



The SEACEN Centre

Volume 8 / June 2017

SEACEN FINANCIAL STABILITY JOURNAL

Insights and Thought Leadership
on Financial Stability

**Considerations in Achieving Strong Systems of
Regulation and Supervision**

Michael J. Zamorski

**Stress Testing – An Overview of Global Best Practice
and Areas for Future Improvement**

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Lending Risk**

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**Bank Lending Practices that Can Lead to Future
Loan Portfolio Problems**

Michael J. Zamorski

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The background of the page is a light blue color with a pattern of overlapping hexagons. Some hexagons are solid blue, while others are white with a blue outline. The hexagons are connected by thin white lines, creating a network-like structure. The overall aesthetic is clean and modern, with a focus on geometric shapes and a monochromatic blue color palette.

SEACEN's core membership is comprised of twenty central banks/monetary authorities in the Asia-Pacific region. SEACEN serves its members through its learning programs, research work, and networking and collaboration platforms for capacity building in central banking knowledge. Through its various activities, SEACEN also strives to promote financial stability in the region, especially through maintaining cooperative relationships and the advocacy of good and best practices in financial institution supervision and central bank policy actions. In addition to its 20 members, it has an outreach of 15 other central banks in the Asia-Pacific region, as well as 26 regional and international strategic partners with which SEACEN collaborates in the design and delivery of its learning programs.

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**FINANCIAL
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Mr. Michael J. Zamorski
Former Adviser
Financial Stability and Supervision
The SEACEN Centre

The Editorial Board has designated Mr. Zamorski as Chief Editor.

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Article Submission Guidelines

The *SEACEN Financial Stability Journal* Editorial Board welcomes potential contributions to the *Journal*. Articles written for the *SEACEN Financial Stability Journal* should focus on providing insights and thought leadership with respect to information and developments relevant and critical to promoting financial stability and related matters, contextualized to the Asia-Pacific region.

- Article drafts should be submitted in 12 point Times Roman font and should be double-spaced, and sent by email to: article@seacen.org.
- The length of draft articles will generally range from 3,000 to 5,000 words (12 to 20 double-spaced typed pages), though treatment of some topics could necessitate longer articles, which would be considered.
- Authors should include a biographical summary at the end of the article. If an article expresses expert opinions, contributors' expert credentials should be apparent.
- Articles will be evaluated by the *Journal's* Editorial Board.
- We are available at any time to answer authors' questions, discuss potential articles, review early drafts, or provide other input. Please contact:

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Letter from the Executive Director

Dear Colleagues and Readers

SEACEN marks the completion of the *Journal's* fourth year of publication with the publication of this eighth issue. We are pleased to continue to provide our readers with insights on topical policy issues related to financial stability and bank supervision by respected subject matter experts. We invite our readers who have relevant subject matter expertise to submit articles for possible future publication.

This issue's lead-off article by Michael J. Zamorski, former SEACEN Advisor on Financial Stability and Bank Supervision, provides an overview of the characteristics of sound systems of bank supervision and regulation. In a second article SEACEN Senior Financial Sector Specialist Aziz Durrani provides a comprehensive discussion of the ongoing evolution of bank stress testing subsequent to the Great Financial Crisis, including global best practices that have emerged. Valuable insights are provided with respect to the stress testing experiences of three key regulators most affected by the Crisis: The Bank of England, The European Central Bank, and the U.S. Federal Reserve Board.

An article by Mr. Dev Striscek, a highly respected U.S. expert on bank credit risk for more than four decades, provides a discussion of fundamental factors that bank supervisors consider in assessing loan quality. He also discusses the importance of proper loan documentation to protect banks' financial interests and minimize the possibility of losses should a borrower default on their loans.

A fourth article by Mr. Zamorski discusses bank lending practices that can lead to future loan portfolio difficulties. During favorable economic times, bank credit standards may be relaxed due to competitive factors and/or the belief that the possibility of a cyclical downturn is remote. Unfortunately, this approach has led to imprudent risk selection and many periods of banking industry instability and even crises.

I would like to express my sincere gratitude to our readers, authors, SEACEN member central banks and monetary authorities and the *Journal's* Editorial Board for their invaluable contributions toward its success to date, and for their continued support.

Dr. Hans Genberg

Executive Director

June 2017

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Considerations in Achieving Strong Systems of Regulation and Supervision

By **Michael J. Zamorski**
Former Adviser
Financial Stability and Supervision
The SEACEN Centre¹

1. Introduction

Asia Pacific economies are very diverse in terms of the size, complexity and stage of development of their financial systems. While there are some advanced economies in Asia, such as Japan, South Korea, Hong Kong SAR and Singapore, most of the region consists of emerging market economies (“EMEs”). One common feature of Asia Pacific economies is that their banking systems play an important role in facilitating sustainable economic growth.

Access to capital markets to finance business activity is generally available only to larger, well-established companies with a track record of stable financial performance. Small and medium-sized enterprises (“SMEs”), fledgling entrepreneurs, and consumers rely significantly on banks and non-bank lenders, such as finance companies, to obtain credit.² SMEs are a major contributor to GDP in EMEs. Therefore, to achieve sustainable economic growth and development, it is important that banking systems be comprised of sound, stable, and resilient banks positioned to meet the productive credit needs of their customers.

A sound banking system is one where problems are manageable and, while there might be some bank failures, they are not large or systemic,³ and their overall impact is small. Effective bank regulation and supervision are key factors in maintaining banking system soundness and avoiding, dampening or mitigating future periods of financial instability or crisis.

This article describes fundamental considerations in establishing effective bank regulatory and supervision programs, including lessons learned from past crises. The author also informs the reader of publicly-available resources that provide independent assessments of the quality of jurisdictions’ regulatory and supervisory capabilities. These assessments are conducted by independent multinational authorities such as the International Monetary Fund, the World Bank, and the Bank for International Settlements.

2. Financial Stability, Systemic Risk and Banking System “Safety Nets”

The concept of financial stability does not have a universally accepted definition. One description of financial stability that captures common elements cited by many observers is:

“...a condition where (a jurisdiction’s) financial system – comprising institutions, markets and infrastructure – is able to: allocate savings to investment opportunities efficiently; ensure the rapid settlement of payments; effectively manage potential risks that may harm its performance; and absorb shocks without impairing its operations.”⁴

Responsibility for promoting financial stability is frequently an explicit central bank (“CB”) legal mandate. However, one or more other domestic authorities may also be involved, including:

- Non-CB bank supervisors and regulators;
- Financial market regulators;
- Deposit insurers; and
- Finance ministries.

These same authorities usually also comprise a jurisdiction’s banking system “safety net”, which consists of national authorities who have differing legal mandates, but work together to ensure banking system stability during times of stress or crisis:

- CBs may have direct responsibility for the chartering/licensing, regulation and supervision of banks. If they find a bank is in an unsafe or unsound condition, usually due to capital insufficiency, they may revoke a bank’s license to do business. Under their “lender of last resort” function, CBs have discretionary authority to provide short-term loans to banks to assist them in a temporary liquidity emergency;
- Non-CB bank regulators: primary responsibility for the licensing, regulation and supervision of banks resides in a non-CB authority in some Asian jurisdictions (China, Japan, Indonesia, South Korea and Chinese Taipei);
- Financial market regulators are typically charged with maintaining fair and orderly financial markets (such as stock and commodities exchanges) and may oversee exchange-traded companies’ financial reporting;
- Deposit insurers (“DIs”) promote public confidence in a banking system by protecting the safety of depositors’ funds in the event of bank failures. They also are frequently responsible for arranging orderly resolutions of failing banks. They may provide conditional, short-term financial assistance to banks. Some DIs may have secondary bank examination authority and/or a role in bank license/charter⁵ revocations;

- Finance Ministries are mainly involved in providing government funds (i.e., taxpayers' funds) when crises pose systemic risk and governmental intervention is deemed warranted to preserve public confidence in the banking system.

A 2001 Group of Ten report describes “systemic financial risk” as:

“...the risk that an event will trigger a loss of economic value or confidence in, and attendant increases in uncertainty about, a substantial portion of the financial system that is serious enough to quite probably have significant adverse effects on the real economy.”⁶

Individual banks can also pose risks to jurisdictions' financial stability – these are referred to as “systemically important financial institutions” or “SIFIs” – if they encounter financial difficulties severe enough to threaten their viability or solvency. Their failure could have “knock on” effects that could adversely impact other banks and companies, or even the entire financial system, which could trigger a financial crisis.

3. Overview of the Banking Business

➤ *Credit intermediation*

Banks' specific business models vary; however, their primary business activity is making loans which are funded by accepting deposits from individuals and corporations – referred to as banks' credit intermediation function. Banks are chartered and licensed by governmental authorities based, in large measure, on their commitment to provide reliable access to credit products and other essential financial services in their local communities.

A banking license confers special benefits such as the ability to accept insured deposits, the safety of which is typically backed by a governmentally-sponsored deposit insurance scheme. Retail bank depositors are concerned with the safety and accessibility of their money, which may include their life's savings. Therefore, they are strongly inclined to do business with banking institutions whose deposits are fully or partially guaranteed in the event of a bank's failure. This customer preference provides banks with a stable source of lower cost funds which they use to make loans.

➤ *Effective corporate governance: the first “line of defense” in protecting bank soundness*

Why do some banks succeed while others underperform or encounter problems that can jeopardize their stability or even viability? Banks' corporate governance, risk management capabilities and risk culture are the main differentiating factors in bank performance and soundness. For this reason, bank supervisors focus on these areas during bank examinations.

Corporate governance has various definitions. The Organization for Economic Co-operation and Development (“OECD”) describes corporate governance as “the structure through which the objectives of (a) company are set, and the means of attaining those objectives and monitoring performance are determined.”⁷

Banks typically operate in a highly competitive environment, competing for business with other banks and non-bank financial services providers. Banks’ ability to identify, measure, evaluate, monitor, control and price risk is critical to achieving their strategic objectives and maximizing financial performance in a safe and sound manner.

An active, interested and vigilant bank board of directors serves as an effective “check and balance” on excessive risk taking, and monitoring the performance of a bank’s senior executive management. Members of a bank’s board of directors have individual and collective legal duties, referred to as their fiduciary responsibilities, to oversee the way a bank’s business is conducted. These duties typically include:

- Appointing competent senior executive management and monitoring their performance
- Establishing the bank’s strategic direction and risk tolerance
- Ensuring that the bank’s capital structure provides adequate protection for depositors and other creditors
- Monitoring enterprise-wide risk on a continuing basis
- Periodically reviewing and approving risk control policies
- Understanding regulators’ views of the bank’s practices and condition
- Remediating regulatory concerns on a timely basis.

Banks especially need to have a comprehensive risk management process, with effective Board and senior management oversight, that identifies, measures, evaluates, monitors, controls and reports all material bank risks on a timely basis.

4. The Nature of Bank Regulation and Supervision

Bank regulation and supervision are closely related and are frequently the responsibility of the same national authority. While the terms “regulation” and “supervision” tend to be used interchangeably, they are not the same.

➤ *Bank regulation*

Bank regulation encompasses the body of laws, rules and implementing regulations specifying minimum licensing and operational requirements to ensure prudent operation and proper conduct of business. Prudential laws, rules and regulations impose restrictions and limitations on banks’ business activities designed to ensure that they operate in a safe and sound manner and maintain a safe and sound

condition – for example, regulations on banks' minimum capital requirements. Banks are also typically subject to laws, rules and regulations on how they conduct business, including consumer protection obligations.

Bank regulators/supervisors also issue regulatory guidance to explain or clarify regulatory/supervisory expectations as to how banks should comply with specific laws, rules, and regulations.

➤ *Bank supervision*

Bank supervision encompasses both prudential supervision, sometimes referred to as micro-prudential supervision, and macro prudential supervision. Prudential supervision has historically focused on assessing individual banks' safety and soundness, primarily through on-site bank examinations.

Macroprudential supervision refers to the imposition of banking rules, regulations or policies intended to control risk to the banking system more broadly. Examples are bank minimum capital requirements and limits on the amount banks can lend in relation to the value of various types of loan collateral, such as a maximum loan-to-value for loans secured by residential real estate.

➤ *Bank examinations and the bank supervision process*

Bank examination and supervision is a critical part of maintaining public confidence in a banking system. Bank examiners, who may also be referred to as bank regulators or bank supervisors,⁸ are highly trained professionals who assess banks' practices and conditions through on-site examinations and inspections on a periodic basis, typically at least annually.

Bank examinations are not the same as financial statement audits; they are qualitative in nature. Bank examiners seek to evaluate whether a bank's current financial condition, banking practices and risk management capabilities are sound, and that the bank has the strength and resiliency to withstand the on-set of less favorable economic conditions without a material weakening of its overall financial position. Accountants and auditors primarily render opinions on whether a company's financial statements fairly present the financial position of a firm as of a specific financial statement date.

Bank supervisors usually meet with a bank's senior executive management and/or board of directors after an examination to present examination findings. When unsatisfactory practices or conditions or violations of laws or regulations are disclosed, bank supervisors obtain commitments from bank management to remedy concerns within agreed-upon timeframes.

When bank examinations disclose excessive risk or unsafe or unsound banking practices or conditions,⁹ bank supervisors require that a bank's board of directors and senior executive management take timely corrective action to mitigate concerns. Regulators usually have legal authority to compel corrective action if voluntary efforts are either not forthcoming or ineffective, or if matters of concern are deemed to pose a future threat to a bank's viability.

➤ *Off-site surveillance*

On-site bank supervision activities are supplemented by off-site surveillance of banks' financial performance. Required bank submissions of certified monthly or quarterly financial data is analyzed, including key financial ratios and performance, to detect potential anomalies in time series data or in comparison to peer group data.

Off-site surveillance is a useful tool in detecting "red flags" and "outliers" in prioritizing finite examiner resources. However, it is not a substitute for on-site examinations or inspections conducted at reasonable intervals by experienced professionals, with an appropriate level of transaction testing.¹⁰ This is primarily due to the potential for inaccuracy or bias in self-reported data that has not been independently verified.

➤ *Regulatory arrangements*

The structure of banking system regulatory oversight and supervision is a public policy determination based on national circumstances and preferences, and varies throughout Asia. Supervisory oversight is usually conducted within the central bank and occasionally by an independent governmental entity.

Jurisdictions adjust and evolve their systems of bank regulation and supervision based on their experiences over time, especially lessons learned from adverse events or periods of financial instability or crisis. The United Kingdom has had an interesting experience in this regard. After the 1995 collapse of Barings Bank related to debilitating losses due to unauthorized securities trading at its Singapore office, prudential bank supervision was shifted from the Bank of England to the U.K. Financial Services Authority (U.K. FSA) in 1997. After perceived regulatory shortcomings related to the Great Financial Crisis of 2007-2008 ("GFC" or the "Crisis"), the U.K. FSA was dissolved and bank supervision was shifted to the Prudential Regulatory Authority of the Bank of England in 2013.

Of the twenty SEACEN member central banks and monetary authorities, sixteen have legal authority giving them primary responsibility for supervising their jurisdiction's banking systems. In four SEACEN jurisdictions,¹¹ a separate non-central bank authority has primary responsibility for bank supervision.

➤ *Macroprudential supervision*

The historical focus of banking system stability monitoring on individual institution risk may not detect the build-up of macroeconomic risks and vulnerabilities that can adversely affect many financial institutions simultaneously. Financial institutions that appear sound can be adversely impacted by common behavior and mutual interaction. For example, asset price bubbles may arise in certain asset classes in an economy – such as commercial and residential real estate – that serve as collateral for bank loans. Sharp price declines in these asset classes could have a destabilizing effect on many banks simultaneously.

Macroprudential supervision refers to the control of banking system risk through the imposition of policies, usually in the form of banking rules and regulations, limiting certain activities, with the intent of controlling risk to the system.

Timely identification of emerging macroeconomic risks and imbalances can serve as the basis to activate macroprudential policy measures, alone or in concert with other policy actions, to avert, dampen or mitigate periods of instability or crisis. Macroprudential surveillance is undertaken by national authorities, usually central banks, to detect and control risks that may adversely affect the financial performance and stability of the banking industry more broadly.

Responsibility for implementing macroprudential measures may reside in different national authorities, and not necessarily be a central bank mandate. Policy actions necessitate close cooperation and coordination among domestic authorities to ensure they do not have contradictory goals or offset each other. Monetary, fiscal and tax policies can also influence systemic risk.

Asian jurisdictions' use of macroprudential policy measures in the recent past has primarily focused on controlling systemic risks arising from rapid rises in real estate values and significant expansion of household debt, the latter fuelled in some cases by credit card lending with lax underwriting criteria.

5. Lessons Learned from Prior Banking Crises and Periods of Financial Instability

There have been many episodes of financial instability in recent decades, including systemic banking crises. Laeven and Valencia (2012) produced a database of “all systemic banking, currency, and sovereign debt crises during the period 1970 – 2011.” Using their crisis definition, they identified 147 banking crises during that period.¹² These crisis events mostly involved individual countries, though many had cross-border spillover effects. These episodes of instability and crisis, and the displacements they caused, typically resulted in large direct costs from governmental interventions to contain the crises. Lengthy post-crisis recovery periods also resulted in substantial economic output losses.

The GFC, which was centered in the U.S. and Eurozone, was the most significant period of global financial instability since the Great Depression. Pre-Crisis, many countries most directly and substantially affected by the GFC had developed what were reputed to be sophisticated monitoring systems to track financial system stability. Yet, those systems and attendant analytical methods almost universally failed to predict the onset, severity and spillover effects of the GFC. Many financial stability assessments published by those jurisdictions reflected no material systemic risk concerns prior to crisis onset.

One of the triggers for the GFC was the sudden cessation of interbank lending among large global banks. This required central banks, regulators and governmental officials to act very quickly, often with less than complete information, to prevent systemic domestic and cross-border events, which could have had even more extreme financial stability implications. Some interventions proved to be quite controversial due to the moral hazard¹³ they posed and, in some cases, taxpayers' funds were put at substantial risk.

➤ *Primary causes of the GFC from a prudential supervisory perspective*

According to analyses of the GFC by the Basel Committee, the Financial Stability Board, the IMF and other industry experts, the most significant underlying causal factors related to regulation and supervision are:

- Failure to conduct regular on-site supervisory inspections or examinations at reasonable intervals and in sufficient depth.
- Failure to identify ineffective bank risk management methods and governance structures, as well as other shortcomings in bank risk cultures.
- Overemphasizing institutions' historic operating results and static financial conditions in assessing risk, not fully considering potential vulnerabilities.
- Allowing banks to operate with excessive leverage.
- Overreliance on off-site surveillance systems to either detect or timely identify "red flags" and emerging risks.
- Failure to understand the risks and policy implications of new bank products and services, and changing bank business models.

➤ *The Asian Financial Crisis of 1997-1998 ("AFC")*

Asia has avoided a significant cross-border financial/banking crisis since the AFC. The AFC was noteworthy for its rapid onset and contagion effects. That crisis spread quickly to other countries due to many cross-border inter-linkages that served as transmission channels for spreading contagion.

Post-AFC reform measures, central bank policy actions and effective financial institution supervision have been effective in controlling financial stability risks over the last two decades. The GFC impacted the region; however, the effects were manageable.

Since the AFC, there has been an increase in the number of large, complex banking conglomerates operating in the region. Some of these conglomerates operate systemically important banks in more than one jurisdiction. Timely and effective regulatory examinations and information-sharing is essential to understanding the risks in these entities and controlling cross-border spillovers, contagion effects and regulatory arbitrage.

6. Cross-Border Banking Conglomerates and Consolidated Supervision

The structures of companies providing banking and other financial services continue to evolve as they seek to expand their geographic reach, and achieve economies of scale and scope as restrictions on banks' affiliations and permissible activities are relaxed or removed in many countries.

Banks' corporate structures may be relatively simple – for example, a stand-alone bank – or complex, such as membership in a diversified corporate conglomerate involved in various businesses, not all of which relate to banking and financial services.

Complex structures may be driven by legitimate business reasons such as legal or tax considerations. It is important for a bank supervisor to understand the business reason(s) behind the chosen corporate architecture and whether the chosen corporate structure can be adequately supervised.

Many banks in Asia operate as part of complex group structures or conglomerates. There may be multiple organizational layers between a bank and its ultimate parent. Non-bank affiliates may also be engaged in activities closely related to banking or financial services, and may engage in business transactions with each other. Some countries allow banks to be part of mixed groups, in which banks are affiliated with, or owned by commercial businesses engaged in activities that are unrelated to the banking business.

Banks are increasingly owned by holding companies or other parent companies that operate in multiple countries. The size and geographic reach of some financial conglomerates and/or their interlinkages may make them systemically important in multiple jurisdictions, thus practicing effective consolidated supervision is essential in promoting financial stability.

Complex structures of financial conglomerates pose several challenges to bank supervisors. First, complex ownership structures, lack of access to information, or other opacities can impair supervisors' ability to assess risk in a financial conglomerate. Second, transactions with affiliates, or problems in affiliated organizations, can adversely impact banks' safety and soundness. Third, contagion risk¹⁴ can spread quickly through a group via intercompany transactions. Fourth, problems in large conglomerates and mixed groups could pose financial stability risks to the countries in which they operate.

Consolidated supervision is a long-standing, fundamental principle and essential element of effective bank supervision, which seeks to determine the financial soundness of a bank, considering the financial soundness and risks posed by affiliate relationships. The Basel Committee on Banking Supervision's "Core principles for banking supervision" ("BCP"), discussed later, stipulate that bank supervisors should have "... the necessary powers, authority and resources to perform comprehensive group-wide supervision of financial conglomerates...(and) ensure financial conglomerates have robust governance, capital, liquidity and risk management frameworks."¹⁵ Moreover, 2012 revisions to the BCP require that banking supervisors should be able to supervise banking groups on a consolidated and on-going basis.

Asia Pacific countries are both home and host supervisors for large, geographically dispersed banking organizations that are part of financial conglomerates operating across the region. Also, global banking organizations operate extensive regional banking networks. Countries' effective implementation of consolidated supervision is, therefore, an important part of promoting regional financial stability.

7. Achieving Effective Bank Regulation and Supervision

Bank supervision is an inherently judgmental process. For supervision to be effective, it must be performed by qualified professionals in a manner that allows for timely detection and mitigation of excessive risk. In addition to a high degree of technical competency, bank supervisors need to possess good judgment, a healthy degree of professional skepticism, and the ability to communicate effectively and persuasively with banks' senior executive managements and boards of directors.

Effective cooperation and information sharing arrangements among domestic and foreign supervisors are essential to understanding and overseeing risk in more complex banking organizations, such as those with multi-tiered corporate structures, mixed (banking and commercial) groups, and cross-border operations. Supervisors who lack the legal authority to share confidential information will likely be unable to adequately assess prudential risks, and thus unable to properly fulfill their supervisory responsibilities.

Bank supervisors need have appropriate legal authority related to safety and soundness oversight of the banking sector and take timely action to identify and mitigate excessive risk or unsound conditions or practices. The GFC exposed instances where bank supervisors were slow in exercising supervisory powers in developing problem situations, allowing problems to worsen. In addition, regulatory interventions in the case of weak or failing banks were sometimes too slow, or the legal authority to intervene (such as prompt corrective action¹⁶) was not stringent enough, allowing nonviable banks to continue operating, increasing ultimate resolution costs. Bank supervisors also need to fulfill their responsibilities free of undue political pressure or interference that can undermine their independence.

Reduced profit margins in traditional bank products have induced banks to develop new products and engage in nontraditional lines of business. Technology can increase the speed of transactions and changes in banks' risk profiles, and can facilitate contagion risk. Greater interconnectedness and cross-border activities and affiliations of banks can increase risk and opportunities for regulatory arbitrage.

Focusing on banks' risk management capabilities and corporate governance during examinations provides insight as to whether their policies and practices provide sufficient "checks and balances" or need to be modified.

Screening out outliers and timely detection of "red flags" is key to proactive bank supervision and preventing the build-up of problems that could possibly pose systemic risk. Supervisory thematic reviews, on-line, real time risk monitoring systems, multilateral supervisory discussions of emerging issues and timely information-sharing for cross-border banking organizations, along with other measures, can assist prudential supervisors in detecting and addressing incipient problems.

8. International Standards for Bank Regulation and Supervision

The Bank for International Settlements, Basel, Switzerland ("BIS"), owned by the world's central banks and monetary authorities,¹⁷ hosts various standard-setting committees that prescribe minimum regulatory and supervisory standards for the international financial services industry. The oldest of these committees is the Basel Committee on Banking Supervision ("BCBS" or the "Basel Committee"),¹⁸ which covers the banking industry.

The BCBS promotes good and sound bank supervisory practices and standards, focused mainly on internationally-active banks.

While the Basel Committee has no supranational authority, member jurisdictions usually adopt agreed-upon standards, sometimes for all their banks.

Harmonization of supervisory practices and regulatory requirements helps to avoid "regulatory arbitrage" which refers to conscious and deliberate strategies by banks to evade or circumvent legal requirements, or take advantage of less stringent (or no) legal requirements, or perceived less stringent supervision, or even the absence of supervisory oversight of certain activities. This can occur, for example, by conducting business in jurisdictions where regulation and supervision of banks is less developed or less stringent.

➤ *International standards for effective bank supervisory programs*

The Basel Committee has done important work in identifying the essential preconditions necessary for regulatory jurisdictions to establish effective bank supervision programs through the development and evolution of “Core Principles for Effective Supervision” (known as the “Basel Core Principles” or “BCP”).

The BCP were originally issued in 1997, and revised in 2006 and 2012. The current version of the BCP states that “The revised Core Principles will continue to provide a comprehensive standard for establishing a sound foundation for the regulation, supervision, governance and risk management of the banking sector.”¹⁹

The 2012 BCP revisions contain 29 core principles (“CPs”), summarized below in Table 1, which incorporate lessons learned from the GFC. Each CP is intended to apply to the prudential supervision of all banks, ranging from large, complex internationally-active banks to small, non-complex deposit-taking institutions. The BCP recognize that supervisory resources should be allocated in proportion to the risk profile and systemic importance of banks.

Assessment criteria have been identified for each of the CPs, designated as either “Essential Criteria” (“minimum baseline requirements for sound supervisory practices universally applicable to all countries”) or “Additional Criteria” (“supervisory practices that exceed current baseline expectations but will contribute to the robustness of individual supervisory frameworks”).

The International Monetary Fund (“IMF”) and World Bank use the BCP to assess the effectiveness of jurisdictions’ supervisory regimes during their Financial Sector Assessment Program (“FSAP”) reviews. FSAP teams assess countries’ compliance with the BCP to determine whether a jurisdiction possesses the necessary pre-conditions to support an effective program of bank supervision. However, an important caveat is in order. While supervisory approaches and practices may appear to be effective, the ultimate test of effectiveness is whether they work in practice. Do they reliably allow for the timely detection and curtailment of unsound practices and excessive bank or industry risk-taking at their incipient stages?

Table 1
Summary of the 29 Basel Core Principles

<p>Principle 1 – Responsibilities, objectives and powers</p>	<p>An effective system of banking supervision has clear responsibilities and objectives for each authority involved in the supervision of banks and banking groups. A suitable legal framework for banking supervision is in place to provide each responsible authority with the necessary legal powers to authorize banks, conduct ongoing supervision, address compliance with laws and undertake timely corrective actions to address safety and soundness concerns.</p>
<p>Principle 2 – Independence, accountability, resourcing and legal protection for supervisors</p>	<p>The supervisor possesses operational independence, transparent processes, sound governance, budgetary processes that do not undermine autonomy and adequate resources, and is accountable for the discharge of its duties and use of its resources. The legal framework for banking supervision includes legal protection for the supervisor.</p>
<p>Principle 3 – Cooperation and collaboration</p>	<p>Cooperation and collaboration: Laws, regulations or other arrangements provide a framework for cooperation and collaboration with relevant domestic authorities and foreign supervisors. These arrangements reflect the need to protect confidential information.</p>
<p>Principle 4 – Permissible activities</p>	<p>The permissible activities of institutions that are licensed and subject to supervision as banks are clearly defined and the use of the word “bank” in names is controlled.</p>
<p>Principle 5 – Licensing criteria</p>	<p>The licensing authority has the power to set criteria and reject applications for establishments that do not meet the criteria. At a minimum, the licensing process consists of an assessment of the ownership structure and governance (including the fitness and propriety of Board members and senior management) of the bank and its wider group, and its strategic and operating plan, internal controls, risk management and projected financial condition (including capital base). Where the proposed owner or parent organization is a foreign bank, the prior consent of its home supervisor is obtained.</p>
<p>Principle 6 – Transfer of significant ownership</p>	<p>The supervisor has the power to review, reject and impose prudential conditions on any proposals to transfer significant ownership or controlling interests held directly or indirectly in existing banks to other parties.</p>

<p>Principle 7 – Major acquisitions</p>	<p>The supervisor has the power to approve or reject (or recommend to the responsible authority the approval or rejection of), and impose prudential conditions on, major acquisitions or investments by a bank, against prescribed criteria, including the establishment of cross-border operations, and to determine that corporate affiliations or structures do not expose the bank to undue risks or hinder effective supervision.</p>
<p>Principle 8 – Supervisory approach</p>	<p>An effective system of banking supervision requires the supervisor to develop and maintain a forward-looking assessment of the risk profile of individual banks and banking groups, proportionate to their systemic importance; identify, assess and address risks emanating from banks and the banking system as a whole; have a framework in place for early intervention; and have plans in place, in partnership with other relevant authorities, to take action to resolve banks in an orderly manner if they become non-viable.</p>
<p>Principle 9 – Supervisory techniques and tools</p>	<p>Supervisory techniques and tools: The supervisor uses an appropriate range of techniques and tools to implement the supervisory approach and deploys supervisory resources on a proportionate basis, taking into account the risk profile and systemic importance of banks.</p>
<p>Principle 10 – Supervisory reporting</p>	<p>The supervisor collects, reviews and analyses prudential reports and statistical returns from banks on both a solo and a consolidated basis, and independently verifies these reports through either on-site examinations or use of external experts.</p>
<p>Principle 11 – Corrective and sanctioning powers of supervisors</p>	<p>The supervisor acts at an early stage to address unsafe and unsound practices or activities that could pose risks to banks or to the banking system. The supervisor has at its disposal an adequate range of supervisory tools to bring about timely corrective actions. This includes the ability to revoke the banking license or to recommend its revocation.</p>
<p>Principle 12 – Consolidated supervision</p>	<p>An essential element of banking supervision is that the supervisor supervises the banking group on a consolidated basis, adequately monitoring and, as appropriate, applying prudential standards to all aspects of the business conducted by the banking group worldwide.</p>
<p>Principle 13 – Home-host relationships</p>	<p>Home and host supervisors of cross border banking groups share information and cooperate for effective supervision of the group and group entities, and effective handling of crisis situations. Supervisors require the local operations of foreign banks to be conducted to the same standards as those required of domestic banks.</p>

Principle 14 – Corporate governance	The supervisor determines that banks and banking groups have robust corporate governance policies and processes covering, for example, strategic direction, group and organizational structure, control environment, responsibilities of the banks’ Boards and senior management, and compensation. These policies and processes are commensurate with the risk profile and systemic importance of the bank.
Principle 15 – Risk management process	The supervisor determines that banks have a comprehensive risk management process (including effective Board and senior management oversight) to identify, measure, evaluate, monitor, report and control or mitigate all material risks on a timely basis and to assess the adequacy of their capital and liquidity in relation to their risk profile and market and macroeconomic conditions. This extends to development and review of contingency arrangements (including robust and credible recovery plans where warranted) that take into account the specific circumstances of the bank. The risk management process is commensurate with the risk profile and systemic importance of the bank.
Principle 16 – Capital adequacy	The supervisor sets prudent and appropriate capital adequacy requirements for banks that reflect the risks undertaken by, and presented by, a bank in the context of the markets and macroeconomic conditions in which it operates. The supervisor defines the components of capital, bearing in mind their ability to absorb losses. At least for internationally active banks, capital requirements are not less than the applicable Basel standards.
Principle 17 – Credit risk	The supervisor determines that banks have an adequate credit risk management process that takes into account their risk appetite, risk profile and market and macroeconomic conditions. This includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate credit risk (including counterparty credit risk) on a timely basis. The full credit lifecycle is covered including credit underwriting, credit evaluation, and the ongoing management of the bank’s loan and investment portfolios.
Principle 18 – Problem assets, provisions and reserves	Problem assets, provisions and reserves: The supervisor determines that banks have adequate policies and processes for the early identification and management of problem assets, and the maintenance of adequate provisions and reserves.

<p>Principle 19 – Concentration risk and large exposure limits</p>	<p>The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate concentrations of risk on a timely basis. Supervisors set prudential limits to restrict bank exposures to single counterparties or groups of connected counterparties.</p>
<p>Principle 20 – Transactions with related parties</p>	<p>In order to prevent abuses arising in transactions with related parties and to address the risk of conflict of interest, the supervisor requires banks to enter into any transactions with related parties on an arm’s length basis; to monitor these transactions; to take appropriate steps to control or mitigate the risks; and to write off exposures to related parties in accordance with standard policies and processes.</p>
<p>Principle 21 – Country and transfer risks</p>	<p>The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate country risk and transfer risk in their international lending and investment activities on a timely basis.</p>
<p>Principle 22 – Market risks</p>	<p>The supervisor determines that banks have an adequate market risk management process that takes into account their risk appetite, risk profile, and market and macroeconomic conditions and the risk of a significant deterioration in market liquidity. This includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate market risks on a timely basis.</p>
<p>Principle 23 – Interest rate risk in the banking book</p>	<p>The supervisor determines that banks have adequate systems to identify, measure, evaluate, monitor, report and control or mitigate interest rate risk in the banking book on a timely basis. These systems take into account the bank’s risk appetite, risk profile and market and macroeconomic conditions.</p>
<p>Principle 24 – Liquidity risk</p>	<p>The supervisor sets prudent and appropriate liquidity requirements (which can include either quantitative or qualitative requirements or both) for banks that reflect the liquidity needs of the bank. The supervisor determines that banks have a strategy that enables prudent management of liquidity risk and compliance with liquidity requirements. The strategy takes into account the bank’s risk profile as well as market and macroeconomic conditions and includes prudent policies and processes, consistent with the bank’s risk appetite, to identify, measure, evaluate, monitor, report and control or mitigate liquidity risk over an appropriate set of time horizons. At least for internationally active banks, liquidity requirements are not lower than the applicable Basel standards.</p>

Principle 25 – Operational risk	The supervisor determines that banks have an adequate operational risk management framework that takes into account their risk appetite, risk profile and market and macroeconomic conditions. This includes prudent policies and processes to identify, assess, evaluate, monitor, report and control or mitigate operational risk on a timely basis.
Principle 26 – Internal control and audit	The supervisor determines that banks have adequate internal control frameworks to establish and maintain a properly controlled operating environment for the conduct of their business taking into account their risk profile. These include clear arrangements for delegating authority and responsibility; separation of the functions that involve committing the bank, paying away its funds, and accounting for its assets and liabilities; reconciliation of these processes; safeguarding the bank's assets; and appropriate independent internal audit and compliance functions to test adherence to these controls as well as applicable laws and regulations.
Principle 27 – Financial reporting and external audit	The supervisor determines that banks and banking groups maintain adequate and reliable records, prepare financial statements in accordance with accounting policies and practices that are widely accepted internationally and annually publish information that fairly reflects their financial condition and performance and bears an independent external auditor's opinion. The supervisor also determines that banks and parent companies of banking groups have adequate governance and oversight of the external audit function.
Principle 28 – Disclosure and transparency	The supervisor determines that banks and banking groups regularly publish information on a consolidated and, where appropriate, solo basis that is easily accessible and fairly reflects their financial condition, performance, risk exposures, risk management strategies and corporate governance policies and processes.
Principle 29 – Abuse of financial services	The supervisor determines that banks have adequate policies and processes, including strict customer due diligence rules to promote high ethical and professional standards in the financial sector and prevent the bank from being used, intentionally or unintentionally, for criminal activities.

Source: Verbatim excerpt from September 2012 Basel Committee on Banking Supervision's *Core Principles for Effective Banking Supervision*, Paragraph 41, pp.10-13, available at <http://www.bis.org/publ/bcbs230.pdf>

9. How Do Asian Jurisdictions' Bank Regulation and Supervision Regimes Compare?

BCP reviews are not audits of regulation and supervisory effectiveness. They are point in time assessments based on discussions with bank supervisory officials and reviews of evidentiary information provided by supervisory authorities in support of their contention that they meet the various BCPs. Even if a bank supervisory authority is in apparent conformity with BCP requirements, the BCP need to be applied in practice to be effective. A supervisory authority's willingness to take timely action cannot be predicted by the FSAP assessors, which is a limiting factor in the FSAP analysis. Nevertheless, the published available BCP assessments provide useful insights into the relative quality of jurisdictions' supervisory regimes. It should be noted that instances of less than full BCP compliance may have been remedied subsequent to the issuance of the assessment.

Jurisdictions are encouraged to conduct BCP self assessments and take action to remedy instances of less than full compliance.

Table 2 presents examples of summary assessments commentary from FSAP reports of two Asian jurisdictions. The assessments used the 2012 version of the BCP, which incorporate lessons learned from the GFC. An index of FSAP Reports from 2001 to the present, including stand-alone BCP assessment reports and BCP assessment in FSAP reports, is available on line at <http://www.imf.org/external/np/fsap/fssa.aspx> with links available to electronic versions of the indexed documents. Four significant Asian jurisdictions will receive an FSAP in 2017 – China, Japan, India, and Indonesia. The 2017 final FSAP reports for these jurisdictions will be available through this link upon completion.

Table 2
Examples of Asian Jurisdictions’ FSAP BCP Assessments

<p>Jurisdiction/ Prudential Regulatory Authority</p>	<p>IMF/World Bank Basel Core Principles (BCP) Assessment Document(s), Date Issued/Name of Document, (Internet address to access referenced country documents valid on 22 May 2017)</p> <p>Assigned Ratings Distribution of the 29 BCP Assessment Areas by Rating Category</p> <p>Relevant Summary Commentary Excerpted from Assessment Documents</p>
<p>Singapore/ Monetary Authority of Singapore</p>	<p>IMF Country Report No. 13/325, November 2013, Financial Stability System Assessment (https://www.imf.org/external/pubs/ft/sctr/2013/cr13325.pdf)</p> <p>“The Singapore financial system is highly developed, and well regulated and supervised.” “Singapore’s current regulation and supervision are among the best globally. The Monetary Authority of Singapore (MAS) oversees the entire financial system, and has the analytical and operational capabilities to do so effectively. Singapore is exposed to a broad array of domestic and global risks, especially in light of its interconnectedness with other financial centers. The most pressing vulnerability appears to stem from the rapid growth of credit and real estate prices in recent years, but the financial system is also exposed to possible spillovers from a future tightening of U.S. monetary policy, an economic slowdown in China, or a deterioration of economic conditions in Europe. The team’s stress tests suggest that these risks are manageable. This reflects banks’ large capital and other cushions, and the decisive macroprudential actions taken by MAS to address the threat of a bubble in the housing sector.” “Stress tests suggest that banks are resilient to adverse macroeconomic scenarios.”</p> <p>IMF Country Report No. 13/342, December 2013/Detailed Assessment of Compliance – BCP for Effective Banking Supervision, (https://www.imf.org/en/Publications/CR/Issues/2016/12/31/Singapore-Detailed-Assessment-of-Compliance-on-the-Basel-Core-Principles-for-Effective-41083)</p> <p>Ratings: Compliant: 25, Largely compliant: 4, Materially non-compliant: 0, Non-compliant: 0</p> <p>“The assessment of the Monetary Authority of Singapore (MAS) represents a very high level of compliance with the Basel Core Principles for Effective Banking Supervision and demonstrates a strong commitment by MAS to their implementation.”</p>

<p>China - Hong Kong SAR (HKSAR)/ Hong Kong Monetary Authority (HKMA)</p>	<p>IMF Country Report No. 14/207, July 2014/FSAP-BCP for Effective Banking Supervision, (https://www.imf.org/external/pubs/ft/scr/2014/cr14207.pdf) Ratings: Compliant: 26, Largely compliant: 3, Materially non-compliant: 0, Non-compliant: 0</p> <p>“HKSAR has a very high level of compliance with the Basel Core Principles (BCPs) for Effective Banking Supervision.” “The HKMA is maintaining its commitment to the international regulatory reform agenda and is an early adopter of many standards. Supervisory practices, standards and approaches are well integrated, risk based and of very high quality. A number of the HKMA practices around corporate governance issues, including close and continuing attention to fit and proper standards and to the role played by the Board of an authorized institution...deserve particular commendation.” “Hong Kong banks are well capitalized, profitable and have extremely low levels of nonperforming loans. The banking sector also appears well placed to meet new Basel liquidity standards. Banks’ capital adequacy remains robust at around 16 percent, with banks’ Tier 1 capital ratio at over 13 percent. Solvency stress tests conducted by the HKMA suggest that banks’ capital adequacy is generally resilient to both domestic and external shocks, including sharp increases in interest rates.”</p>
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Another valuable resource in determining jurisdictions’ adoption of standards promulgated by the Basel Committee is a series of very detailed progress reports on adoption of Basel III standards by the 27 Basel Committee member jurisdictions. Asian jurisdictions that are Basel Committee members include: China, Hong Kong SAR, India, Indonesia, Japan, South Korea, and Singapore. The most recent report was issued by the Basel Committee in April 2017, entitled “Twelfth progress report on adoption of the Basel regulatory framework” which is available on-line at www.bis.org/bcbs/publ/d404.htm.

10. Conclusions

Extensive post-GFC regulatory reforms have been promulgated by the Basel Committee, the Financial Stability Board, and various national authorities to enhance the strength and resiliency of individual banks and banking systems, to withstand future periods of adversity and instability. Despite the comprehensive nature of the reforms and preventative measures, they do not eliminate the possibility that destabilizing events can occur. It is prudent for jurisdictions to conduct periodic self-assessments of their bank regulatory and supervisory capabilities against international standards such as the BCP to identify and address any areas needing improvement.

On-going regional financial integration in Asia and attendant cross-border interconnectivity have intensified over the past decade. This has increased the potential for contagion risk, in which problems arising in one jurisdiction can be spread to others through various transmission channels, sometimes quickly. Effective implementation of consolidated supervision, including the legal ability to share confidential supervisory information on a timely basis, is essential to controlling these risks.

The global economy will continue to experience significant structural shifts and volatility that will provide future challenges to financial stability. Strong systems of bank regulation and supervision are necessary to meet those challenges and avoid, dampen or mitigate future periods of financial instability or crisis.

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Endnotes

1. The comments, conclusions and opinions expressed by the author are his own and do not represent the opinions of his current or former employers. Use of the term “country” or “jurisdiction” in this chapter is not intended to make or imply any judgments as to the legal or other status of any territory or area.
2. SMEs and consumers in EMEs who do not have sufficient creditworthiness to obtain loans from banks rely on non-bank lenders for credit, such as finance companies, which may be unregulated or lightly regulated. Banks’ lending activities are usually subject to detailed regulations regarding loan terms and conditions, which seek to reduce the possibility of unfair and deceptive lending practices. Bank credit also typically costs less. Therefore, borrowers attempt to attain a financial standing that allows them to access bank credit.
3. Systemic risk in this context means that the failure of a bank, particularly if it is large or has many interconnections with other banks (such as granting or receiving loans from them), or offers some unique functions for many banks, such as operating a securities market clearing and settlement system, could have negative impacts that jeopardize the stability of those other banks.
4. Michael C. Bonello, Governor of the Central Bank of Malta, 23 May 2011.
5. A bank’s license to do business is, in some jurisdictions, synonymously referred to as its “charter.”
6. Group of Ten (2001), p. 163. This report was prepared by a working party comprised of finance ministry and central bank staff from Australia, Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States, and representatives from the Bank for International Settlements, the European Central Bank, the European Commission, the International Monetary Fund and the Organization for Economic Co-operation and Development.
7. OECD (2015), p. 9.
8. Bank examiners are sometimes referred to as “bank supervisors.” Bank supervisors may also refer to: staff supporting bank examiners conducting on-site reviews/ examinations; staff conducting off-site monitoring of banks; or those responsible for overseeing bank supervisory activities.

9. The record of 1966 U.S. Congressional testimony on bank regulatory enforcement powers included a memorandum by then Federal Home Loan Bank Chairman John E. Horne which states that an “unsafe or unsound (banking) practice embraces any action, or lack of action, which is contrary to generally accepted standards of prudent operation, the possible consequences of which, if continued, would be abnormal risk or loss or damage to (a banking) institution, its shareholders, or the agencies administering (deposit) insurance funds.” This definition is frequently cited in judicial and administrative enforcement proceedings involving regulatory supervision of banks. (*Financial Institutions Supervisory and Insurance Act of 1966: Hearings on S. 3158 Before the House Committee on Banking and Currency, 89th Cong., 2d Sess., 49–50 (1966)*).
10. Transaction testing refers to sampling techniques employed by bank examiners in reviewing a bank’s books and records. For example, the focal point of most examinations is a review of loan portfolio quality. Examiners will typically select a sample of loans to review in detail. This review includes analyzing borrowers’ current financial information to assess their ability to repay the loan and an assessment of the protection against loss provided by collateral pledged to secure the loan, such as real estate, in the event the borrower defaults.
11. People’s Republic of China; Taipei, China; Indonesia and South Korea.
12. Thirteen of the 147 identified systemic banking crises were characterized as “borderline” events, meaning that while they met the crisis definition, they were less severe events.
13. Moral hazard occurs when a party to a transaction takes excessive risk, knowing that the impact of an adverse outcome will not be borne by them.
14. Contagion risk in this context is the risk that financial weaknesses or problems in one affiliate can be transmitted to affiliated organizations through various mechanisms, such as interbank loans, or the sale of poor quality assets.
15. BCBS/Joint Forum (2012), p. 3.
16. Prompt corrective action, also known as PCA, refers to banking laws that mandate increasingly stringent operating restrictions on undercapitalized banks, up to and including license revocation. The general objective of PCA is to close nonviable institutions or transfer their operations to new ownership well before book capital is zero or negative, to minimize losses. PCA frameworks usually mandate that regulators impose more stringent restrictions as capital levels decline. Restrictions can include dividend prohibitions, curtailment of non-deposit borrowings, asset growth, executive compensation limitations, and removal/replacement of senior executives.

17. Sixty central banks are listed as having rights of voting and representation per “The BIS in profile,” (Basel: BIS), updated 27 June 2016, available on-line at <http://www.bis.org/about/profile.htm>.
18. The Basel Committee on Banking Supervision (“BCBS”) consists of senior representatives of bank supervisory authorities and central banks. Member jurisdictions are: Argentina; Australia; Belgium; Brazil; Canada; China; the European Union; France; Germany; Hong Kong, China; India; Indonesia; Italy; Japan; Korea; Luxembourg; Mexico; the Netherlands; Russia; Saudi Arabia; Singapore; South Africa; Spain; Sweden; Switzerland; Turkey; the United Kingdom and the United States. Source: BCBS website September 2016: www.bis.org/bcbs/membership.htm.
19. BCBS (2012), p. 3.

Stress Testing – An Overview of Global Best Practice and Areas for Future Improvement

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Stress testing has become one of the key prudential tools for Central Banks and Regulators following the financial crisis in the US, Europe and UK during 2007-2009. That period highlighted the inadequacy of regulatory reliance on Internal Ratings Based models that ultimately calculated Risk Weighted Asset requirements for setting capital buffers. Such models, which, amongst other things, were used to calculate the Probabilities of Default (PD's), the Loss Given Default (LGD) and the Exposure at Default (EAD) for Credit Risk and the Value at Risk for Market Risk based on historical experience, were open to mis-calibration and/or deliberate gaming by firms.

The crisis forced regulators in the affected countries to establish a new way of trying to assess the riskiness of banks' portfolios that would measure wider economic risks and interlinkages in the system, and also be forward looking in its approach. The result was a new system of regulatory stress testing that aimed to combine the macro-economic top-down assessment of the economic system, with the micro-economic bottom-up analysis of individual firms. It has since become **the** key tool in setting capital buffers for individual firms, whilst also being used to highlight model and data weaknesses and identify key risk issues for Supervisors to focus on. In addition, stress testing is now also used to support assessments of threats to financial stability and in testing out the impact of Central Banking policy changes across the wider markets. As such, it is important to understand how supervisory stress testing evolved from the recent financial crisis, and to take stock of the developments that have occurred over the last few years, during which stress testing has become a key part of the annual setting of capital buffers and supervisory strategies. This paper therefore aims to summarise the key elements of stress testing regulatory regimes that have been set up in the three major global centres that suffered most during the crisis, and to consider what has been learnt in the last few years of running these processes. It will also look at how this information can help those Central Banks and Regulators who are in the process of building up or improving their stress testing processes to develop their frameworks whilst taking into account the experiences of the three key regulators most affected by the crisis.

1. The Bank of England (BoE)

In the immediate aftermath of the financial crisis, stress tests were run by the Financial Services Authority - the FSA.¹ In similarity to other regulators, these focused on a bottom-up analysis of each bank's balance sheet to assess potential losses

to the bank and impact on capital from key risks areas, as this was the main on-going concern at that time. It involved looking at both solvency and liquidity risks and covered Credit Risk, Market Risk, Operational Risk and Liquidity Risk, thereby bringing in specialists with a variety of risk expertise from across the organisation. The stress tests were run on one bank at a time and methodologies for risk estimation were developed by a small team of Risk Specialists and supplemented by Asset Quality Reviews. These determined how accurate banks' risk grading models and provision estimations were, which subsequently drove assumptions in the loss estimation model.

Following the lessening of the immediate pressures in the aftermath of the crisis, the Bank of England (BoE) had the chance to take a more holistic view of how stress testing should be run, and what they should set out to achieve. Whilst this is still a work in progress, the key focus has been on understanding the interlinkages and inter-connectedness between banks, and their impact on financial stability as a whole. A key change that was introduced by the Bank of England was running a system wide, top-down, stress test, to sit alongside the more detailed bottom-up analysis of each firm that was already being run. These would include integrated liquidity and solvency stress tests. This followed the IMF's 2014 Review of the Financial Sector Assessment Program (FSAP) globally,² highlighted the need to strengthen the systemic focus of central banks' financial stability assessment, deepen the analytical treatment of interconnectedness, expand coverage of stress tests to non-bank financial sectors and enhance the systematic analysis of cross-border spill overs. The Basel Committee's Principles for Sound Stress Testing Practices and Supervision³ also recommended that banks take into account system-wide interactions and feedback effects (principle 8), and consider interactions between funding and liquidity (principle 10).

The BoE was well placed to undertake this change, as its economists and policy makers were able to focus on such a system-wide approach to assess risks to wider financial stability that may not materially impact any one individual firms, whilst the BoE's Risk Specialists and Supervisors (housed within the Prudential Regulation Authority) could continue to focus on the bottom up analysis of each of the systemically important institutions in the UK. These were then brought together in an integrated assessment of risks across the system, to decide which banks' individually deserved higher capital buffers, further capital raising and limitations on dividend pay-outs, and/or which sectors of the system collectively required higher buffers to mitigate against systemic risks.

The BoE announced the first concurrent stress test of the UK banking system in 2014.⁴ This followed a similar concurrent EU-wide exercise co-ordinated by the European Banking Authority in previous years. The process now involves seven firms (Barclays, HSBC, Lloyds Bank, Nationwide, RBS, Santander UK and Standard Chartered Bank) running a base and stress case scenarios using their own models over

a five year time horizon. The BoE also runs the scenarios on its own in-house models (both system wide and individual bottom-up loss projection models). The results of losses projected by the individual firms, as well as the results projected by BoE for each firm, are compared to highlight outliers and systemic impacts of the stress. Finally, Asset Quality Reviews (AQRs) are undertaken as part of both the stress testing, and the ongoing supervisory processes, to help calibrate the BoE's models and the assumptions and judgements made during the exercise.

The high level results and related commentary from the stress test is disclosed to the public. If the stress test results indicate that a bank does not have sufficient capital resources (i.e. does not meet the BoE's 'hurdle rate' for its capital ratio), the bank would have to take action to strengthen its capital position over an appropriate time frame. This is usually agreed and planned prior to the publication of results.

An additional objective of the Bank of England's stress-testing framework is to support a continued improvement in participant banks' own risk management and capital planning capabilities. As part of the annual stress test, the Bank of England's Risk Specialists conduct a review of participants' stress-testing practices. The findings of this qualitative review are then fed back to banks. Participants are expected to demonstrate sustained improvements in their capabilities over time, in particular in any areas of weakness identified in the review. If participants fall short of expectations in this area, the BoE may take action, including by using the findings of the qualitative review to inform the setting of required capital buffers for individual banks.

2. Lessons Learned - BoE

In June 2016, the IMF FSAP reviewed the Bank of England's stress testing framework,⁵ and it is useful to consider their conclusions on the key areas for improvement:

1. Despite the investment and work undertaken to date, the IMF felt that the BOE's analytical infrastructure—data, models, processes— still required substantial efforts in order to be finalised. The IMF recommended that these should be completed as soon as practical, in order to allow for investment in the necessary infrastructure, both at the BoE and at the supervised banks.
2. The IMF further concluded that there should be additional investment and improvements in the Bank of England's actual models themselves, to ensure they properly capture the risks and interlinkages in the system.
3. Finally, the IMF also recommended that the BoE should include the largest subsidiaries of foreign investment banks in the concurrent stress test, given that they play such a key role in the UK's financial system.

Lessons learned from the 2014 and 2015 Concurrent Stress Tests, and following the IMF FSAP, were subsequently used to refine the stress testing approach from 2016 onwards.⁶ The focus of the changes were:

- To develop an approach to stress testing that would be explicitly countercyclical, with the severity of the test, and associated regulatory capital buffers, varying systematically with the state of the financial cycle. As such:
 - ◆ Every year, the Bank will now design and run a scenario intended to assess the risks to the banking system emanating from the financial cycle — the **‘annual cyclical scenario’**.
 - ◆ Every other year, the annual cyclical scenario will be complemented by an additional scenario intended to probe the resilience of the system to risks that may not be neatly linked to the financial cycle — the **‘biennial exploratory scenario’**.
- To improve the consistency between the concurrent stress test and the overall capital framework, including ensuring global systemically important banks are held to higher standards. For example, Barclays, HSBC, RBS and Standard Chartered have been designated as Global Systemically Important Banks (G-SIBs), with associated G-SIB buffers ranging from 1% to 2.5% of Common Equity Tier 1 (CET1) capital. This will mean that banks in the stress test will face differing hurdle rates depending on whether they are a G-SIB or not.
- To enhance the Bank of England’s own modelling capabilities, whilst ensuring that participating banks were also improving their own stress testing methodology, framework and models.

3. The European Central Bank (ECB)

As Europe struggled with successive crises, its supervisory stress testing scenarios were seen by the market as being too optimistic. The 2010 exercise indicated that EU banks would remain sufficiently capitalized and resilient under adverse scenarios, yet weeks later Ireland requested a bailout from the ECB and IMF. Banks such as Dexia and Bankia passed the 2011 stress test, but later needed to be rescued. As a result, supervisory stress testing in Europe became increasingly focused on accurately assessing asset quality. When the ECB took over supervisory and stress testing responsibilities in 2014, it initiated a Comprehensive Assessment, which included an AQR of all banks it was to supervise, as a precursor to the annual stress test, in order to ensure balance sheets were correctly valued. By examining their asset valuations, a key input into a stress test, the AQR showed whether banks had/hadn’t the capital to withstand a crisis, and this helped to further strengthen the basis of results from the stress testing exercise.

The EU-wide stress test exercise⁷ is carried out on a sample of banks covering broadly 70% of the national banking sector in the Eurozone, each non-Eurozone EU Member and Norway. To be included in the sample, banks have to have a minimum of EUR30bn in assets. The ECB provides two macroeconomic scenarios for the exercise - a baseline and an adverse scenario. The exercise and scenarios are run over a 3 year time horizon. The results are reported in terms of CET1 capital. In addition, the Tier 1 capital ratio and total capital ratio, as well as a leverage ratio, are also reported for each year of the stress test. Importantly, the ECB does not specify any hurdle rates or capital thresholds that firms need to 'pass'. Nevertheless, individual supervisors in their home countries are supposed to apply the stress test results as an input to the Supervisory Review and Evaluation Process (SREP) when reviewing the firm's Internal Capital Adequacy Assessment Process (ICAAP).

An important point to note is that the EU-wide stress test is conducted on the assumption of a static balance sheet. Assets and liabilities that mature within the time horizon of the exercise are assumed to be replaced with similar financial instruments in terms of type, credit quality, and original maturity as at the start of the exercise. No workout or cure of defaulted assets is assumed in the exercise. Furthermore, the ECB asks firms to maintain the same business mix and model (in terms of geographical range, product strategies and operations) throughout the time horizon. With respect to the P&L, revenue and costs, assumptions made by banks should be in line with the constraints of zero growth and a stable business mix. Banks frequently assert that this is not realistic and that in a stress they would change their business mix and business strategy. An equitable resolution to this issue has yet to be found, since if the banks had total freedom to change their business strategy, they may apply unrealistic assumptions in how quickly changes could be achieved. At the same time, central banks, in a stress, will want to continue the pressure on banks to keep lending to the real economy, and hence the argument is that the stress test should test to see if banks' are adequately capitalised to allow them to continue lending through a recession.

The stress test is primarily focused on the assessment of the impact of risk drivers on the solvency of firms. Firms are required to stress test the following common set of risks:

- Credit risk, including securitisations;
- Market risk, CCR and CVA;
- Operational risk, including conduct risk.

Firms are also requested to project the effect of the scenarios on Net Interest Income (NII) and to stress Profit and Loss and capital items not covered by other risk types.

The banks themselves run the bottom-up stress tests using their own models. They need to adhere to the scenario, assumptions around the static balance sheet and

other PD and LGD benchmarks, as well as caps and floors for PDs, LGDs, and NII etc. provided by the ECB. Each bank supervisor in the relevant country then carries out a quality assurance process on the bottom-up results. This includes validating banks' data and stress test results based on their own bottom-up calculations, as well as reviewing the stress testing models applied by firms. The ECB will then review the output from these and carry out its own top-down analysis of results, peer reviews and benchmarking across the Eurozone. High level results from the stress test are then disclosed to the public.

In practice, it is very difficult to co-ordinate each country's regulators and banks to run the test as prescribed, and ensuring they all apply the same level of oversight. Moreover, as the stress test has to cater for so many different institutions, it has sometimes been criticised as being too high level. Nevertheless, probably the most important action the ECB has undertaken is to publicly release a lot of the underlying stress testing data related to individual firms. This enabled the market to carry out its own analysis of each banks' capital adequacy and reflect the outcome in the share price.

4. Lessons Learned – ECB

An IMF FSAP of the EU was carried out in 2013⁸ which made some recommendations on the EU's stress testing programme, a number of which were since implemented by the ECB when it took over supervisory responsibilities formally. The review mentioned that the June 2011 stress tests failed to signal some subsequent bank failures and that the recapitalization exercise in June 2012 was more effective, leading to substantial infusions of capital into EU banks (albeit the report also pointed out that some banks enhanced their capital positions through risk weight optimization). Hence, the IMF's recommendations should be viewed in the light of what had taken place in the stress tests of 2011 and 2012, and it is therefore not surprising that they focus on the importance of obtaining full transparency about banks' data, preferably through an asset quality review. The review also stated that further bank failures after passing a stress test would substantially damage the credibility of the stress testing programme and so it was important to avoid this happening. They made the following additional recommendations to prevent such an outturn occurring:

1. The ECB should implement standardised definitions of NPLs, loan classifications, provisioning etc. while initiating a review of input asset quality data.⁹
2. The ECB should continue to publish a wide range of detailed information on banks being stress tested.
3. Banks should be encouraged to incorporate, as far as possible, their funding and capitalization plans in their stress test projections, and further efforts could be made to assess the sensitivity of results to likely changes in balance sheet composition.

4. The ECB should ensure the consistency and quality of tests run by national supervisors against its own ones, and also run tests on relatively neglected topics such as structural issues and funding vulnerabilities. The ECB should develop further liquidity stress testing, and run stress tests to incorporate longer-term and cross-sector factors.

5. The Federal Reserve Banks (Fed)

During the financial crisis in the US, in a similar manner to the UK and Europe, the usefulness of stress testing in assessing the capital needs of, and restoring confidence in, banks, resulted in stress testing becoming a required and regular feature of large firm prudential regulation. As a result, the Dodd-Frank Act Stress Test (DFAST) was introduced, and it has since been integrated into the Fed's Comprehensive Capital Analysis and Review (CCAR) process.

The CCAR process evaluates the capital planning and capital adequacy of the largest U.S. based bank holding companies, including the firms' planned capital actions such as dividend payments and share buybacks and issuances. The stress tests cover 13 of the largest and most complex bank holding companies, which are subject to both a quantitative evaluation of their capital adequacy, and a qualitative evaluation of their capital planning capabilities.

Banks are required to submit the results for a total of 5 scenarios: 3 Supervisory ones (Baseline, Adverse and Severely Adverse – provided by the Fed); and 2 Bank scenarios (Baseline and Stress – to be formulated by each bank). The banks must also provide the Federal Reserve with detailed and significantly standardized data on their loans, securities holdings, trading positions, counterparty exposures, revenue, expenses, and balance sheets. The Fed then inputs the data from the firms into its own supervisory models to project each firm's losses, revenues, and capital over a nine-quarter planning horizon under the specified scenarios. The results of the exercise, including the capital positions of the firms following the hypothesized stress scenarios, are disclosed to the public.

Banks must also submit a capital plan which should sufficiently detail the Bank's capital planning process and the process for deriving stress test estimates as well as planned capital distributions. If the Fed objects to a plan, it means the bank in question cannot undertake its planned capital distributions. The Fed can object to the plan on either a quantitative or a qualitative basis. The quantitative assessment involves the Fed using its supervisory models to assess whether a bank is capable of continuing to meet minimum capital requirements and that it meets a minimum Tier 1 ratio of 5% through the stress period. The qualitative assessment involves a review of the comprehensiveness of the capital plan, the suitability of scenarios the bank has chosen and the extent that all risks are captured. It will also look at the reasonableness of the assumptions made and the overall robustness of the capital plan. If the Fed is not satisfied with its findings, it may object in whole or in part to the proposed capital actions in the plan.

6. Lessons Learned - Federal Reserve

The IMF reviewed the CCAR stress testing framework in their FSAP review in 2015¹⁰ and made some suggestions for improvement, many of which have since been adopted (see below). One of their key recommendations was for the Fed to try to link liquidity, solvency and network analysis into a systemic risk stress testing framework. The IMF pointed to the example of the Bank of Canada's Macro Financial Risk Assessment Framework, which captures the various sources of risk (solvency, liquidity and spill-over effects) within a single stress testing framework. Another key suggestion they made was that the Fed should try to conduct more intensive monitoring of systemic financial sector risks, including the use of market-based solvency and shortfall measures. Their recommendations included:

1. The Fed should increase the coverage of the tests, and should start to include the largest Savings and Loan Holding Companies in the supervisory stress tests once they start performing company-run stress tests (from 2017).
2. Establishing a regular liquidity stress testing framework for banks. The IMF stated that the announced Comprehensive Liquidity Analysis and Review (CLAR) is a step in the right direction and will complement the solvency testing under Dodd-Frank.
3. The IMF observed that improvements were necessary in relation to modeling network contagion. They stated that the Fed should try and expand their data on interbank exposures to include a richer set of dynamics and a broader range of counterparties.
4. In insurance, the IMF report stated that the focus should be on developing and performing insurance stress tests on a consolidated, group-level basis. This was deemed to be particularly important for groups that are (i) designated as systemically important; (ii) engaged in material group-internal risk transfer, e.g., via captives; or (iii) exposed to non-linear market risks through the sale of products which include guarantees or optionalities, e.g., variable annuities.
5. The IMF also recommended that regular system-focused liquidity risk analysis for the mutual fund industry should be undertaken on a regular basis. The report observed that at present a considerable range of bottom-up analyses is performed by the industry. The Fed was encouraged to further clarify the guidance to the industry on liquidity risk analysis, and to start conducting regular top-down analysis to provide a more holistic picture of the industry's contribution to systemic risk.
6. The IMF encouraged the Fed to conduct more intensive monitoring of systemic financial sector risks, including the use of market-based solvency

and shortfall measures. As market-price based stress tests employ forward-looking, higher-frequency, market consensus information, they can add value to traditional stress tests by providing a useful “cross-check” to corroborate the findings of other stress tests. They can also be readily extended to assess the safety and soundness of sectors which are not traditionally subject to bank-like supervisory oversight.

In a speech delivered in September 2016,¹¹ Governor Daniel Tarullo of the Federal Reserve indicated a number of improvements that were to be made to the Fed’s stress testing programme. These included the following:

- The integration of CCAR into the year round Supervisory program.
- The introduction of a Stress Capital Buffer (SCB) for the largest banks which would replace the 2.5% Counter-Cyclical Buffer already in place for G-SIBs, and would be risk-sensitive and vary across firms. It would be set equal to the maximum decline in a firm’s common equity tier 1 capital ratio under the severely adverse scenario of the supervisory stress test, before the inclusion of the firm’s planned capital distributions, but with a floor of 2.5%.
- The Stress Capital Buffer approach would also have the effect of requiring a firm to hold capital to meet its stress losses *and* fund its planned dividends over the following year.
- Instead of trying to forecast how banks will continue to lend during a stress, the Fed will now follow the ECB’s approach and assume that balance sheets and risk-weighted assets remain constant over the severely adverse scenario horizon.
- To build out the macro-prudential elements of the stress testing program, i.e. to also stress the indirect risks to bank capital through channels such as market-wide funding and liquidity disruptions, fire sales, counterparty failure and so on.
- Banks with less than \$250 billion in assets that do not have significant international or nonbank activity will no longer be included in the annual CCAR qualitative review. As a result, 21 firms with less complex operations will no longer be subject to the qualitative portion of CCAR.

The Fed’s new approach would appear to convert the CCAR stress test into an additional risk-based capital requirement, in which the new Stress Capital Buffer would substitute for the capital conservation buffer. Under that requirement, a bank would need to maintain CET1 capital equal to the sum of (i) 4.5 percent, (ii) its SCB, and (iii) its GSIB surcharge, if applicable. The SCB would be the greater of (i) 2.5 percent or (ii) the maximum decline in the bank’s CET1 ratio under the CCAR severely adverse scenario.¹²

7. Implementing a Robust Stress Testing Framework

Regulators globally have started to implement many of the stress testing practices detailed above. In some cases they have also put in places more stringent requirements, taking into account the lessons learned from earlier practices in the UK, Europe and US. Nevertheless, the majority of regulators outside of the UK, Europe and US have not been forced to develop stress testing processes as robustly as Western peers, whose banks have suffered/have been suffering direct losses that have necessitated much more formal stress testing. Regulators therefore have a unique opportunity to learn the lessons from these countries, and supervisors should use the opportunity to revamp their stress testing regimes to help strengthen their financial systems before the next crisis emerges. There are several key practices that regulators should take note of, when developing or enhancing their stress testing frameworks.^{13; 14}

The experience of the Bank of England, the European Central Bank and the Federal Reserve has demonstrated that to be credible, stress tests really need to push banks in assessing a severe loss scenario. This not only means that the macroeconomic stress scenario has to be robust and pose an appropriately challenging situation, but also that the assumptions and methodologies banks use need to be sufficiently challenged by the regulator. This includes the models used for stress testing, the assumptions made in calibrating such models, and the adequacy of the stress testing methodology and governance processes.

Arguably an even more important factor is for the regulator to undertake sufficient asset quality reviews to determine the quality of the underlying portfolios being stressed. Some regulatory authorities have often omitted this aspect (whether in relation to stress testing, or in their more general day-to-day supervisory functions), arguing that this is something for the banks' management and auditors to be responsible for. Unfortunately, experience in the UK, Europe and the US has shown time and time again that there have been significant issues with the quality of lending portfolios that neither the banks' senior management, nor their auditors, have openly identified. This includes a range of issues from poorly structured facilities, incorrect identification of risk drivers, inappropriate risk grading or improper application of models, documentation weaknesses, failure to identify high-risk or non-performing loans, and insufficient provisions against non-performing loans once identified. Auditors have been at fault for focusing more on whether correct processes and procedures have been followed, rather than carrying out a more comprehensive risk assessment. A key conclusion from the recent financial crisis, and experiences at the regulators most affected by bank losses resulting from it, is that an in-house team of risk reviewers /specialists, with previous banking credit risk assessment skills, are critical in allowing the Regulatory Authority to properly carry out a stress testing programme. Such asset quality reviews can then help identify weaknesses in valuations or provisions, which can then be properly reflected in the stress test and thereby increase its credibility and the accuracy of results.

Stress tests also need to be embedded by the bank into their everyday processes. Under Basel II, banks must link together planning, risk appetite and performance. In practice, they have struggled to do this. The risk appetite statement, set by senior management, has often failed to be communicated to front line staff in its entirety, and loans and other credit has often been extended outside of the stated risk appetite. Similarly, whilst stress tests are also part of the ICAAP process, banks often run them primarily for the purposes of the regulator rather than as part of a strategic planning tool. As such, they would fail the regulatory ‘use’ test. Regulatory Authorities, by using the output from stress tests to set capital planning buffers and also the supervisory agenda, can help to encourage firms to embed the stress test into their business as usual planning cycle.

Taking this a step further, regulators can further enhance the importance of stress testing by making use of stress test data in reaching policy decisions. For example, stress tests can show the potential impact of raising interest rates or of falls in house prices. Some of the key variables used in the stress test can also be monitored to provide early warnings against forthcoming downturns in the economy.

A final point to note is that the actual result from any stress test is not really the key purpose behind stress testing. Clearly, neither the Regulatory Authority nor the banks can accurately predict the response to any economic shock or crisis. The most important element the stress testing process contributes to, apart from indicating a range of possible outcomes, is the wider light that it helps shine upon the banks’ myriad operations, as well as highlighting areas where potential losses or problems for the bank could develop and putting in place contingency plans. Where data is made public, then there is further benefit in the market being able to come to its own conclusions on the solvency of particular banks. A properly run stress test exercise will underscore the quality of a bank’s risk data and models, how effective and well trained its staff are, how strong the Risk function is vis-à-vis the front line, how robust its sources of liquidity are, how well Board members understand the nature of the risks being taken by the bank, and the effectiveness of the overall governance and control processes within the bank. As such, these can greatly aid risk based supervision in helping Supervisors to focus their limited time and resources on the key issues of risk and concern within the bank. Ultimately this will improve both the level of regulatory oversight of the bank, and ensure the bank’s senior management are equally aware of, and focused on, such issues.

8. Issues relevant to Emerging Market Economies

There are a number of points that are pertinent to consider, particularly for emerging market countries, when implementing a stress testing programme. Some of these are discussed below.

1. There may be a lack of sufficient historic stressed losses in particular markets. An example may be Commercial Real Estate (CRE) and residential property in Hong Kong. During both the Asian Financial Crisis and the more recent global financial crisis, this part of the market was relatively unaffected and did not see the heavy losses and write-offs experienced in the CRE and residential property markets in the US, UK and Europe. Banks being stress tested in Hong Kong, and associated regions, may therefore draw on such historic data in the calibration of their own stress testing models. Hence, even if the scenario were to stipulate large falls in property prices, the models would not forecast particularly heavy losses. The banks would support this by stating that in previous periods of significant stress they did not experience heavy losses and so there would be no reason to expect such losses to crystallise during periods of future stress. There is certainly some merit in this argument, since homeowners in these countries prioritised repaying their mortgages, and corporates were able to take advantage from other income streams to keep their CRE interest payments up to date. Furthermore, we should note that even significant falls in CRE prices do not necessarily lead to losses, as long as customers have sufficient cash flow to cover their interest payments. Similarly, steep falls in GDP over one or two years would again not lead to corporates defaulting on their loan repayments, particularly if they are larger companies who can weather more difficult conditions and can draw on reserves or income from other business lines or markets. Nevertheless, the purpose of a stress test is to test the hypothetical question of just how severe would the impact be on the bank if such companies were to default on their payments. Therefore Regulators / Central Banks should guide the banks to use historical data drawn from other regions where heavy losses were experienced, or create hypothetical scenarios which generate more significant levels of losses than those experienced historically in the home country. In this respect, it is important for the Regulator / Central Bank to describe the details of the scenario they are proposing, and the potential impacts they would expect to see resulting from it, so that there is a clarity of expectations on assumptions that should be made during the stress testing process.
2. In many economies, a number of the companies banks lend to are conglomerates, with multiple and significant lines of business that are inter-connected across industries. Careful thought therefore needs to be given as to how the stress scenario would play out for them. This would include assessing how much of their business function falls into particular asset classes or industry sectors, so that stress factors appropriate to the scenario can be applied. For example, how much of the underlying conglomerate's business is related to the CRE sector, how much

to manufacturing businesses, how much to non-bank financial activities and so on. There may also be additional contagion risks that could arise from threats in a sector that they are not at first sight directly connected to via their primary lines of business, but which could still end up having a material effect on their ultimate performance. Regulators need to ensure that all such risks are fully explored and appropriately accounted for.

3. Linked to this is the question of cross-border inter-connectedness within corporates, and indeed across banking groups themselves. Banks may be lending to conglomerates that operate across numerous countries, whilst the bank itself may also be operating across a number of global locations. Hence, a stress situation may not arise in the company or bank's 'home' country, but ultimately would impact the home market and therefore have to be resolved by the home regulator. Such an impact would therefore need to be considered in a stress test. Conversely, a stress situation in the home country may actually end up impacting a host jurisdiction much more severely than the home country. All such issues need to be considered as part of a comprehensive stress testing programme, and contingency planning around this needs to take place. The results from the stress test should then also contribute to recovery and resolution planning, and be discussed further at supervisory colleges and other similar meetings.
4. Whilst it is reasonable to assume that individual Central Banks and Regulators will still want to run their own country specific stress tests, given the issues raised above there is also a benefit in co-ordinating a stress test across regions. Such a region wide stress test (similar to that run by the ECB) may provide a useful benefit in harmonizing scenarios, assumptions, credit assessments and management actions, as well as reducing the scope for banks to engage in regulatory arbitrage by providing contradictory rationales and assumptions to different regulators. An added benefit would be to increase co-ordination and co-operation amongst Regulators, enabling them to use resources more effectively. Banks being stressed would also benefit in not having to run multiple similar scenarios, allowing them to invest in one common data request platform and thereby also enabling them to better focus and manage their own resources.

Endnotes

1. Subsequently split into the Prudential Regulation Authority (within the Bank of England) focusing on Prudential Risk, and the Financial Conduct Authority, focusing on Conduct Risk.
2. Review of the Financial Sector Assessment Program: Further Adaptation to the Post Crisis Era, prepared by IMF staff and completed on August 18, 2014.
3. Principles for sound stress testing practices and supervision, May 2009, Bank for International Settlements.
4. Stress Testing the UK Banking System: 2014 results, Bank of England, December 2014.
5. IMF United Kingdom FSAP – Financial System Stability Assessment, June 2016.
6. The Bank of England's Approach to Stress Testing the UK Banking System, Bank of England, October 2015; Stress Testing the UK Banking System: 2016 results, Bank of England, November 2016.
7. EU Wide Stress Test – Methodological Note, European Banking Authority, 24 February 2016.
8. IMF EU FSAP – Financial System Stability Assessment, February 2013.
9. The ECB, on 20 March 2017, published its final guidance to banks on non-performing loans. This can be found here: https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance_on_npl.en.pdf?b2b48eefa9972f0ca983c8b164b859ac
10. IMF US FSAP – Stress Testing: Technical Note, July 2015.
11. Next Steps in the Evolution of Stress Testing, Governor Daniel K. Tarullo, Board of Governors of the Federal Reserve System, 26 September 2016.
12. The speech was not clear on whether and how the stress capital buffer would apply to existing CCAR post-stress risk-based minimum capital requirements other than the CET1 requirement, and so this will need to be worked out in due course
13. Some of the points are expanded from Oliver Wyman's 2015 Review of Stress Testing in Asia.
14. How Well Do You Know Your Banks – The case for supervisory stress testing development in Asia, Oliver Wyman, 2015.

Fundamentals of Assessing and Controlling Bank Lending Risk

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1. Introduction

Banks' lending activities are typically the main source of bank profitability and risk. Accordingly, the focal point of bank risk management examinations is usually assessing the quality of a bank's loan portfolio and bank management's capabilities in controlling loan portfolio risk.

The purpose of this article is to provide central bankers who are not involved in bank supervision matters with an overview of the foundations of sound bank lending, as well as how lenders control risks in underwriting individual loans through properly documented terms and conditions. First, the "Five C's of Credit" are discussed, followed by an overview of basic loan documentation used to protect a bank's interests should a borrower's financial condition materially weaken or they default on their loan repayment obligations. Bank examiners need to be proficient in these technical matters in order to properly assess loan portfolio risk.

❖ Part 1: The "Five C's of Credit"

Among all the lessons learned and relearned from past recessions, some bankers seem to suffer a memory lapse when it comes to the basics of credit, and nothing is probably more basic than the 5 C's of Credit – assessing a Borrower's Character, Capacity, Collateral, Capital and external Conditions that may impact loan repayment.

These basic tenets of loan underwriting seem to have been discarded in favor of less labor-intensive approaches by many banks as has the evaluation of "character," or determining the "willingness" of the borrower to repay. There is a difference between the "willingness" and the "ability" of a borrower to repay a loan, so in the hope of breaking this repetitive cycle of recession and expansion, remission and recovery, let's examine the 5 C's, distinguish between willingness and ability to repay, and offer some old-fashioned guidance on how to evaluate it all.

The Five C's of Credit: Long Time Coming

The Five C's of Credit have been around for a long time, and their longevity suggests how useful they are in helping bankers remember what to evaluate in determining the creditworthiness of their borrowers. Four of the C's assess borrowers' ability to repay, and one of them their willingness to repay. The four C's that help us evaluate repayment ability include Collateral, Capacity, Capital and Conditions,

but the C that assesses whether the borrower will actually perform is Character. Let us refresh our memories on what these five credit icons really mean, especially Character.

Character. Character can be defined as the complex of mental and ethical traits marking and often individualizing a person, group, or nation. Its synonyms include decency, dignity, nobility, quality, reputation, worth, honesty, and integrity. Typically ranked first among the five C's in determining creditworthiness, Character is a banker's way of summing up a borrower's determination to pay, and it is tested by cash shortages, hard times, and poor business conditions. The other C's have their places, but unless the borrower is willing to live up to his promise to repay the debt, the lender is taking a risk at the outset of the credit extension so great that the other C's are unlikely to offset a character failing. The borrower's willingness to honor obligations reflects the value the borrower puts on reputation, honesty, and integrity.

We can track character negatively, that is, by the lack of it, in a review of the borrower's payment history. Information reflecting negatively on the integrity of the borrower is critical because time and costs limit the extent and depth of investigation. Credit bureau reports and credit agency reports provide the necessary statistics, but of course, their inherent weakness is their reliance on past performance. No one's willingness to pay is tested in good times; it takes a recession to find out whether a borrower will honor his promises and meet his commitments.

So the analytical key to character is willingness to pay, probably the most difficult of the five C's to ascertain. The other Four C's of Credit can be quantified into measures of ability to pay, but there remains a wide gap between a borrower's available repayment funds and his willingness to part with them.

Capacity. Capacity usually follows Character as the second "C." Capacity is the ability of the borrower to operate the business successfully and generate the cash needed to repay obligations as they come due. Its synonyms include ampleness, sufficiency, room, extent, potential, ability, capability, adequacy, sufficiency, endowment, strength, endurance, and perseverance.

Capacity is sufficient power, enough strength, and adequate resources to start, maintain, and expand operations as the firm passes through its life cycle. It reflects the experience of the principals and the demonstrated ability of the business to operate successfully and profitably. Inherent in this "C" is the sum of experience, training, and skills that make someone successful. However, winning sport team coaches do not have to be the best players in their sports to be successful leaders of their teams. On the other hand, Enron's¹ management was viewed as an all-star ensemble, and in its October 1999 issue, CFO magazine named its chief financial

officer Andrew Fastow as “CFO of the year” just two years before its failure. One by one, management’s integrity was found to be wanting as Ken Lay, Jeff Skillings, and Andrew Fastow, among others, demonstrated that credentials are no substitute for character. Now let us look at the other C’s to show in more detail how they differ from Character in their emphasis on ability to repay rather than willingness to repay.

Capital. Does the capable character have sufficient funds to “prime the pumps”? It takes money to make money, so the principals of a business must invest some funds in the beginning to cover start-up costs, acquire earning assets and provide working capital. Capital refers to the adequacy of funds needed by the business to allow it to operate efficiently in generating cash flow and effectively within its competitive business environment. Capital is what is needed to carry the firm past the breakeven point, profitable operations and satisfactory returns on equity. Its synonyms include principal, assets, stock, investment, funds, money, finances, savings, means, resources, wealth, riches, fortune, and treasure.

Conditions. Conditions connote the economic and environmental influences on the firm’s financial condition and performance. Conditions represent the factors typically beyond the borrower’s immediate and direct control, events sometimes referred to as force majeure in contracts. Regardless of who or what controls them, Conditions must be considered in any credit decision. Synonyms of Conditions include such phrases as the economy, the business climate, the business environment, the national outlook and the legal and regulatory situation.

Collateral. When all else fails, Collateral, the property pledged by a borrower to protect the interests of the lender, is the final source of repayment and stands guard as the last line of defense against loan loss. Synonyms of collateral include security, insurance, assurance, surety, guarantee, pledge, warrant, and endorsement.

Assets likely to retain their values in deteriorating business conditions make the most desirable kind of collateral and borrowers pledge these assets to offset weaknesses in the firm’s capital and capacity. Further, sometimes the collateral cannot be liquidated easily, especially if the market for the Collateral evaporates. History is full of asset bubble blow-ups — from the 1637 collapse of the tulip bulb market in Holland to the eBay Beanie Babies frenzy a decade ago.

Oscar Wilde’s advice to would-be gamblers is that “one should always play fairly when one has the winning cards.” Some borrowers might argue that bankers have embraced Wilde’s advice by stacking the repayment deck with cash flow, collateral, and guarantee cards. Lenders do expect their credit bets to be covered, but even uncollateralized loans to cash-poor borrowers ultimately get repaid if there is a big enough Character chip on the table.

How to Put Character Back into Credit: Some Good Questions

A good first step toward getting Character back into the credit game is for banks to decide whether their lending strategy is going to be based on transactions or relationships. Transaction lending's appeal is how quickly loans can be produced with the right pieces in place — centralized underwriting, standardized documentation, continuous monitoring. If priced satisfactorily, the transaction pays for itself, and the extra effort and cost associated with building relationships is avoided. A credit score on the principals and a trade payment report on the company are cheaper than the time and effort in calling on the client, reviewing financials, and custom fitting a lending solution to the unique needs and wants of the borrower.

It has been well documented in the banking literature that relationships turn out to be more profitable than transaction financing in the long run, and part of the long-term return is because in the relationship building, the lender identified a requisite degree of willingness to repay on time, as agreed, and in full. As the relationship grows, so does the mutual trust and commitment between the lender and the borrower. A high character “C” is likely to reduce both the probability of default and loss given default because even if the borrower is momentarily unable to repay on time or as agreed, he remains morally committed to repaying his obligations in full.

How does a banker identify Character? Bankers develop an appreciation of the diversity in the personalities, motives, and capabilities of the principals in the businesses their banks finance. Firms' aspirations and circumstances can and do change abruptly, so the face-to-face meeting allows the lender to read borrower body language as he asks these kinds of questions:

1. Has any of the principals ever walked away from a loan or refused to pay a creditor?
2. Is the firm or its principals delinquent in payment of its taxes, fees, licenses, etc.?
3. Have any of the principals or the firm ever been involved in deceptive, misleading, or fraudulent practices?
4. Do the firm and its principals fail to pay their creditors according to terms?
5. Do any of the firm's principals lack the skills, training, and experience necessary to perform their functional responsibilities?
6. Have any of the firm's principals misrepresented their background, experience, skills, training, or education?
7. Are the principals or the firm unwilling or unable to provide financial information?
8. Are the principals unwilling to offer personal guarantees, provide collateral, or accept any conditions or covenants?

9. Does the firm fail to meet its projections and/or meet its budget?
10. Do the firm's facilities appear poorly maintained, look unsafe, or feel uncomfortable?
11. Do the firm's management and major stockholders or its partners disagree about the firm's goals and objectives?
12. Are the principals unwilling or unable to provide references from colleagues, competitors, suppliers, lenders, customers, lawyers, accountants, etc.?

An affirmative answer to one or more of these questions raises a red flag warning of questionable character. Some of the answers to the questions can be found in credit bureau reports and credit agency reports. Internet searches of public records and local media archives are another way to find answers to these questions. Other answers come from personal inquiries of people and entities that have had dealings with the borrower. Some questions may have to be posed directly and tactfully to the borrower, and reticent responses may in themselves reveal some potential character flaws.

Nothing on this list is new or unique. Guess what? It was not so long ago that the 12 questions above and others like them were part of the credit investigation, evaluation, and analysis of prospective borrowers. Yes, it takes some time and effort, but that is part of knowing your customer and in the end, you have also documented the borrower's character.

Conclusion: the C's Have It

The Five C's of Credit are no panacea for the solution to today's credit challenges, but they do provide a concise checklist for evaluating a borrower's "ability" and "willingness" to pay. Today's bitter irony is that while the banking industry has improved its quantitative skills in assessing ability to repay, of the Five C's, Character is becoming harder to assess in our increasingly impersonal, faceless society. Our "Twittery, Facebooked, Instagrammed" culture makes it easier to avoid invasive, in-your-face, watch-the-body-language interrogation in favor of less time-consuming, external, out-of-sight intelligence. These impersonal measures of character suffer the same weakness that relegate spy satellites a poor second option behind on-the-ground intelligence.

A satisfactory credit score may reflect more a positive combination of Capacity, Capital, Conditions, and Collateral, making ability to repay possible, but as conditions deteriorate and Capacity, Capital, and Collateral shrink, the credit score only serves as a historic record of the borrower's repayment activities. What if the borrower enters into an economic environment much tougher than those in recent years, such as the current period compared to the recession-lite years of 1999–2001, for example? Perhaps it is time to readjust the weight we put on each of the

five C's, to look at character harder, and to know our customer more. Let us narrow the gap between ability to repay and willingness to pay by assessing character better. Our banker's battery of covenants and conditions, guarantees and collateral, notes and agreements add up to an expensive barrier against dishonest borrowers. That is a high price to pay compared to meeting with the customer, making inquiries of the borrower's other creditors and business associates, reviewing payment practices, and building a relationship with the client.

We expect our borrowers to be able and willing to repay their debts, and we avoid those who practice Napoleon's philosophy on success, "If you wish to be a success in the world, promise everything, deliver nothing." Napoleon might have been more successful by following the advice of the Roman playwright Terence, "You can take a chance with any man who pays his bills on time." Terence knew character when he saw it. So should lenders.

❖ **Part 2: Basic Loan Documentation**

Anyone who has ever worked in loan documentation preparation has probably had to work around the clock to meet a closing deadline, and the involvement of bankers unfamiliar with basic loan documentation can sometimes run out the clock. So what do bankers need to know about loan documentation to keep the doc clock running on time?

The Basics

It is essential that bankers have a thorough understanding of the types, purpose and content of loan documentation which is used to protect the bank's interests in a loan contract. Loan documentation plays two basic roles:

1. Loan documents represent a contract between the borrower and the bank that defines:
 - ◆ The responsibilities of the borrower in repaying the loan in full, on time, and as agreed
 - ◆ The rights of the bank for repayment of the loan
2. Full repayment of the loan's principal and interest is the primary responsibility of the borrower, and the bank usually expects the cash flow from the borrower's business to repay the loan. If the borrower's business cash flow falls short, the bank may also require additional repayment from alternative sources including liquidation of collateral and exercise of personal guaranties. The bank's loan documents will spell out all the rights and actions the bank may take to collect the loan.

Of course, the bank's loan documents are bank-friendly. After all, the bank is risking its funds when it lends to the borrower. Typically, the borrower uses the loan proceeds in its business to earn a profit, and in providing the opportunity for the borrower to earn that profit, the bank has the right to have the loan principal repaid and to collect interest income and fees. Making that right legally enforceable requires some key loan documents, so now let's identify and explain these key loan documents — promissory note, commercial loan agreement, collateral documents.

Promissory Note. The promissory note is the fundamental loan document. The note “evidences the indebtedness of the borrower.” Simply put, by executing, i.e., signing the note, the borrower is acknowledging the act of borrowing money from the bank and, more importantly, promising to repay the borrowed amount plus interest.

The note defines the most basic terms of the loan:

- Loan amount
- Interest rate
- Repayment terms

Default. The note also addresses “default”. An “event of default” occurs when the borrower does not comply with one or more terms or conditions of the loan. The most basic act of default is payment default. For example, if a borrower does not make a loan payment within 30 days of the due date – the borrower has defaulted in payment (“payment default”). If an event of default occurs, the bank typically has the right to “call the loan” meaning that full repayment of the loan's principal and interest is immediately due. The bank communicates “calling the loan” in writing to the customer.

Besides payment default, there is also technical (or compliance) default. Technical default occurs when the borrower does not comply with any term or condition of the loan other than payment default. Technical default can range from not providing the required periodic financial statements to the occurrence of a “material adverse change” (“MAC”) in the condition of the borrowing entity. A MAC event is so severe that it threatens the ability of a borrower to repay the loan.

Grace or “Cure” Period. Banks typically provide the borrower with a grace period, also known as the “cure period,” of say 10 or 15 days, to remedy technical defaults. If the borrower does not cure the default within the grace period, the bank has the legal right to call the loan. However, most banks are unlikely to call a loan because of a technical default unless the default impairs the borrower's ability to repay the loan. Nevertheless, repeated technical defaults may cause the bank to renegotiate the loan and supporting documents.

A MAC is hard for a borrower to swallow. As explained earlier, a MAC is the occurrence of an internal or external event that materially weakens the ability of the borrower to repay the bank's loan. MAC's include such events as a substantial judgement levied against the borrower's business or assets or the loss of a major customer. But a MAC implicitly relies on fuzzy words like "material," "major," "substantial," "significant," so unless these adjectives are defined quantitatively, e.g., major customer defined as generating 25% or more of annual revenues, invoking a MAC can be a very subjective call best made with sound legal guidance and concurrence of senior bank management.

The note generally includes two other vital default sections:

- **Default Rate of Interest** – After an event of default occurs, the Bank may want to increase the loan's rate of interest by some percentage, e.g., 2% or 3%. Why boost the rate on borrower having trouble paying the current interest rate? The rate is supposed to reward the bank for credit risk, and a defaulted loan is a higher risk. Ideally, the bank should earn a higher return on a defaulted loan, and if the threat of a higher interest rate induces the borrower to counter with more collateral, another guarantor, or even a co-borrower, the lender can also think of this provision as an additional negotiating tool.
- **Right of Setoff** - Under the right of setoff, if an event of default occurs, the bank can draw from the borrower's depository accounts the funds needed to cover the unpaid principal, interest, and fees.

Commercial Loan Agreement. The loan agreement serves two purposes:

1. **Bill of Health** – The loan agreement contains several representations and warranties regarding the "health" of the borrower. These representations and warranties usually include:
 - ♦ Accuracy of Financial Information – The financial information provided by the borrower to the bank is complete and accurate.
 - ♦ Good Standing - The borrower is a properly formed legal organization in good standing with all applicable licenses in the jurisdiction(s) where it operates.
 - ♦ Taxes – The borrower is current on all tax payments, e.g., income, sales and real estate taxes.
 - ♦ Liens and Judgments – the borrower has no material liens or judgments against it.
 - ♦ Environmental – The borrower complies with all environmental laws and regulations.

The borrower's "representations and warranties" assure the bank lender that the borrower is a law-abiding citizen. For large loan transactions and an additional layer of protection, the bank may require the borrower's attorney to make representations and warranties regarding the health of the borrower in the form of a borrower's attorney's opinion of counsel letter addressed to the bank.

2. **Covenants** – While conditions require the borrower to be in healthy shape at the inception of the loan, the bank may want to govern the borrower's behavior going forward over the course of the loan by imposing affirmative "must do" covenants and negative "must not do" covenants.

- ◆ **Affirmative Covenants** – Affirmative covenants require the borrower to do something, such as:
 - Maintain qualified management for the business
 - Provide annual financial statements and tax returns to the bank
 - Maintain insurance on the borrower's business assets
 - Promptly notify the bank of any material adverse changes, e.g., death of a principal, damage to the borrower's facilities, loss of copyright protection for its software products, etc.
 - Comply with all terms and conditions of all the applicable loan documents
 - Comply with financial covenants requiring some minimum level, e.g., current ratio of 2.0x (i.e., current assets are two times current liabilities), working capital of at least USD 1,000,000, etc.

- ◆ **Negative Covenants** - Negative covenants are prohibit the borrower from taking some action unless given prior bank approval, such as:
 - Not selling the borrower's business assets
 - Not changing the ownership of business
 - Not starting or acquiring a new line of business
 - Not incurring any liens or indebtedness outside of the normal course of business such as accounts payable or accrued expenses. Specifically, this covenant prohibits the borrower from borrowing money from another lender.
 - Not making any loans or guaranteeing the debts of another entity of individual.
 - Not exceeding financial covenant limits, e.g., debt/worth ratio of no more than 1.5x, capital expenditures of no more than USD 50,000 annually, etc.

Violation of any affirmative or negative covenant constitutes an event of default. Covenants are not intended to ensure that the borrower operates the business in a manner that protects the bank's right to repayment.

Collateral Documents. A bank usually takes as collateral the borrower's assets that the bank is financing, e.g., inventory, accounts receivable, equipment, real estate, etc. What differentiates real estate from non-real estate property is its fixity. Real property isn't going anywhere; it is fixed in place, and the current owner's rights to the property are granted by the governmental entity having jurisdiction over it. Therefore, perfecting a security interest in a borrower's assets necessitates separating real estate from non-real estate property. Real property is real estate, and real estate is governed by federal or local law. On the other hand, personal property includes all the other non-real estate assets, e.g., inventory, accounts receivable, equipment, stocks, bonds, certificates of deposits, customer lists, patents and copyrights. Personal property is generally governed by separate federal or local laws.

Personal Property. Collateralizing a loan with personal property is usually a two-step process involving, first, the creation of a security interest, and, second, perfecting the security interest:

1. Creating a Security Interest – the security interest is created using a “security agreement” that identifies
 - ◆ The borrowing relationship between the bank and the borrower
 - ◆ The assets comprising the bank's collateral
 - ◆ The bank's rights - If the borrower defaults and the bank calls the loan, the bank has the right to take possession of the collateral and liquidate it. Upon liquidation – the bank can use the proceeds to pay down the loan principal and related amounts of unpaid interest, fees, and collection costs. Any leftover proceeds are returned to the borrower.
2. Perfecting the Security Interest – Once the security interest is created via the “security agreement,” the bank must “perfect the lien” by recording the lien in a specified “public record.” The most common way to “perfect the security interest” on personal property is to file a standard governmental document with the appropriate governmental official in the national or local jurisdiction where the borrower is incorporated. Some types of personal property, mainly, transportation equipment such as vehicles, boats, planes, require additional steps to perfect the lien, sometimes including actual possession of the vehicle titles by the lender.

Real Property. For real property, a “mortgage” document is used instead of a security agreement to identify the collateral and record the bank's rights to the collateral. The mortgage is then filed with the appropriate jurisdictional official to perfect the lien.

Mortgages include several unique provisions that can vary from jurisdiction to jurisdiction:

- “Grantor” – Mortgages tend to call the borrower “the grantor.” The “grantor” is the person or entity that owns the real estate being pledged as collateral. In most cases, the grantor is the borrower.
- Loan Specific – A mortgage must include the date and amount of the loan note collateralized by the real estate. If the real estate collateralizes more than one loan, each of those loans’ promissory note date and amount must be included in the mortgage. If a loan amount is subsequently increased, the mortgage must be amended to reflect the revised loan amount, or a new mortgage executed.
- Insurance and Taxes – the grantor is required to maintain casualty insurance on the property and pay real estate taxes on the property. If the grantor cannot pay for insurance, the bank usually has the right to obtain insurance coverage on the property to protect the collateral. If the grantor does not pay real estate taxes, the taxing authority can file a tax lien on the collateral property. A government tax lien takes priority over the bank’s first mortgage. To protect the bank’s position, the mortgage typically allows the bank to pay the taxes and preclude a tax lien from being filed. The bank can then seek to recover from the borrower the real estate collateral’s insurance and tax amounts paid by the bank.
- Notarization – The signing of the mortgage usually must be witnessed and notarized by a notary public or other licensed official that can validate the signatory’s identity.

Guaranty Agreement. The final basic loan document is the Guaranty Agreement. Most business loans are personally guaranteed by the business owner(s). Once the bank declares the borrower to be in default, besides the bank’s right to liquidate the borrower’s collateral, the guaranty agreement gives the lender the right to demand payment of the remaining balance from the guarantor(s). Upon the borrower’s default, the guarantor then becomes responsible for repaying the loan.

The standard bank guaranty is usually unlimited in amount, i.e., the guaranty applies to all amounts unpaid--principal, interest, fees and collection costs. The guaranty typically applies to all loans from the bank to the borrowing entity at the time the guaranty is signed plus any future loans made to that borrower. However, if new loans are subsequently made to the borrower, it is prudent to have a new guaranty agreement executed.

The standard guaranty includes several key provisions:

- Order of action – If a loan goes into default and the bank calls the loan, the bank has the right to immediately pursue payment from the guarantor. The bank does not have to exhaust its rights against the borrower and collateral before pursuing payment by the guarantor.

- Right of Setoff - Under the right of setoff, if default occurs, the bank can charge the guarantor's deposit and/or savings accounts maintained with the bank for the unpaid loan amounts.
- Subordination – All loans from the guarantor to the borrower are subordinated to the bank's loans to the borrower. No payments on these loans are allowed unless approved by the bank.
- Witness to the Guaranty - This requirement serves to eliminate any future question as to whether the guarantor signed the guaranty agreement.

Post-Closing Compliance. A standard note and loan agreement typically includes a “post-closing compliance” clause. Under this clause, if there are any errors in the closing documentation, the borrower is obligated to cooperate with the bank in correcting the mistakes.

Additional Documentation. Depending on the loan and local jurisdictional requirements, there may be other loan documents needed to properly document a loan and support its legal enforceability.

2. Summary

Lenders and bank examiners need to be technically competent and pay close attention to detail in ensuring that proper loan documentation exists so that the loan contract is legally enforceable and the bank can pursue its remedies and protect its interests if a borrower defaults. Credit officers as well as bank examiners need to know how each piece of loan documentation contributes to the construction of a legally enforceable contract. Knowing why each document is needed enables the banker to competently and confidently explain the documents to the borrower. This knowledge also girds the lender for inevitable demands from the borrower to revise or delete portions of the loan documentation. Making the loan is a good beginning, but an even better ending is collecting the loan in full, on time, and as agreed.

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Endnotes

1. Enron Corporation was a large, renowned U.S. American energy, commodities, and services company based in Houston, Texas, which failed in 2001 in due to widespread accounting fraud. Enron was the sixth largest corporate bankruptcy in U.S. history.

Bank Lending Practices that Can Lead to Future Loan Portfolio Problems

By Michael J. Zamorski

1. Introduction and Background

Most bank profitability is derived from assuming credit risk. Banks accept deposits and other funding liabilities which they use to make loans and purchase debt securities to generate revenue that exceeds their funding and overhead costs, producing a net profit. Banks' ability to identify, measure, evaluate, monitor, control and price credit risk is critical to achieving their strategic objectives and maximizing financial performance in a safe and sound manner.

There is an adage among many seasoned bank supervisors that "bad loans are made in good times." This maxim reflects their professional experience that banks tend to relax loan underwriting standards and loan terms and pricing during extended periods of favorable economic conditions. Bank managements often justify looser loan underwriting standards and pricing by asserting they are necessary to match the actions of competitors in order to retain loan customers, expand business, or meet short-term performance goals.

In the years preceding the Great Financial Crisis of 2007-2008 (the "Crisis"), the economy seemed to be stable. This led some lenders to take greater risks that allowed less stringent bank credit risk management practices to proliferate. Bank credit underwriting standards – especially assessing borrower repayment capacity and valuing collateral – became lax. A sizeable price bubble developed in many domestic real estate markets. Some banker compensation schemes became tied to improper incentives, such as loan portfolio growth, inducing imprudent lending strategies such as subprime residential housing loans, home equity lending, and "no-doc and low-doc" mortgage lending. The "good times," fueled in part by these risky credit products, ended abruptly when residential real estate markets began to experience sharp price declines, in some cases 30%-40% from peak values.

Unfortunately, when economic activity eventually declines or recessionary forces emerge, banks that engaged in riskier lending practices frequently experience a sharp rise in loan payment delinquencies, defaults, restructurings, foreclosures and losses. After the fact, the risks of lax or unsound bank lending practices that had an unfavorable outcome may seem obvious. However, many post-mortem analyses from recent banking crises identified lending "red flags" and risks that were evident pre-crisis, but which were either underestimated, dismissed or not recognized.

The objective of this article is to provide an overview of the elements of sound bank credit risk management, especially as they relate to commercial lending, since that lending category usually poses the most risk. The article also discusses some examples of “red flags” or circumstances that should receive scrutiny by bank supervisors as they may indicate situations that can lead to excessive risk or problems.

2. Credit Risk Control Infrastructure

Basel Core Principles for Effective Supervision

The Basel Committee on Banking Supervision (“BCBS”) is the international standards-setter for the banking industry. The BCBS has specified the essential preconditions and standards that are necessary to have an effective supervisory regime in its “Core Principles for Effective Supervision” (“BCP”). The latest version of the BCP was published in September 2012 and contains 29 principles. Principles 17, 18 and 19 relate to credit risk management:

“Principle 17 – Credit risk: The supervisor determines that banks have an adequate credit risk management process that takes into account their risk appetite, risk profile and market and macroeconomic conditions. This includes prudent policies and processes to identify measure, evaluate, monitor, report and control or mitigate credit risk (including counterparty credit risk) on a timely basis. The full credit lifecycle is covered including credit underwriting, credit evaluation, and the ongoing management of the bank’s loan and investment portfolios.

Principle 18 – Problem assets, provisions and reserves: The supervisor determines that banks have adequate policies and processes for the early identification and management of problem assets, and the maintenance of adequate provisions and reserves.

Principle 19 – Concentration risk and large exposure limits: The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate concentrations of risk on a timely basis. Supervisors set prudential limits to restrict bank exposures to single counterparties or groups of connected counterparties.”¹

Elements of Effective Credit Risk Control

Effective Credit Risk Control is a process of checks and balances which includes:

- Specification of the roles and responsibilities of banks’ boards of directors and senior executive management;

- Board committee structures and processes for effective risk oversight;
- Setting the bank's risk strategy and establishing a sound credit risk culture;
- Establishing appropriate individual and committee lending authorities;
- Developing comprehensive lending policies and procedures and exception reporting; and,
- Establishing an independent loan review process.

Bank supervisors should require that banks have an effective system in place to identify measure, monitor and control credit risk as part of an overall approach to risk management. They should conduct an independent evaluation of a bank's strategies, policies, procedures and practices related to the granting of credit and the ongoing management of the portfolio.

Bank Lending Policies

Banks should establish written lending policies and related operating procedures to guide bank personnel in administering the credit-granting process properly to ensure that credit exposures are consistent with prudential standards and internal limits. Policies should be reviewed and approved by the board annually and updated as needed to ensure their continued relevance.

Permissions required for policy exceptions, also known as policy overrides, should be tightly controlled, with a mechanism for secondary review and reporting to senior executive management and possibly the board. Frequent overrides are a "red flag" that could indicate that loan policy provisions being overridden are either out-of-date or that there is the possibility that policy waivers may not have proper justification.

Establishing a Sound Credit Risk Culture

During the Crisis, banks operating in the same trade area experienced significantly different results. Some made it through the Crisis relatively unscathed, while others experienced significant losses and in some cases failed. What were the reasons for the differential performance? In my opinion, it largely due to differences in the quality of banks' credit risk management and especially their risk cultures.

What is meant by "risk culture"? Risk culture encompasses the following considerations:

- Is the bank's board of directors actively engaged in overseeing executive management and serving as an effective check and balance against excessive risk-taking?
- Does the board clearly and formally articulate the bank's risk tolerance, reinforced by incentive arrangements?

- Do the actions of senior bank leadership and “tone from the top” reinforce the stated risk appetite?
- Do the bank’s risk management systems and controls and governance arrangements allow bank executive management and board of directors to effectively measure, monitor, and control risk close to “real time?”
- Is the bank’s board aware of changing external factors that could impact risk appetite and loan portfolio performance?
- Do those involved in credit-granting have a consistent understanding of what lending risks are acceptable in the bank and what credit proposals would likely be problematic?

Independent Loan Review

The ability to accurately monitor loan portfolio quality is essential to generating reliable data that allows a bank’s board of directors and senior executive management to know the level and trend of overall credit risk on a continuing basis. The loan review process should be conducted by experts who are independent of a bank’s lending function to prevent conflicts of interest and ensure objectivity.

3. Potential Sources of Excessive Credit Risk or Unsound Lending Practices

Over-Emphasis on Collateral Values in Loan Underwriting Decisions

There are several ways most commercial loans get repaid:

- Cash flow generated by a borrower’s business and/or pledged collateral;
- Sale of collateral securing the loan; or
- Refinancing the loan with another lender.

The typical source of commercial loan repayment is through cash flow generated by the borrower’s business. Without getting too deeply into the technical details, lenders analyze historical business performance and make assumptions about future sustainable cash flow. Cash flow is computed by adding non-cash expenses, such as depreciation and amortization, to net income.

Loan underwriting decisions should be based on the analytically supported determination that the borrower can continue to generate sufficient profitability and cash flow to pay principal and interest on a timely basis. Lending policies may specify minimum cash flow requirements above required principal and interest payments, and may formally require this by imposing those requirements in loan contracts (these requirements are referred to as loan covenants). Failure to adhere to loan covenants usually constitutes an event of loan default.

Lenders should carefully assess the value of any collateral pledged to secure a loan. In the event of loan default which cannot be cured by the borrower, the lender may need to foreclose on the collateral and sell it, using the sales proceeds to offset any outstanding loan principal and interest.

Frequently, commercial loans have real estate collateral such as an office building or business premises or equipment used in a borrower's business. Banking regulations usually require that valuations of loan collateral be supported by independent assessments conducted by credentialed professionals such as certified real estate appraisers. Loan offering memoranda (which contain a bank's internal analysis supporting a loan proposal) need to carefully document analysis of appraisal assumptions and computational methodologies to substantiate that the estimated collateral value is reliable.

Credit problems sometimes arise when lenders move away from a loan underwriting approach which considers both borrower repayment capacity and collateral protection, and places disproportionate weight on collateral values to support lending decisions. This risk is especially prevalent during periods of sustained escalation in commercial property values. Bankers sometimes assume that collateral values will continue to go up, dismissing the risk that markets are cyclical and that collateral may experience large reductions in value under disorderly market conditions.

The use of faulty or overly optimistic assumptions in collateral appraisals can generate unreliable collateral valuations. For many commercial real estate properties, appraisers project future cash flows and compute a net present value using an appropriate discount rate. Any inaccuracies in the computational inputs, such as the chosen discount rate (which the appraiser must justify), can materially undermine the reliability of the appraisal and lead to unsound lending decisions.

Rollover of Delinquent Loans Can Mask Loan Problems

There are some lending practices that may have the intended or unintended effect of masking potential loan problems. For example, a one year unsecured term loan with principal and interest due at maturity becomes due and payable. The borrower cannot pay the principal and interest due. To avoid reporting a loan delinquency, the loan officer renews the loan for another year, paying the interest due on the original loan by adding it to the principal balance of the new loan. Depending on the circumstances, the practice might not be objectionable if there is a financially strong borrower who is seeking a renewal for convenience. However, in the case where the borrower cannot pay, the renewal is problematic. A variation of this situation is the granting of separate loans to pay interest.

Rapid Growth

During boom times, some banks embark on a rapid expansion of their loan portfolios. This can lead to problems if the volume of activity exceeds the capacity of bank staff to maintain adequate quality control, which is frequently the case.

Credit Risk Assessment in Financial Conglomerates' Subsidiary Banks

Large banking conglomerates may centralize certain loan underwriting and risk control functions with the parent company or another affiliate. Bank board members may be expected by the parent to approve purchases of participations in large syndicated credit originated by affiliated banks. Such “outsourcing” arrangements do not relieve the board and senior executive management from exercising independent control over the institution’s lending function and for responsibility for sound outcomes.

4. Concluding Remarks

The Asia Pacific region, while affected by the Crisis, has avoided a major cross-border banking crisis since 1997-1998. Continuance of that status depends in large measure on maintaining sound lending practices. Hopefully the foregoing commentary provides some insights on the attributes of sound credit risk management as well as some specific lending practices that can lead to difficulties.

Endnotes

1. Basel Committee on Banking Supervision. 2012. *Core Principles for Effective Banking Supervision*. Basel, Switzerland: Bank for International Settlements, pp. 11-12, available at www.bis.org/publ/bcbs230.htm



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