OPERATIONAL RISK MANAGEMENT PRACTICES AND THE ROLE OF CAPITAL: A PRELIMINARY ASSESSMENT OF THREE CARIBBEAN COUNTRIES

by

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Operational Risk Management Practices and the Role of Capital : A Preliminary Assessment of Three Caribbean Countries[1]

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Abstract

Operational risk may be defined as the risk of losses resulting from inadequate or failed internal processes, people and systems; or external events. Recent catastrophic events such as Hurricane Ivan, which disrupted business and commerce in the region, devastating entire islands in its wake, emphasized the fact that financial institutions are not immune to the effects of operational risks. In fact, an effective and robust operational risk management framework must be construed as a prerequisite for sound performance in today's challenging marketplace.

The consolidation of the financial sector in the region, (particularly through mergers & acquisition) and its concomitant implications for technological systems and personnel, coupled with the heightened interest in client products and business practices ie anti-money laundering, fiduciary breaches and misuse of confidential customer information, have forced Regulators over the last decade to strengthen the regulatory framework, thus ensuring that financial institutions remain safe and sound despite their exposure to operational risk.

This paper attempts to locate the current status of operational risk management in the region, its relative importance among other categories of risks, and how this risk is currently being managed by financial institutions. Additionally, the paper will look at the operational risk exposure and regulatory capital nexus of financial institutions in the Caribbean.

This paper postulates that operational risk is an important pillar in the risk management architecture of deposit taking institutions, and as such, banks need to hold capital to protect against losses resulting from this exposure.

[1] Barbados, Trinidad and Tobago and Jamaica.

1.0 INTRODUCTION

In recent times, the financial community in the region has come under severe pressure not only to seek a deeper understanding of its overall risk profile and exposure but, more importantly to critically reexamine its approach to risk assessment and management. Recent cataclysmic events such as the earthquake and tsunamis in northern Sumatra, the high profile failures of Barings, Daiwa and Sumitomo coupled with increased market volatility, regulatory pressure and shareholders' demand for more stringent corporate governance practices have all highlighted the need for a more robust institutional risk management framework for operational risk. Additionally, the devastation of Grenada and the Cayman Islands and the subsequent failure of Dyoll Insurance company in Jamaica, have also fuelled the necessity for banking institutions to effectively identify, assess and manage operational risks.

Although operational risk is a fairly new phenomenon in terms of its formal definition and its official acceptance as a critical risk category, operational risk dates back to the very beginning of banking. Indeed, before a bank underwrite its first loan, contemplates its funding requirements or seeks to determine its interest rates or foreign exchange risk exposure, it is already exposed to operational risk which is inherent in its people, processes, systems, internal or external events. In fact before a banking institution gets its first customer, its exposure to operational risk is evident. The challenge therefore is for banks to develop and implement a robust system of identifying, measuring, monitoring and mitigating these risks.

The Basel committee has issued principles for sound operational risk management, covering risk identification, assessment, measurement, supervisory review and disclosure. It is therefore imperative, that regional banks, although not necessarily defined as internationally active, take on board these core principles to ensure the safety and soundness of Depositors' funds.

This paper attempts to locate the current status of operational risk management in the region, its relative importance among other categories of risk, and how this risk is currently being managed by financial institutions. Additionally, the paper will look at the operational risk exposure and regulatory capital nexus of financial institutions in the Caribbean.

This paper is organized into five sections. The first section offers an introduction to the broad concept of operational risk and the second section provides an overview of related literature. Section three entails a discussion of the data and methodology while section 4 highlights the results. The paper concludes with the summary and policy recommendations in section 5.

2.0 LITERATURE REVIEW

2.1 Defining Operational Risk

An integral part of an effective risk management decision-making process both from an industry and regulatory perspective is to identify an acceptable definition and philosophy of risk that best fits the organizational profile. The challenge of agreeing to a single definition has to take into consideration the organizational posture, its relative size and complexity, including the range of activities and the environment in which it operates.

Inasmuch as there appears to be a general consensus on the definition of the major risk types in the financial services sector, (Market, Liquidity, Credit) operational risk on the other hand, a fairly new and emerging risk category, has not yet benefited from a single or unified definition. Risk practitioners however are coming closer to consensus on a definition, which I believe had its genesis in the seminal study done by PriceWaterhouseCoopers, published in December 1999. The operational risk definition advanced in this study is:

"Operational risk is the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events".

This definition of operational risk represents the distillation of discussions/feedback provided by fifty-five (55) large financial institutions worldwide that were solicited to participate in the study. This definition has obviously found traction both in the industry and among regulators as evidenced in the current definition of operational risk proposed by the Basel Committee of Banking supervision (BCBS) in its New Basel Capital Accord" [2001] which defines operational risk as:

"the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events"

The subtle difference here being the lack of emphasis on direct and indirect loss in the Basel definition. It is felt that a definition of operational risk, needs both to be based upon and drawn from the few major incidents that originally initiated the discussion about operational risk and as such over the last few years, banks commenced a process of internally defining operational risk based on causes and effects related to their specific exposure (see Muermann and Oktem [2003]

Muermann and Oktem also proposed the implementation of an internal definition process, which dynamically adjusts according to new incidents or observations rather than to a fixed definition based on industry-impacting events such as the ones for market and credit risk. The Basel committee in recognition of the fact that operational risk as a subject has a variety of meaning within the banking industry, proposed that banks choose to adopt their own definition for operational risk.

2.2 Components of Operational Risk/ Operational Risk Events

Regardless of the individual bank's definition of operational risk, banks must ensure that its definition captures the most significant causes of severe operational losses. The Basel Committee in co-operation with the industry has identified the following seven areas as having the potential to result in substantial losses:

1. Internal fraud ie the intentional misreporting of positions, employee theft, and insider trading on an employee's own account
2. External fraud, eg. robbery, forgery, cheque kiting, and damage from computer failure
3. Employment practices and workplace safety, eg workers compensation claims, violation of employee health and safety rules, organized labour activities, discrimination claims and general liability
4. Clients products and business practices, eg. fiduciary breaches, misuse of confidential customer information, improper trading activities on the bank's account, money laundering and the sale of unauthorized products
5. Damage to physical assets, eg terrorism, vandalism, earthquakes, fires and floods
6. Business disruption and system failures, telecommunication problems, and utility outages
7. Execution, delivery and process management eg data entry errors, collateral management failures, incomplete legal documentation, unapproved access given to client accounts, non client counterparty misperformance and vendor disputes.

In contrast to the BCBS, JP Morgan Chase (2003) provided examples of new and growing risks faced by banks. These include *(a)* increased system failure as a result of greater use of more highly automated technology, (b) increased exposure to internal and external fraud and system security issues as a consequence of the rapid growth in e-commerce and (c) increased pressure on the viability of new or newly integrated systems due to large scale acquisitions, mergers and de-mergers.

CAIB[2] (July 2003), concurred with both JPMorgan chase (2003) and BCBS 2003, in its assertion that although electronic banking enables retail and wholesale customers to access specific accounts and general banking information on banks' products and services through various electronic delivery channels including the internet, computer hardware, software, and telecommunications systems, criminal actions, however, such as fraud, invasion of electronic systems and privacy breaches made possible by technological advances are not only escalating, but are becoming far more sophisticated.

2.3 Operational Risk Measurement

SAS[3] Institute Inc. (2003) outlined certain operational risk challenges facing institutions impacted by Basel ll's approach to the measurement of operational risk, particularly with regard to the estimation of a probability distribution with very scarce data. Some operational risk events occur with low frequency, yet can have a potentially huge impact and therefore the lack of available data required to perform analyses can present a modeling challenge. It was further asserted that current operational risk measurement approaches are too simplistic and vague, and therefore the capital reserve may not be as risk sensitive as would be desirable.

[2] Caribbean Association of Indigenous Banks
[3] Software and Solutions

According to SAS, the majority of banks are just starting to gather operational loss data in a structured way, therefore it will be a challenge to aggregate the internal and external loss data mandated in a timely manner and with an acceptable degree of sophistication. As this operational risk data often resides in a variety of systems across different platforms, a crucial requirement is to develop automated processes to gather, track, monitor, analyse and report on the data. The solution would also need to be flexible enough to incorporate both qualitative and quantitative measures into a bank's overall risk calculations. This presents the challenge of acquiring risk technology that can apply more advanced calculations to determine the level of capital reserve to account for these risks.

Additionally, banks need to adopt an operational risk framework that encompasses self-assessment, quantitative assessment and incident management, and provides a real-time information environment. The focus should be on the on going operational efficiencies of the enterprise, coupled with risk management best practices and the commitment to maximize the bottom-line return within the boundaries of a defined enterprise-wide risk profile.

2.4 Management of Operations Risk

The Basel Committee of Bank Supervisors (BCBS) has recommended ten (10) basic principles in the effective management of operational risks in banking institutions, in an effort to minimize misstatement of an institutions risk profile and/or significant loss exposure. In this regard, the management of operational risk should take cognizance of the policies, practices, processes and control mechanism in place to identify, assess, monitor and mitigate/control risks.

These ten principles can be summarized into five main areas namely: (i) The development of an appropriate risk management environment, principles # 1-3, (ii) The implementation of an effective system of risk management to identify, assess, monitor and mitigate risks, principles # 4-7 (iii) The role of supervisors/regulators, principle 8-9 and (iv) disclosure requirements for operational risk, principle # 10. (Refer Appendix 1 for details)

2.5 Select Operational Risk Events in the Region

2.5.1 The Caribbean Region's Vulnerability to Tsunami

Attention was drawn to the vulnerability of small island nations to natural disasters as a result of the devastation recently caused by the tsunami that impacted 12 countries in Southeast Asia resulting from climate variability and rising sea levels. The cataclysmic earthquake and tsunamis in northern Sumatra on December 26, 2004, caused estimated losses of Rp42 Trillion ($US4.5 billion) representing 2.2% of national gross domestic product (GDP) and 97% of Acheh's GDP[4]. The earthquake and resulting tsunami killed over 150,000 persons around the Indian Ocean, two thirds of them in Northern Sumatra.

Small islands states should continue to build resilience into their economies – whether to natural disasters, climate change or negative shocks such as the loss of trade preferences and seek support from the international community. According to the World Bank Vice President, the Bank is committed to working with small island states and has already disbursed US$1.4bn in the last 10 years"[5].

Small Island States in the Caribbean was drawn sharply into focus in this regard as the region is subject to a broad range of geologic processes that have the potential to generate tsunamis [Groat 2005[6]]. Indeed, the Caribbean tectonic plate has almost all of the tsunami generating sources within a small geographical area. Subduction zone earthquakes of the type that generate the Indian Ocean tsunami can be found along the Lesser Antilles and the Hispaniola and Puerto Rico trenches. Other moderately large earthquakes due to more local tectonic activity take place probable once a century, such as in Mona Passage (1918 tsunami) and the Virgin Islands basin (1867 tsunami) Moderate earthquakes occur that may trigger undersea landslides and thus generate tsunami. An active underwater volcano (Kick' em Jenny near Grenada) where sea floor maps show previous episodes of flank collapse, also poses a tsunami hazard. There is also the possibility of tele-tsunami from the African-Eurasian plate boundary, such as the great Lisbon earthquake of 1755.

[4] Statements by Sri Mulyani Indrawati, Minister of National Development Planning in Aceh, Laksamana.Net, January '05.
[5] Statements by Ian Goldin, World Bank Vice President for External affairs, Communications and United Nations Affairs, January, '05.
[6] Statement of Charles G. Groat Director, U.S. Geological Survey U.S. Department of the Interior before the Committee on science U.S. House of Representatives, January 26, 2005.

In 1867, St. Thomas' Charlotte Amalie was impacted by an 18-foot high tsunami wave and at the same time a 27-foot wave entered St. Croix's Christiansted Harbor and on October 11, 1918 the island of Puerto Rico was struck by a magnitude 7.5 earthquake which centered approximately 15 kilometers off the island's northwestern coast, in the Mona Passage. This quake not only caused widespread destruction across Puerto Rico but it also generated a medium sized tsunami that produced run-up as high as 18 feet along the western coast of the island and killed 40 people, in addition to the 76 people killed by the earthquake. More than 1,600 people were reportedly killed along the northern coast of the Dominican Republic in 1946 by a tsunami triggered by a magnitude 8.1 earthquake.

2.5.2 Hurricanes in the Caribbean

In the north Atlantic region (including the Caribbean) it is estimated that over 4,000 tropical storms have occurred since the advent of Columbus. Approximately 2,000 or half of these tropical storms have developed into hurricanes. [Gibbs 2001]. The name hurricane is derived from the Mayan storm god Hunraken and the Arawak word hurican which is translated devils wind.

The most significant of all hurricanes in the region occurred October 10 – 18, 1780, when approximately 20,000 persons lost their lives as the storm hit virtually every island from Tobago in the southeast through the Windward and Leeward Islands and across to Hispaniola and Cuba. In the last 60 years (to Dec 2000) another 20,000 persons have perished as a result of hurricanes. As a result of better early warning systems and other preparedness measures however, fewer deaths and injuries have occurred nonetheless the damage to property have increased significantly as outlined below:

Name of Hurricane	Date	Target	Estimated loss
David	27 Aug – 4 Sept 1979	Dominica and the Dominican Republic	> 100% of GDP
Gilbert (Category 5)	11 Sept – 19 Sept, 1988	Jamaica	Approx. 65% of GDP
Hugo	14 Sept – 23 Sept 1989	Dominica, Guadeloupe, Montserrat, Antigua, St. Kitts, Nevis and The British Virgin Island	US$8bn Losses in Montserrat amounted to Approx. 200% of GDP
Andrew (Category 4)	Late August 1992	Bahamas, Florida, Louisiana	Total damage – Approx US $30bn Losses in Bahamas approximately 50% of property values
Luis (Category 4)	04 Sept to 05 Sept. 1995	Antigua and Barbuda	Approx. 65% of GDP
George (Between category 2 & 3)	21 Sept 1998	St.Kitts	Approx. 40% of GDP
Ivan (Between Category 4 and 5)	11 Sept. 2004	Cayman, Grenada, Jamaica, Bahamas, Dominican Republic	US$6bn Losses in Cayman amounted to 200% of GDP

For the North Atlantic, Caribbean Sea and the Golf of Mexico, fifteen tropical or subtropical storms formed in the North Atlantic during the 2004 hurricane season. Nine of these became hurricanes with six becoming major hurricanes (category three or higher on the Saffir-Simpson Hurricane scale). The strongest hurricane was Ivan, which reached category five status. Ivan hit Grenada and had significant impact on Jamaica, Grand Cayman and western Cuba. Jeanne also hit the Dominican Republic as a hurricane and Puerto Rico as a strong tropical storm.[7]

Atlantic tropical cyclones were directly responsible for more than 3,000 deaths in 2004, the vast majority of these were in Haiti due to rains from Jeanne. Unadjusted property damage is estimated at more than US$42bn dollars, making 2004 the costliest hurricane season on record.

[7] NWS/TPC National Hurricane Center, Miami Fl.

2.5.3 Financial Sector Consolidation in the Region

The intense competition among banks for new business due to falling interest rates, the increased operational costs as a result of Regulators heightened focus on enhanced corporate governance, anti-money laundering and terrorism financing controls (post 9/11) have sought to push banking institutions to merge their operations in an effort to survive. As a result, mergers and acquisitions have intensified in the Caribbean region in recent years and as such, their operational risk exposure has been heightened.

In Trinidad and Tobago, for example, The Jamaica Money Market Brokers bought Intercommercial Bank; AIC Financial, (the parent company of NCB in Jamaica) bought Total Finance Merchant Bank and subsequent to its merger, FirstCaribbean Commercial Bank bought Merchantile Bank. In Barbados, Barclays and CIBC merged to form FirstCaribbean Commercial Bank; the Republic Bank of Trinidad assumed controlling interest in Barbados National Bank[8] and Caribbean Commercial Bank.[9] Additionally, the Bank of Butterfield of the Bahamas bought the Mutual Bank in Barbados.[10] In Jamaica, RBTT acquired Union Bank (a merger of four FINSAC controlled entities)[11]

In the wider financial services sector there has also been evidence of significant merger activities. This saw mergers between First Life, Life of Jamaica and Sagicor; Pan Caribbean Financial Services and Manufacturers Sigma Merchant Bank; Dehring, Bunting & Golding and Issa Trust & Merchant Bank; Globe Insurance and Jamaica General Insurance Company and NEMWIL and Caribbean Home Insurance Company in Trinidad.

This consolidation of financial institutions across the region is however not without the corollary operational risks exposure issues, occasioned by the conversion of banking systems to a single technology platform, the challenge to establish and manage the process of integration, (both human resources and otherwise) and fulfilling the numerous requirements of Regulators, Central Banks, Country specific legal jurisdictions and numerous Trade Unions etc). Further, as a result of consolidation, banking institutions are faced with the challenges to maintain ongoing customer management, employee motivation, operations functions and other legal and statutory requirements.

2.5.4 Money laundering challenges in the Caribbean

An operational risk challenge that financial institutions have faced for years (money laundering) was brought sharply into focus with the promulgation of The USA Patriot Act.[12] Consequently, AML requirements were expanded (effective January 2003) and financial institutions are now required to implement systems and processes to meet these new demands which were introduced particularly to deter illicit financial activities that support the financing of terrorism. Financial institutions now need to provide detailed record keeping, comprehensive customer profiles and configurable alerts that will allow them to detect suspicious activities based on criteria set by their internal policies.

Regional jurisdictions have also accelerated efforts to combat money laundering and terrorism financing as evidenced in the varied pieces of legislations that have been promulgated over the last decade. In Barbados there is the Drug abuse (Prevention and Control) Act 1990, the Money Laundering (Prevention and Control) Act 1998 and its subsequent Amendment, 2001 and the Proceeds of Crime Act 1990. Similarly in Trinidad and Tobago, there is the promulgation of the Dangerous Drugs Act, 1991 (Amendment, 2001), The Extradition and Foreign Territories Act 1995, the Extradition (Commonwealth and Foreign Territories) (Amendment) Act, 2004, the Mutual Assistance in Criminal matters Act, 1997 (Amendment, 2001), and the Proceeds of Crime Act 2000. In Jamaica, regulations impacting money laundering and terrorism financing include the Drug Offences (Forfeiture of Proceeds) Act 1994, The Financial Services Commission Act, the Money laundering Act 1999, the Mutual legal Assistance in (Criminal Matters) Act 1995, The Customs Act and the Customs (Prescribed Forms) (Amendment) Order dated June 30, 2003, the Dangerous Drugs (Amendment) Act 1994, The Money Laundering Regulations, 1997 and the Sharing of Forfeited Property Act 1998.

[8] The Republic Bank of Trinidad also bought Banco Mercantile in the Dominican Republic
[9] ABN AMRO in the Netherlands Antilles was also purchased by RBTT of Trinidad.
[10] The Bank of Butterfield in Bahamas also bought Leopold Joseph, Deerfield Funds and Thorand Bank in Bahamas.
[11] The merged Finsac controlled entities were Citizens Bank, Island Victoria Bank, Eagle Commercial Bank and Workers Bank.

[12] USA PATRIOT - Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism

Further, there has been a flurry of extradition requests to Jamaica from the United States in the past year[13] and of the roughly 20 persons that the US has asked local officials to extradite, ten requests have come over the last 12 months ending June 2005. Three of which were for drug trafficking and money laundering[14]

In 2004, the U.S. Financial Crimes Enforcement Network (FinCEN) estimates that up to US$1.5 trillion (1,500 billion) dollars is laundered annually around the world. The failure of Bank of Credit and Commerce International (BCCI) in 1991, which stems from what is regarded as the biggest bank fraud in history, involving billions of dollars of dirty money, is a case in point. BCCI had its head office in Luxembourg and was being operated from London with branches in over 70 countries (including the Caribbean). The bank's, 1.2billion dollar liquidation however, involved court proceedings around the world[15].

Implications for Correspondent Banking Relationships

In February 2001, the US Senate Permanent Subcommittee on investigations in its groundbreaking report on "Correspondent Banking: A Gateway for Money Laundering", it was concluded that US banks, through the correspondent accounts they provide to foreign banks have become conduits for dirty money flowing into the American financial system. Banks in the Caribbean Region and indeed other territories rely on Correspondent banks in the US to move funds, exchange currencies or carry out other financial transactions. Prior to the US Senate report these transactions were subject to few controls. As a result Caribbean banks having correspondent banking relations with US banks had to ensure and indeed convince their counterparts in the US that they have in place strong due diligence practices and adequate anti-money laundering controls. It is interesting to note that it was only months after this report was presented that the terrorist attacks against the World Trade Centre and the Pentagon took place. This undoubtedly propelled the USA Patriot Act, which was passed in October 2001.

[13] The Sunday Observer, June 5, 2005, page 8.

[14] Over the last year, the US has asked local authorities to hand over 10 men as follows: Leebert Ramcharran, Donovan "Plucky" Williams, Vivian "Jungle" Dally; Robroy "Spy" Williams, Police corporal Herbert "Scarry" Henry, Glenford Williams, Colombian national Luis Arias, Businessman and ex-policeman Carlton Dunkley; Presley "Pressa" Bingham and Adrian Armstrong.

[15] Founded by banker Agha Hansan Abedi in 1972, BCCI's intricate structure of multiplying layers were apparently designed to evade controls by regulatory and other authorities in the regions in which it operated.

2.5.5 NCB Losses due to Dyoll's Insolvency

The National Commercial Bank in Jamaica, is set to loose its over J$600mn investment in the Dyoll Insurance Company as a result of the insolvent condition of the insurance company which was exposed by a surfeit of claims corollary to Hurricane Ivan in September 2004.

The Financial Services Commission (FSC) Regulator of the insurance companies in Jamaica, was granted permission to take control of the company and wind up its operations, almost one month after the Jamaica Stock Exchange suspended trading in the group's shares. Within weeks of its takeover, Dyoll Jamaica's insurance portfolio was sold to Jamaica International Insurance Company , a subsidiary of Grace Kennedy Company limited.

The FSC projected that Dyoll had a deficit of about J$1.1bn caused by a surfeit of claims occasioned by Hurricane Ivan. Court documents indicated that as at April '05 Dyoll had total assets of almost $584 million and liabilities of over $2.1billion both in Jamaica and the Cayman Island. The petition by FSC to the Supreme Court acknowledged that the company is clearly unable to pay its debts and its assets are greatly exceeded by its liabilities.

In July 2005, the CEO of Dyoll Insurance company was arrested and formally charged on suspicion of fraud.

2.5.6. RBTT (Jamaica) ATM Fraud

One evidence of systems or processing failure, which resulted in an ABM's systems' vulnerability to external fraud, occurred in Jamaica late 2003 when the Trinidadian owned RBTT Bank (Jamaica) Limited was fleeced of an estimated $23mn, between December 25 and 26, 2003.[16] The approximately $23 million robbery extended across the island however the Mobay branch in particular was robbed of nearly $4million by account holders in that Parish.

[16] The Daily Gleaner, Thursday, January 8, 2004

2.6 The Basel Approach to Measuring Operational Risk

BCBS (2003) advanced three main approaches to the measurement of operational risk. These are the Basic Indicator Approach (BIA), the Standardized Approach and the Advance Measurement Approach (AMA).

2.6.1 The Basic Indicator Approach (BIA)

In the use of the BIA, banks must hold capital for operational risk equal to the average positive annual gross income (over the previous three years) of a fixed percentage denoted alpha. The charge is expressed as follows:

$$K_{BIA} = [\sum(GI_{1\ldots n} \times \alpha)]/n$$

Where:

K_{BIA} = the capital charge under the Basic Indicator Approach

GI = annual gross income, where positive, over the previous three years

n = number of the previous three years for which gross income is positive

α = 15%, which is set by the Committee, relating the industry wide level of required capital to the industry wide level of the indicator

2.6.2 The Standardized Approach

In this approach, banks' activities are divided into eight business lines: corporate finance, trading & sales, retail banking, commercial banking, payment & settlement, agency services, asset management, and retail brokerage.

The total capital charge is calculated as the three-year average of the regulatory capital charges across each of the business lines in each year. In any given year, negative capital charges (resulting from negative gross income) in any business line may offset positive capital charges in other business lines without limit. The total capital charge may be expressed as:

$$K_{TSA} = \{\sum_{years\ 1\text{-}3} \max[\sum(GI_{1\text{-}8} \times \beta_{1\text{-}8}), 0]\}/3$$

Where :

K_{TSA} = the capital charge under the Standardized Approach

$GI_{1\text{-}8}$ = annual gross income, where positive, over the previous three years in each of the eight business lines

$\beta_{1\text{-}8}$ = a fixed percentage, set by the Basel Committee, relating the level of required capital to the level of gross income for each of the eight business lines. The values of the betas are outlined below:

Business Lines	Beta Factors
Corporate finance	18%
Trading and sales	18%
Retail banking	12%
Commercial banking	15%
Payment and Settlement	18%
Agency services	15%
Asset management	12%
Retail brokerage	12%

2.6.3 The Advanced Measurement Approach

The regulatory capital under the advanced measurement approach will equal the risk measure generated by the banks internal operational risk measurement system. The use of the AMA is subject to supervisory approval and the appropriateness of the allocation methodology will be reviewed in light of the stage of development of risk-sensitive allocation techniques and the extent to which it reflects the level of operational risk across the banking group.

A comparison of the committee's approach to regulatory capital regarding operational risk vis-à-vis credit risk reveals the tendency to promote the development of banks' internal assessment techniques in an effort to provide incentives for banks to improve upon those techniques in a timely manner. [See IRB and AMA approaches in the Measurement of Credit Risk and Operational Risk respectively]

The Basic Indicator Approach (BIA), is the average annual gross income of the bank over the previous three years. This average, multiplied by a factor of 0.15 (set by the Committee), produces the capital requirement. There are no specific criteria for use of the basic indicator approach as a point of entry for capital calculation. Nonetheless, the Committee advises that banks using this approach are encouraged to comply with the Committee's guidance on sound practices for the management and supervision of operational risk[17].

In its outline of the Standardized approach, the Committee advances the argument that gross income serves as a proxy for the scale of a bank's business operations and thus the likely scale of the related operational risk exposure for a given business. The distinction was made however, that rather than calculating capital at the firm level as under the basic indicator approach, banks must calculate a capital requirement for each business line. This is determined by multiplying gross income by specific supervisory factors determined by the Committee. The total operational risk capital requirement for a banking organization is the summation of the regulatory capital requirements across all of its business lines. The Committee cautions however that as a condition for use of the standardized approach, it is important for banks to have adequate operational risk systems that comply with the minimum criteria outlined in CP3.

The paper was limited however in its discussion of the Advanced Measurement Approach (AMA). The Committee advised that banks using the basic indicator or the standardized approaches to operational risk are not permitted to recognize the risk mitigating impact of insurance. The discussion paper nevertheless articulates its thinking on AMA going forward. In this regard, The Committee is prepared to allow for the partial adoption of the more risk-sensitive AMA. As proposed in CP3, banks may use either the basis indicator approach or the standardized approach to operational risk for some parts of its operations and an AMA for others, provided that all material risks are captured within the banking organization on a global, consolidated basis. A bank will not, however, be permitted to revert to the simpler approaches once it has been approved to use one of the more advanced operational risk approaches unless advised to do so by its supervisors.

[17] See Basel Committee on Banking Supervision, Sound Practices for the Management and Supervision of Operational Risk (February 2003). In this paper the committee looks briefly on industry trends and practices, The development of an appropriate Risk Management Environment and Risk Management Vis-à-vis Identification, Assessment, Monitoring and Mitigation/Control. The Role of Supervisors and the Role of Disclosure were also addressed.

3.0 DATA AND METHODOLOGY

This paper on Operational Risk Management Practices is a part of a wider study on Risk Management Practices and Regulatory Capital in Emerging Markets, which looks at four categories of risk (Credit, Liquidity, Market and Operational) in three Jurisdictions in the Caribbean region. Additionally the study compares two types of deposit taking financial intermediaries, ie Commercial Banks and Trust & Merchant Banks. Responses in relation to the management of operational risk particularly in commercial banks, is being highlighted for the purpose of this paper.

3.1 Elite Interviews

Elite interviews were conducted with senior management in sixteen (16) Financial institutions in Trinidad and Barbados. Interviews were held with select senior management executives in the financial institutions including, CEOs, Senior Vice Presidents, Risk Managers, Credit Managers, Operations Managers and Treasury Managers to obtain information on four risk categories namely Credit Risk, Liquidity Risk, Market Risk and Operational Risk. Detailed interviews will be conducted in Jamaica in the third quarter of 2005.

The Interviews were guided by a structured questionnaire designed to capture information in the following areas:

- Risk Management Policies
- Risk Management Processes (Series of steps)
- Risk Management Procedures (Tools and Techniques)

The respondents were required to describe briefly the steps taken to Identify, Measure, Mitigate, Monitor and Report risks in their respective organizations. Similarly, senior managers were asked to identify the tools/techniques used in the Identification, Measurement, Mitigation, Monitoring and Reporting of Risks.

3.2 The Sample

The total number of Commercial Banks, Merchant Banks and Trust Companies are relatively small in the three countries being studied and as such the entire population of 54 financial institutions are being surveyed (Refer Table A). These Financial Intermediaries are divided into categories according to size (asset base) Geographic locations (Jamaica, Trinidad and Tobago and Barbados as well as International Banks vis-s-vis Indigenous Banks) and type (Commercial Bank, Merchant Bank or Trust Companies).

Table A

Commercial Banks, Trust and Merchant Banks (Supervised entities) in Jamaica, Trinidad & Tobago and Barbados as at August 31, 2004

	Commercial Bank	Trust and Merchant Banks	Total
Jamaica	6	5	11
Trinidad	6	16	22
Barbados	6	15	21
TOTAL	18	36	54

3.2.1 Size of Financial Institutions

The criterion used to determine large, medium or small is based on the asset base of the Financial Institutions. Asset base below US$500 million is considered small; asset base equaling or in excess of US$500 million but less than US$1 billion is considered medium and asset base equaling or in excess of US$1 billion is considered large. (Note the US dollar was used as the common currency of translation).

3.2.2 Type of Financial Intermediaries

The type of Financial Institutions relate to the nature of its operations. There are two major types covered in this study, namely, Commercial Banks and Trust & Merchant Banks.

3.3 Data Collection

The questionnaire described above is one of the means of data collection. The questionnaires were distributed to managers within the head offices of the financial Institutions. In the wider study, detailed analysis will also be carried out on the individual financial institution based on published assets and liability reports and audited financial statements.

3.4 Analytical Tools

3.4.1 Regression Analysis techniques will be used (in the detailed study) to determine the relationship between components/key financial indicators in the balance sheets of the financial entities which are the subject of this study. Key financial indicators (variables) will be identified for the four risk categories (Credit, Market, Liquidity and Operational risk) outlined in the study. As such balance sheet data spanning a period of ten years will be analysed. For example in my analysis of Credit Risk exposure in financial institutions, key financial indicators (independent variables) including Total Loans and Advances, Past due loans and Provision for losses will be analysed to determine the relationships. Dependent variables such as a Composite Rating for credit exposure or Returns on Assets for individual financial entities or the aggregate of the subsystem will be identified and explored in the study.

Variables will be regressed on an individual financial institution basis as well as an aggregate basis for the sub-systems.

3.4.2 Risk Adjusted Return on Capital (RAROC)

RAROC is acronym for risk Adjusted Return of Capital which was developed in the early nineties by experts in the banking sector. Initially it was used to express the adjusted return of an investment for its risk, that is related to the economic capital consumed when undertaking this investment. RAROC calculations may be appropriately applied to a single transaction, a client, a segment or business line a business unit or a financial entity. In this paper, the RAROC methodology was applied as a measure of commercial banks efficiency/profitability.

The Formulae for RAROC is:

$$RAROC = \frac{\text{Re}venues - EL}{EconomicCapital}$$

The "adopted" methodology "ARAROC", developed in this paper will seek to estimate the quantitative impact of the BIA on the RAROC as well as the applicable charges to the financial institution.

4.0 EMPIRICAL RESULTS

As exhibited in tables 1 and 2, a comparison was made between asset base and gross revenues of commercial banks of similar sizes in Jamaica with those in Barbados as it is felt that the size of the bank could be a determinant of its inherent operational risks. It was found that there is a close correspondence between the large commercial banks (with asset base in excess of US$1bn) and gross revenue as demonstrated in the cases of BNS and NCB in Jamaica and First Caribbean International Bank in Barbados. However this relationship does not hold for the medium sized and small commercial banks (asset base > $500mn < $1bn and asset base less than $500mn respectively). For example, in Jamaica, the smallest commercial bank based on asset base (CBNA) generates significantly higher revenue (106%) than FGB, its larger counterpart. Further in Barbados, the third largest bank under study (Bank of Nova Scotia, (a medium-sized bank) generated higher revenues than the second largest commercial bank (Royal Bank of Canada).

With the implementation of the BIA, large banks will require a proportionately higher capital charge than medium sized banks and smaller banks. However the capital charge requirement for smaller and medium sized banks will not necessarily correspond with their asset base.

Table 1: Select Indicators for Commercial Banks in Jamaica as at 2004

Size	Commercial Bank	Asset Base	Gross Revenue	Gross Revenue as a % of total Assets
		US$'000	US$'000	%
Large	BNS	2,176,491	173,934	7.99
	NCB	2,141,107	141,400	6.60
Medium	RBTT	692,992	53,646	7.74
Small	FCIB	347,657	26,807	7.71
	FGB	267,680	10,350	3.87
	CBNA	215,857	21,373	9.90
	Total	**5,841,784**	**427,510**	**7.32**

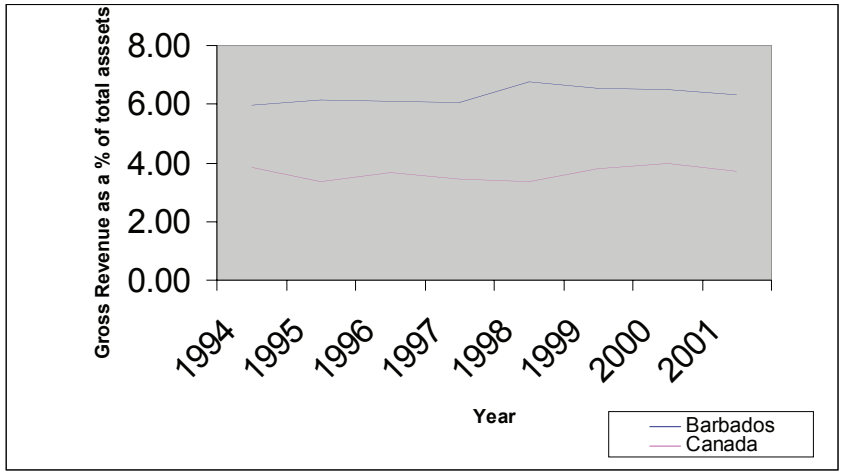
Table 2: Select Indicators for Commercial Banks in Barbados as at 2004

Size	Commercial Bank	Asset Base	Gross Revenue	Gross Revenue as a % of total Assets
		US$'000	US$'000	%
Large	First Caribbean International Bank	1,114,353	64,042	5.75
Medium	Royal Bank of Canada	608,450	35,317	5.80
	Bank of Nova Scotia	581,914	43,310	7.44
Small	RBTT (Formerly CCB)	214,121	15,654	7.31
	Bank of Butterfield	174,057	8,708	5.00
	Total	2,692,895	167,031	6.20

One of the tenets of Basel II, is that capital levels globally will remain generally the same as they are under Basel I. In other words, the Basel Committee does not anticipate a reduction in global capital levels among banks because they are using Basel II. As such, the alpha 0.15 in the BIA was arrived at because it produced an OR capital charge globally, that when added to the credit risk capital charge, maintained capital levels at roughly the same level that they are under Basel I.

It can be argued however that although this 15% capital charge may be appropriate for banks in more developed countries where profitability levels are generally lower, it may not be well suited for Regional banks with higher profitability levels (Refer chart 1) and that a lower capital charge might be more appropriate. Note, gross revenue as a percentage of total assets for commercial banks was observed to be significantly higher in Barbados than in Canada.

Chart 1



In the ARAROC methodology, both the numerator and the denominator of the ratio take cognizance of the adjustment for risk. In the first instance, the expected loss is used to reduce the nominal return of the investment. Here the expected loss (EL) can be defined as the product of the average gross income and the alpha 0.15. The denominator on the other hand represented by the economic capital, defined here as capital base (ie. regulatory capital, permanent non-distributable etc.) also reflects the operational risk taken by the entity since this represents the amount of institutional capital needed to cover the losses. In essence both banking institutions and regulators have a vested interest in ensuring that the revenues generated by the entity are sufficient to cover the remuneration of the regulatory capital it consumes.

Table 3: Comparative Risk Adjusted Return on Capital for Commercial Banks in Jamaica as at 2004

Commercial Bank	Capital Base	Average Revenue	Estimated Loss	ARAROC
	US$'000	US$'000	US$'000	
BNS	153,333	173,934	26,090	0.96420
CBNA	15,334	21,373	3,206	1.18472
FCIB	25,983	26,807	4,021	0.87694
FGB	21,285	10,350	1,553	0.41333
NCB	181,875	141,400	21,210	0.66084
RBTT	107,321	53,646	8,047	0.42488
Total	**505,132**	**427,510**	**64,127**	**0.71938**

Table 4: Comparative Risk Adjusted Return on Capital for Commercial Banks in Barbados as at 2004

Commercial Bank	Capital Base	Average Revenue	Estimated Loss	ARAROC
	US$'000	US$'000	US$'000	
Bank of Butterfield	20,456	8,708	1,306	0.361849
Bank of Nova Scotia	2,000	43,310	6,496	18.40661
RBTT (Formerly CCB)	16,239	15,654	2,348	0.819422
First Caribbean International Bank	61,956	64,042	9,606	0.878616
Royal Bank of Canada	2,302	35,317	5,298	13.04047
Total	**102,952**	**167,031**	**25,055**	**1.37905**

This 15% recommended capital charge could also be viewed a counter intuitive as it will in effect penalize the larger banks by requiring them to take more capital relative to smaller banks. Additionally, the capital charge required for banks that are more profitable would also be greater than their less profitable counterparts. For example in table 3, it was observed that CBNA, the most profitable bank in Jamaica, (ARAROC of 1.18472 and the only bank in Jamaica with ARAROC in excess of 100%), would require a higher capital charge (approximately 100% more) than its counterpart FGB (a relatively larger bank in size, with RAROC of 0.41333). Larger banks (over US$1bn) and more profitable banks however are more likely to have in place a more effective and robust risk management framework that will enable them to identify, measure, manage and mitigate operational risks than smaller or less profitable banks. ARAROC were found to be significant higher in Barbados than Jamaica due predominantly to the differences in regulatory capital requirements in both jurisdictions.

Alternatively, if the Basel committee should recommend a lower capital charge for regional banks in emerging markets, it is probable that this could be construed as insufficient for regional banks given their high exposure to operational risks particularly to natural disasters such as hurricane and earthquake and as such could see the institutions being significantly exposed on these fronts. It is imperative therefore that regional banks regardless of size and profitable levels, put in place the systems and processes necessary to identify, measure, manage and mitigate operational risks thus allowing them to migrate to the Alternative Standardize approach or even the Advance Measurement approach.

Due to the fact that the capital reserves as calculated under the BIA, may not be as risk sensitive as would be desirable coupled with the likelihood that the capital charge requirements for regional banks under the alternative standardize approach or the advance measurement approach could be lower than the requirement under the simplistic Basic Indicator Approach, financial institutions in the region should consider expediting the process of capturing loss data to facilitate the use of the standardized approach or even the AMA. Smaller and less profitable institutions however might find the requirements to develop automated processes to gather, track, monitor and analyse loss data quite challenging both in terms of cost and available personnel resources and as such could consider the BIA as proposed by Basel. Banks considering the Alternative Standardize Approach or the Advanced Measurement Approach to assess operational risks would have to ensure that the financial resources are available to either purchase or develop, a solution that is flexible enough to incorporate both qualitative and quantitative measures in determining the level of capital reserves needed to account for its operational risk exposure.

Assessment of compliance with Basel Core Principles for the management of operational risks.

PRINCIPLES	BASEL REQUIREMENTS	SUMMARY FINDINGS/CURRENT STATUS
Principle 1	The board of directors should be aware of the major aspects of the banks operational risks as a distinct risk category that should be managed, and it should approve and periodically review the banks operational risk management framework. The framework should provide a firm-wide definition of operational risk and lay down the principles of how operational risk is to be identified, assessed, monitored and controlled/mitigated	An effective operational risk management framework to identify, assess, monitor and control operational risk is not yet evident in financial institutions in the region although some commercial banks have begun work in this regard.
Principle 2	The board of directors should ensure that the bank's operational risk management framework is subject to effective and comprehensive internal audit by operationally independent, appropriately trained and competent staff. The internal audit function should not be directly responsible for operational risk management	The management of operational risk is still limited predominantly to the implementation and testing of internal controls, particularly in the operations departments, as an effective operational risk management framework is not yet in place in regional commercial banks. Note some commercial banks are currently conducting work in this area.
Principle 3	Senior management should have responsibility for implementing the operational risk management framework approved by the board of directors. The framework should be consistently implemented throughout the whole banking organization and all levels of staff should understand their responsibilities with respect to operational risk management. Senior management should also have responsibility for developing policies, processes and procedures for managing operational risk in all of the bank's products, activities, processes and systems	Not in place, see earlier comment above.
Principle 4	Banks should identify and assess the operational risk inherent in all material products, activities, processes and systems. Banks should also ensure that before new products, activities, processes and systems are introduced or	Although some of the Commercial Banks in the region have begun the process of measuring/assessing the operational risks inherent in their activities, this process is largely

	undertaken, the operational risk inherent in them is subject to adequate assessment procedures.	incomplete.
Principle 5	Banks should implement a process to regularly monitor operational risk profiles and material exposures to losses. There should be regular reporting of pertinent information to senior management and the board of directors that supports the proactive management of operational risk	Commercial banks in the region are yet to develop and implement an effective framework for monitoring its operational risk profile.
Principle 6	Banks should have policies, processes and procedures to control and or mitigate material operational risks. Banks should periodically review their risk limitation and control strategies and should adjust their operational risk profile accordingly using appropriate strategies, in light of their overall risk appetite and profile	In as much as there are varying forms of policies, processes and procedures in place to control or mitigate operational risks. All commercial banks were still placing significant reliance on insurance (particularly blanket bond) as a mitigant. Operational risk profile is not currently being periodically reviewed and adjusted in accordance with appropriate strategies.
Principle 7	Banks should have in place contingency and business continuity plans to ensure their ability to operate on an ongoing basis and limit losses in the event of severe business disruption	All banks were found to have some kind of contingency plan in place to ensure business resumption however these contingency plans were not being subjected to rigorous testing, business impact analysis or scenario analysis etc.
Principle 8	Banking supervisors should require that all banks, regardless of size, have an effective framework in place to identify, assess, monitor and control/mitigate material operational risks as part of an overall approach to risk management	Supervisors in the region have not yet finalized and circulated best practices for the comprehensive management of operational risk exposures for commercial banks.
Principle 9	Supervisors should conduct, directly or indirectly, regular independent evaluation of a bank's policies, procedures and practices related to operational risks. Supervisors should ensure that there are appropriate mechanisms in place which allow them to remain apprised of developments at banks	Supervisors in the region have not commenced comprehensive operational risk management examinations of banks.
Principle 10	Banks should make sufficient public disclosure of their approach to operational risk management to allow market participants to assess these methodologies.	Full Operational risk management methodologies are not currently being disclosed by banks in the region and supervisors have not yet issued disclosure requirements specifically for operational risks.

Risk Management Policy Framework

Financial institutions regardless of geographic location, size or type had some form of policy in place to guide operational risk management within the organizations. None of the commercial banks in the region currently have in place a robust framework in place to identify, measure, manage, mitigate and report on operational risks.

Risk Management Process Framework

In practice, financial institutions employed several processes to guide risk identification, assessment and management. These processes however were not documented in a systematic manner to facilitate consistency and organizational efficiency. Majority of the institutions indicated that the steps taken to identify, measure, mitigate, monitor and report on operational risks were not systematic.

Senior Management personnel were not able to make a clear distinction between the processes of risk management (steps taken in identifying, measuring, monitoring, reporting risks) and the risk management procedures (tools/techniques used to identify, measure, monitor and report risks). Additionally, senior management was unable to make clear distinctions between the tools/techniques used within the different phases of risk management ie, identifying, measuring, monitoring and reporting risks.

5.0 SUMMARY AND POLICY RECOMMENDATIONS

Due to its fundamental role in the efficient allocation of resources and the facilitation of economic growth and development, financial institutions must ensure that its risk management practices are effective and efficient so as to preserve the integrity, safety and soundness of the financial system in any country. This paper attempts to locate the current status of operational risk management practices in the region and how these risks are being managed by financial institutions.

It is evident that financial institutions exposure to losses have been heightened by the myriad of operational risk events that they face whether due to consolidation in the sector, money laundering, fraud or the high frequency of hurricanes, earthquakes and even the vulnerability to

tsunamis. As a result, the basic indicator approach (BIA), although simple in methodology and application might produce capital reserves, which may not be as risk sensitive as would be desirable.

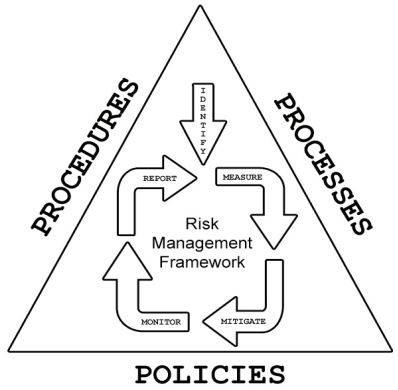
Banking institutions should therefore commence the process of building business resilience by ensure that they have in place a clearly defined risk management framework to effectively identify, assess, monitor and mitigate operational risks. It is imperative therefore that commercial banks begin the challenging process of gathering, tracking and analyzing loss data and more importantly, begin to allocate the requisite financial and personnel resources to manage these risks.

Regulators on the other hand, should seek to fast track the development and issuance of appropriate guidelines and best practices to manage operational risks in addition to commencement of rigorous operational risk examinations (including the detailed assessment of Business Contingency Plans) taking into consideration the specificities of operational risk exposures in the region.

5.1 A Proposed Risk Management Framework

Emerging from the literature was a particular framework of risk management, which I have developed and diagrammatically represented below. This framework was used in the design of the questionnaire for the elite interviews. The framework hinges on three pillars of risk management ie. Policy, Processes and Procedures. The **policy** pillar is the base of the framework and is supported by the **processes** or specific steps used in financial institutions to manage risks as well as the **procedures** or tools/techniques used in the risk management process. Within the framework are the five phases of the risk management process namely: risk identification, risk measurement, risk mitigation, risk monitoring and risk reporting.

Chart 2: Proposed Risk Management Framework



5.2 Effective Business Continuity Planning (BCP) – the way forward

In the implementation of the framework outlined above, commercial banks must ensure that its business continuity planning process is comprehensive, effective and robust. Business continuity planning by commercial banks in the region must be concerned with the maintaining, resuming and recovering of the business (not just the technology) subsequent to a failed internal process or system, natural disasters or other external events. As such the BCP process should be conducted on an enterprise-wide basis and not solely from a department, core business or material product perspective. Financial institutions are therefore encouraged to adopt a process-oriented approach to building business resilience that involves a robust business impact analysis, sound risk assessment techniques and effective risk management and risk monitoring systems irrespective of its size.

A thorough Business Impact Assessment in Regional banks should therefore include the identification of potential impact of uncontrolled events such as hurricanes, earthquakes, and even tsunamis on the business processes and customers of the institution. Consideration should

also be taken of all departments and business functions as well as the maximum acceptable levels of data, operations and financial losses.

A system of sound risk assessment in financial institutions should entail the prioritizing of potential business disruptions based upon the likelihood and severity of occurrence and an analysis not only of a threat but more importantly the likely impact of each threat on the institution, its customers, and financial markets. As a part of its risk monitoring process, financial institutions should also ensure that their BCP is tested at least annually, reviewed periodically by independent audit and updated based upon changes to personnel and the internal/external environment.

Appendix 1: BASEL CORE PRINCIPLES FOR THE MANAGEMENT OF OPERATIONAL RISK

PRINCIPLES	REQUIREMENTS
Principle 1	The board of directors should be aware of the major aspects of the banks operational risks as a distinct risk category that should be managed, and it should approve and periodically review the banks operational risk management framework. The framework should provide a firm-wide definition of operational risk and lay down the principles of how operational risk is to be identified, assessed, monitored and controlled/mitigated
Principle 2	The board of directors should ensure that the bank's operational risk management framework is subject to effective and comprehensive internal audit by operationally independent, appropriately trained and competent staff. The internal audit function should not be directly responsible for operational risk management
Principle 3	Senior management should have responsibility for implementing the operational risk management framework approved by the board of directors. The framework should be consistently implemented throughout the whole banking organization and all levels of staff should understand their responsibilities with respect to operational risk management. Senior management should also have responsibility for developing policies, processes and procedures for managing operational risk in all of the bank's products, activities, processes and systems
Principle 4	Banks should identify and assess the operational risk inherent in all material products, activities, processes and systems. Banks should also ensure that before new products, activities, processes and systems are introduced or undertaken, the operational risk inherent in them is subject to adequate assessment procedures.
Principle 5	Banks should implement a process to regularly monitor operational risk profiles and material exposures to losses. There should be regular reporting of pertinent information to senior management and the board of directors that supports the proactive management of operational risk
Principle 6	Banks should have policies, processes and procedures to control and or mitigate material operational risks. Banks should periodically review their risk limitation and control strategies and should adjust their operational risk profile accordingly using appropriate strategies, in light of their overall risk appetite and profile
Principle 7	Banks should have in place contingency and business continuity plans to ensure their ability to operate on an ongoing basis and limit losses in the event of severe business disruption
Principle 8	Banking supervisors should require that all banks, regardless of size, have an effective framework in place to identify, assess, monitor and control/mitigate material operational risks as part of an overall approach to risk management
Principle 9	Supervisors should conduct, directly or indirectly, regular independent evaluation of a bank's policies, procedures and practices related to operational risks. Supervisors should ensure that there are appropriate mechanisms in place which allow hem to remain apprised of developments at banks
Principle 10	Banks should make sufficient public disclosure of their approach to operational risk management to allow market participants to assess these methodologies.

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