States, 2008-2011)
- **Rogue Sovereigns:** Devalue currency to the point of worthlessness. (Zimbabwe, 2001-2009).

The nature of the asset/liability mix is the key feature which decides which options a Sovereign government will exercise in response to a negative "national" net worth.

Fiscally Responsive Sovereign Entities: Distribution of default losses in case of financial crisis can be modeled through a numerical procedure using the factor model and a multinomial lattice (a multi-dimensional version of a binomial tree).

Using the factor model, the return on the assets for any debt issuer can be estimated in a risk neutral world by the following expression

$$R^* = r + \beta R_M + R_S$$

Where R_M is the return on the market index and R_S is the issuer specific or idiosyncratic return risk.

Here we consider a case of joint default put option on two entities - e.g. a Sovereign and a bank. Subject to no arbitrage condition, the value of the default put can be stated by the following expression

$$P = e^{-rt} \int_{-\infty}^{+\infty} \int_{-\infty}^{+\infty} \max [0, (D - S_0 e^{r+\beta R_M + R_S})] f_S(R_S | R_M) f_M(R_M) \partial R_S \partial R_M$$

This implies that the value of the option is the expectation, under the risk-neutral probability density, of the discounted cash flows where the joint-underlying option is exercisable. This can be extended to any number of credits as follows

$$P_{\text{sov_FISC}} = e^{-rt} \int_{-\infty}^{+\infty} \int_{-\infty}^{+\infty} \dots \int_{-\infty}^{+\infty} \sum_{i=0}^n \max [0, (D_i - S_0 e^{r+\beta_i R_M + R_{Si}})] \prod_{i=0}^n f_S(R_S | R_{S_{j>i}}, R_M) f_M(R_M) \partial R_{Si} \dots \partial R_{Sn} \partial R_M$$

Monetarily Responsive Sovereign Entities: Some governments are effectively able to control the amount of the national currency in circulation like U.K. and U.S. In times of crisis, central banks have a similar objective and align their action with governments. The “print” option is more subtle than tax hikes and does not require political approval. The “print” scenario is also more advantageous to debt holders as it spreads the credit loss with all users of the currency. This measure will lead to a drop in currency purchasing power loss resulting in a loss equal to the level of inflation in the market for goods and services and financial assets sold in that currency invoked by the money creation due to a fiscal default. The expression is stated below

$$P_{\text{sov}} = (P_{\text{sov_FISC}} / MS) * P_{\text{sov_FISC}}$$

Where MS is the Money Supply in its narrowest definition is the currency in circulation and cash equivalents.

Rogue Sovereigns Entities: Rogue governments have little concern for taxpayers or the long term economic outlook. As long as government revenues fall under the debt threshold, the print route is imminent. Money is printed to meet ongoing government spending and current debt, not to pursue any real Keynesian effects to improve the economy. As soon as price level increases, meeting the ongoing spending becomes a moving target. Inflation rate becomes exponentially related to time. The value of default put can be estimated by the expression below

$$P_{\text{Sov_rogue}} = [D / H(t)] + [(D / MS_0) \exp(-rt) \int_{-\infty}^D (D - A) p(A) dA]$$

Where H(t) is the projected level of hyperinflation process.

Conclusion

The structural model captures the dynamics of Sovereign credit risk which can be economically justified. It offers results that are consistent with prices in the Sovereign debt market. The results can be made available by us upon request. This model limits the use of implied inputs, which is dominant in other models. The methodology is comprehensive with respect to the customary types of government responses to a credit. It is computationally tractable and does not pose insurmountable data requirements. For further details of the model, please write to us at emilian@northinfo.com.



Emilian Belev

Emilian heads the development of Northfield’s Enterprise Risk analytics for the last 12 years. His domain of responsibilities include modeling equity and fixed income, currency, equity, interest rate, and credit derivatives, structured products, directly owned real estate, private equity, and infrastructure, and developing an integrated framework for these asset classes to be analyzed side-by-side in a coherent, accurate, and economically logical fashion. He has introduced various innovative methodologies in the areas of convertible bonds modeling, MBS path dependency, efficiency of numerical derivative pricing algorithms, credit risk among tranches of seniority, infrastructure investments, and directly owned real estate. Emilian has presented on some of these topics at various industry events in North America and Europe. Prior to joining Northfield, Emilian has been with State Street Global Advisors. Emilian is an actively involved CFA charter holder, holder of the Certificate in Advanced Risk and Portfolio Management, a member and founding member of respectively QWAFACFEW Boston and QWAFACFEW Toronto, a member of the PRMIA expert advisory group for Market Risk, and a winner of the 2013 PRMIA award for New Frontiers in Risk Management.

Regulatory Updates



Basel Committee updates its assessment methodology for global systemically important banks and issues disclosure requirements-3 July 2013

The Basel Committee on Banking Supervision has today issued Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement.

When the initial assessment methodology for global systemically important banks (G-SIBs) was issued in November 2011, the Basel Committee noted that certain elements would be developed further before implementation. In particular, it was highlighted that outstanding data issues would be addressed by re-running the assessment framework using updated data and that reporting guidance would be issued to ensure the transparency of the methodology.

As a result of the analysis conducted since the November 2011 publication, including the collection of updated data from banks, the Basel Committee has made certain refinements to the assessment methodology. These refinements, together with the reporting guidance, are set out in the updated framework published today.

<http://www.bis.org/press/p130703.htm>

IASB Comment Letter on Financial Instruments – Expected Credit Losses-3 July 2013

On July 3, 2013, the IIF's Senior Accounting Group (SAG) submitted a comment letter to the International Accounting Standards Board (IASB) on its Exposure Draft- Financial Instruments- Expected Credit Losses (ED/2013/3) (the ED). The SAG, further to its response to the Financial Accounting Standards Board (FASB) on May 31, 2013 continued its analysis of both proposals. The Group believed that a two-stage approach, differentiating the measurement for the good book, is appropriate for impairment but acknowledged the difficulties to define the boundary between the two stages. The SAG urged the IASB to articulate better the list of indicators that could be used to assess the "significant credit deterioration" and to clarify the ability to use all available information to transfer from one stage to another. Finally, the Group reiterated that convergence on this topic remains a priority.

<http://www.iif.com/regulatory/>

Agencies Release Public Sections of Resolution Plans for Four Institutions - 2 July 2013

The Federal Deposit Insurance Corporation (FDIC) and the Federal Reserve Board on Tuesday made available the public portions of resolution plans for four firms with U.S. nonbank assets between \$100 billion and \$250 billion.

The Dodd-Frank Wall Street Reform and Consumer Protection Act requires that bank holding companies with total consolidated assets of \$50 billion or more and nonbank financial companies designated by the Financial Stability Oversight Council submit resolution plans to the FDIC and Federal Reserve. Each plan must describe the company's strategy for rapid and orderly resolution in the event of material financial distress or failure of the company.

Firms are required to file their initial resolution plans on a staggered schedule. The firms whose resolution plans were due on July 1, 2013 are BNP Paribas SA, HSBC Holdings plc. Royal Bank of Scotland Group plc. and Wells Fargo & Company. Larger firms with \$250 billion or more in total U.S. nonbank assets first submitted plans last year and must submit their second plans by October 1, 2013. Firms with more than \$50 billion but less than \$100 billion in total U.S. nonbank assets must submit their initial resolution plans by December 31, 2013.

<http://www.federalreserve.gov/newsevents/press/bcreg/20130702b.htm>

Principles for effective risk data aggregation and risk reporting - June 2013

The financial crisis that began in 2007 revealed that many banks, including global systemically important banks (G-SIBs), were unable to aggregate risk exposures and identify concentrations fully, quickly and accurately. This meant that banks' ability to take risk decisions in a timely fashion was seriously impaired with wide-ranging consequences for the banks themselves and for the stability of the financial system as a whole.

The Basel Committee's Principles for effective risk data aggregation will strengthen banks' risk data aggregation capabilities and internal risk reporting practices. Implementation of the principles will strengthen risk management at banks - in particular, G-SIBs - thereby enhancing their ability to cope with stress and crisis situations.

<http://www.bis.org/publ/bcbs222.pdf>

Basel Committee consults on derivatives-related reforms to capital adequacy framework - 28 June 2013

The Basel Committee today released two consultative papers on the treatment of derivatives-related transactions under the capital adequacy framework. The non-internal model method for capitalizing counterparty credit risk exposures outlines a proposal to improve the methodology for assessing the counterparty credit risk associated with derivative transactions. The proposal would, when finalized, replace the capital framework's existing methods - the Current Exposure Method (CEM) and the Standardized Method. It improves on the risk sensitivity of the CEM by differentiating between margined and un-margined trades. The proposed non-internal model method updates supervisory factors to reflect the level of volatilities observed over the recent stress period and provides a more meaningful recognition of netting benefits. At the same time, the proposed method is suitable for a wide variety of derivatives transactions, reduces the scope for discretion by banks and avoids undue complexity.

<http://www.bis.org/press/p130628.htm>

Methodology note on calculating capital pressures - 27 Mar 2013

In November 2012 the interim Financial Policy Committee recommended that the FSA takes action to ensure that the capital of UK banks and building societies reflects a proper valuation of their assets, a realistic assessment of future conduct costs and prudent calculation of risk weights. Where such action revealed that capital buffers need to be strengthened to absorb losses and sustain credit availability in the event of stress, the FSA should ensure that firms either raise capital or take steps to restructure their business and balance sheets in ways that do not hinder lending to the real economy.

<http://www.fsa.gov.uk/library/communication/statements/2013/methodology-note-on-calculating-capital-pressure>

The FSA and the Bank of England relax the barriers to entry for new bank entrants - 26 Mar 2013

The Financial Services Authority (FSA) and the Bank of England have published the results of their review (the Review) into barriers to new entrants to the banking sector. This Review sets out significant changes to regulatory requirements and authorization processes which, taken together, will reduce some of the regulatory barriers to entry into the banking sector and, as a result, enable an increased competitive challenge to existing banks.

<http://www.fsa.gov.uk/library/communication/pr/2013/030.shtml>

External audits of banks - consultative document - 21 March 2013

This document describes, through sixteen principles and explanatory guidance, supervisory expectations regarding audit quality and how that relates to the external auditor's work in a bank. Implementation of the principles and the explanatory guidance is expected to improve the quality of bank audits and enhance the effectiveness of prudential supervision which is an important element of financial stability.

This document sets out supervisory expectations of how:

- External auditors can discharge their responsibilities more effectively;
- Audit committees can contribute to audit quality in their oversight of the external audit;
- An effective relationship between the external auditor and the supervisor, can lead to regular communication of mutually useful information;
- Regular and effective dialogue between the banking supervisory authorities and relevant audit oversight bodies can enhance the quality of bank audits.

<http://www.bis.org/publ/bcbs244.htm>



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proceed, working
together we succeed.**

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