High performance. Delivered.

Accenture Risk Analytics Network
Credit Risk Analytics
Accenture, as a leader in risk analytics, works closely with banks and other financial institutions in developing the building blocks of credit risk analytics.
Lending, the core business of banks, is their daily activity for profit generation, while risk management serves as the controlling function for lending. Through innovation in the financial services industry over the last decade, regulators have gradually encouraged banks to develop their own risk management tools and enhance their risk management framework.

For managing credit risk, many banks still use expert judgment models without the benefit of an accurate or integrated framework to support their often complicated risk management needs in a changing and evolving environment. A bank’s exposure to risks which have not been fully measured might lead to unexpected default rates and high write-offs, which would influence their profit and capital requirement.

Probability of Default – Loss Given Default – Exposure at Default Modeling

Beginning in 2004, Basel II imposed a standard methodology for credit risk management and introduced more flexible regulatory supervision. This in turn led banks to move towards the development and implementation of accurate modeling methodologies on an Internal Ratings-Based (IRB) approach, and the quantitative-based measurement of credit risk factors – Probability of Default (PD), Loss Given Default (LGD) and Exposure at Default (EAD). (See Figure 1.)

Figure 1: Banks can help reduce their capital charge by using an advanced IRB (Internal Ratings-Based) approach

Source: Accenture
Benefits of Adopting Basel Accord Compliance

With all the relevant models in place within a Basel II framework, banks can enjoy a broad range of potential benefits, including:

Improved Credit Risk Return profile due to:
- Improved credit rating and monitoring
- Enhanced risk-based pricing
- Reduced non-performing loans and bad debts
- Optimized credit portfolio structure

Reduced Economic capital requirement due to:
- Lower risk-weighted assets through the adoption of an internal ratings-based approach
- Improved capital allocation

Improved credit processing efficiency due to:
- Streamlined and/or automated credit processing
- Improved collections management

Reduced operational losses due to:
- Improved allocation of capital

This can also help banks potentially improve their credit rating and thereby provide a competitive edge over competitors.
Our Approach

Gradual implementation of the complete credit risk management framework – using PD/LGD/EAD models as the basic building blocks – can help banks realize these benefits. Accenture typically uses a six-step credit risk management process consisting of:

1. Risk identification
2. Risk measurement
3. Approval and control
4. Reporting and monitoring
5. Provision and capital
6. Portfolio management and capital allocation

These steps take into account the organization’s data, transaction and portfolio levels while aligning key components such as governance, policies and processes, and information technology enablement to set appropriate transaction and portfolio limits.

The Accenture Risk Analytics Network consists of experienced members who are all dedicated to developing and implementing accurate and robust PD, LGD and EAD models for corporate, small and medium enterprises (SME) and the consumer sectors. This experience includes providing credit scoring such as application scorecard, behavior scorecard and collection scorecard for all consumer lending products, such as credit cards, installment loans and mortgages. With many successful assignments providing IRB approach and risk scoring to international and regional banks, we have deep industry insight and a broad array of industry benchmarks to support such initiatives.

Probability of Default – Loss Given Default and Model Validation

The critical role played by internal models, industry leading practices and regulatory requirements dictate that financial institutions implement an independent model validation process to assess the quality and accuracy of their internal models.

Independent validation of internal IRB models is in increasing demand under Basel II.

Banks worldwide need to invest and implement a strong mechanism via systems to authenticate the precision and reliability of rating systems, processes, and the appraisal of all relevant risk components.

In addition, a bank must also demonstrate to regulators the completeness of its internal model validation process.

As required by the Basel Accords, IRB model validation is necessary to meet external and internal compliance. While the various aspects of model quality can be assessed with complicated quantitative procedures, qualitative judgment is essential to guarantee that the financial institutions are using the correct model. As a consequence, the efforts involve a combination of in-depth knowledge in analytical validation techniques as well as banking industry practices.

Financial institutions are also expected to have frameworks in place to enable:

- Initial model validation -- review of the model development, the processes and the execution of the model
- Ongoing model validation -- ongoing validation of rank-order performance using industry wide standard metrics.
Benefits of Model Validation Process

Accenture can add value by helping clients implement a model validation process. The prospective benefits include:

• Access to experience and know-how gained from implementing robust practice methodologies and processes, and model validation efforts during previous client assignments
• Access to implementation benchmarks that can be used by clients as part of their assessment effort
• Expertise gained from working with regional regulators on IRB model reviews
• In-depth model enhancements based on real-world applications during validation process
• Prompt reporting capabilities including “from issue to outcome” analysis
• Top-down evaluation process for the design and implementation of risk mitigation controls
• Support through the Accenture Analytical Network
• Knowledge transfer program

Figure 3: Advantages of outsourcing independent validation

Basel II Regulatory Perspective

• A key requirement for IRB compliance
• A key element of board and senior management reports
• A well-defined, actionable process around ongoing reporting on model quality with clearly defined responsibilities, metrics and thresholds for acceptable quality
• Independent of model development
• The responsibilities of banks, not supervisors

In order to comply with Basel II regulation, most banks should consider establishing internal independent validation teams to meet the requirements. Consideration should also be given to having the independent validation teams focus on providing effective feedback and recommendations for strengthening the models.
Our Approach

The goals of model validation are to:

- Improve Basel compliance through an efficient approach to risk assessment, confirming the model is operational as expected
- Improve model development and best-in-class validation, by identifying model inadequacies and determining the situations where the model is inappropriate
- Find the tradeoff between analytical foundation and risk judgment, on behalf of a standard process incorporating these essential needs (See Figure 3.)

In order to fulfill regulatory requirements prior to the Basel II compliance application, banks had to perform an independent validation through an external vendor (a common industry practice). Today there are some practical challenges to performing these "external" independent validations.

Accenture can work with clients to perform such validations, as well as the regular monitoring and reporting of internal models to external parties. (See Figure 4.)

Our validation services include:

- Independent model validation: reviewing model methodologies, assumptions, data inputs, intermediate adjustments, expert judgment and outcomes
- Program management: identifying program managed capabilities and end-to-end delivery
- Model and process matching: conducting a complete process map using template or interview inputs
- Outsourcing of independent validation, regular model monitoring and reporting function

Countercyclical Capital Buffer in Basel Regulation

Pro-cyclicality in the banking industry was said to exacerbate the impact of the banking crisis. While this is inherent to the industry and cannot be completely eliminated, the Basel Committee on Banking Supervision (BCBS) introduced a framework for countercyclical capital buffers beyond the minimum capital requirement set in the Basel II framework. The primary objective of the countercyclical capital buffer is to achieve the broader macro prudential goal of protecting the banking sector from periods of excess aggregate credit growth that have often been associated with the build-up of system-wide risk.

As such, the common reference point put forward by the BCBS for taking countercyclical buffer decisions is the credit to GDP guide. This buffer is up to an additional 2.5 percent of risk-weighted assets (RWAs). The direct implication is that the minimum capital requirement will increase by 30 percent, from eight percent to 10.5 percent at a maximum and at the national supervisor’s discretion, depending on the different level of Credit to GDP ratio.

The Credit to GDP ratio for Hong Kong from 1995 to 2010 and its long-run trend are shown in Figure 3. Using the countercyclical capital buffer rule (buffer derived from the Credit to GDP ratio for Hong Kong), we can observe the capital buffer that would have been required in the years 1990, 1996, 1997, 1998, 1999, 2009 and 2010.

During the Asian Financial Crisis (1998 to 1999), it is likely that the high Credit to GDP ratios were due to very low GDP figures rather than significant systematic credit risk, and therefore the additional capital buffer might be misleading.

In order to understand the benefits, an example is provided to illustrate the impact of countercyclical capital buffer.

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1 It is important to note that the BCBS has caveats with respect to its use, not the least of which is that the common reference point could give misleading signals if used as a standalone measure. The BCBS proposed supervisory judgment is also exercised when countercyclical buffer decisions are made. The key role given to judgment by relevant national authorities, and the designation of which will be left to each jurisdiction, could result in an unlevelled playing field.

2 The precise methodology can be found in the Countercyclical capital buffer proposal, Issued for comment on September 10, 2010. More recent information on this topic can be found at: http://www.bis.org/publ/bcbs187.htm and http://www.bis.org/publ/bcbs189.htm.
Benefits of Countercyclical Capital Buffer

We constructed a hypothetical corporate segment portfolio of HK$ 150 billion from 1000 obligors in Hong Kong (HK) for the years 1995 to 2006 and used HK Credit to GDP ratio to derive the timing and magnitude of the countercyclical capital buffer. (See Figure 5.)

The graph in Figure 6 plots the internal rating distribution for different years and Figure 7 presents the assumed average LGD per rating grade, which is a downward trending curve where greater collateral coverage requirements were imposed to higher default risk customers. With the exposure amount fixed at HK$ 150 billion, the distribution of the exposure across rating grades is merely determined by customer rating distribution.

For the impact analysis, we constructed the rating distribution for the internal model based upon Point-in-Time (PIT) and Through-the-Cycle (TTC) models. By comparing the impact of the internal model capital requirements, the PIT and TTC models, we can see the differences attributable to the countercyclical capital buffer.

Figure 5: Countercyclical capital buffer distribution

Source: Accenture

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3 This hypothetical portfolio is built from Accenture's corporate experience with the rating migration of an internal rating model, average LGD and EAD across rating grades.
Figure 6: Internal rating distribution of a hypothetical portfolio

Figure 7: LGD distribution by rating grades

Source: Hypothetical example created by Accenture
The chart that follows (Figure 8) shows the capital requirement of our hypothetical portfolio. We can observe that for a perfect TTC model, the capital requirement is stable across the economic cycle, while the PIT model is more volatile and highly affected by the economic cycle. The fluctuation of the capital requirement for the internal model is somewhere in between. The countercyclical capital buffers in the years 1996 to 1999 were imposed as an additional capital requirement for the bank using the internal model as shown in the bar chart.

The differences in impact of the countercyclical buffer can be clearly observed in Figure 9. In the years 1996 and 1997, the capital requirements of using a PIT model are 3.6 percent and 2.8 percent lower than those associated with a typical internal model. These numbers are more than enough to cover the additional countercyclical capital buffer of 2 and 2.5 percent in 1996 and 1997. Banks using a TTC model are different from those using a typical internal model.

For the years 1998 and 1999, banks using a TTC model will benefit from a lower capital requirement of about one percent compared to those using a typical internal model, while, for those using a PIT model, their capital requirement will be about one percent higher due to more significant rating downgrades incurred during the crisis. Nevertheless, as mentioned above, imposing a countercyclical capital buffer may not have been appropriate during 1998 and 1999.

From the impact analysis results, it is clear that banks using a PIT internal model would have been less affected by countercyclical capital buffer due to capital savings from the rating upgrades of their internal models during the credit expansion period.

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Figure 8: Comparison of capital requirements for TTC (Through-the-Cycle) & PIT (Point-in-Time) models

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*Increase in capital requirement will occur one year after the crisis.
Figure 9: Capital requirement differences as a percentage of internal model's RWAs

Source: Accenture
Our Approach

The BCBS as well as banking supervisors in many countries do not explicitly prohibit the use of different types of rating approaches. In fact, based on a survey conducted by the BCBS, most of the banks find it difficult to use a TTC rating method. However, the level of PIT focus of the internal models used by banks may differ depending on the rating model design and the risk factors chosen.

The impact differences of PIT-focused internal models will not only affect the return on equity of the banks, but it will also impact the dividend payout ratio, share buybacks and discretionary bonus payments due to minimum capital conservatism ratio.

As shown in Figure 10, during the countercyclical capital buffer periods banks are required to conserve a higher percentage of earnings for the same level of capital ratio (Tier 1 capital).

We have designed a comprehensive approach to help clients undertake a model enhancement project, including internal model enhancements to reduce the impact of countercyclical buffer. (See Figure 11.)

Figure 10: Comparison of capital requirements during countercyclical buffer period and normal period

![Figure 10: Comparison of capital requirements during countercyclical buffer period and normal period](source)

Source: Accenture

Figure 11: The Accenture approach to enhancing internal ratings

![Figure 11: The Accenture approach to enhancing internal ratings](source)

Source: Accenture

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5 The Internal Ratings-Based Approach, [http://www.bis.org/publ/bcbsca05.pdf](http://www.bis.org/publ/bcbsca05.pdf)
There are many reasons why Accenture is the right partner for risk analytics initiatives. Accenture has a Risk Analytics Network with experienced professionals from local Asia Pacific countries. Our people have extensive in-market experience, with broad and diversified modeling skills. They also bring broad industry insights, knowledge, and familiarity with industry specific benchmarking standards to each client assignment.

Accenture’s broad corporate knowledge acquired through the years by working with leading firms developing end-to-end solutions allows us to support clients in important transformation projects and initiatives. Our risk analytics services give clients access to a mature quantitative methodology, qualitative assessment capabilities in addition to a systematic approach, and proprietary assets to assist them in their risk analytics capability development and implementation.

Accenture’s approach focuses on collaboration, prioritizes what needs to be undertaken early in an assignment and aligns itself with a client’s needs and comfort level. This delivers ‘quick wins’ to stimulate organizational confidence, buy-in and create focus and momentum.

Accenture’s solutions can accommodate an adaptable business strategy, operating model and solution architecture. These solutions also provide the necessary flexibility, built on scalable platforms to meet future needs and growth opportunities and respond to evolving environmental challenges, including new regulatory requirements to seize a competitive advantage.
Asia Pacific Risk Analytics Network

Global Lead Risk Analytics
Phillip Straley
phillip.straley@accenture.com
Direct: +852 2249 2939
Mobile: +852 9186 2929

Singapore
Christopher Loh
christopher.loh@accenture.com
Direct: +65 6410 6450
Mobile: +65 9069 3860

Beijing
Kent Tianshi Xu
kent.tianshi.xu@accenture.com
Direct: +86 10 5870 5881

Tokyo
Shingo Yamamoto
shingo.yamamoto@accenture.com
Direct: +81 3 3588 3820
Mobile: +090 8812 1373

India
Sanjay Ojha
s.ojha@accenture.com
Direct: +91 124 467 2191
Mobile: +91 995 369 0574
About Accenture

Management Consulting

Accenture is a leading provider of management consulting services worldwide. Drawing on the extensive experience of its 16,000 management consultants globally, Accenture Management Consulting works with companies and governments to achieve high performance by combining broad and deep industry knowledge with functional capabilities to provide services in Strategy, Analytics, Customer Relationship Management, Finance & Enterprise Performance, Operations, Risk Management, Sustainability, and Talent and Organization.

About Accenture Risk Management

Accenture Risk Management consulting services works with clients to create and implement integrated risk management capabilities designed to gain higher economic returns, improve shareholder value and increase stakeholder confidence.

For more information about Accenture Risk Management please visit www.accenture.com/riskmanagement