

# CRISIL YOUNG THOUGHT LEADER 2006

## A DISSERTATION ON

### “HOW RELEVANT AND APPLICABLE ARE QUANTITATIVE MEASURES OF OPERATIONAL RISK FOR INDIA INC”

*By*

**Saurabh Mishra**

Business Management, 2<sup>nd</sup> Year

XLRI Jamshedpur

CH Area (East)

Jamshedpur-831 001

[b05049@astra.xlri.ac.in](mailto:b05049@astra.xlri.ac.in)

[saurabh97@gmail.com](mailto:saurabh97@gmail.com)

**Word Count: 2495**

(Excluding Cover Page, Appendix, Bibliography and Heading Numbers)



**XLRI** Jamshedpur

*School of Business & Human Resources*

## Profile of the Author

### EDUCATION BACKGROUND

Course	Institution	Board	Percentage/CQPI	Achievement
PGDBM (2005-2007)	XLRI, Jamshedpur (One term, 5 <sup>th</sup> , in AIM, Manila as Exchange Student)	XLRI, Jamshedpur	6.67/8.00	3 <sup>rd</sup> rank in Institute
B.Tech* (Chemical Engineering) (1998-2003)	Indian Institute of Technology, Chennai (IIT Madras)	Indian Institute of Technology, Chennai (IIT Madras)	8.52/10	Among the top 10% in the department
Class XII (1998)	AIC, Kanpur	State Board	80.6%	Distinction in 4 out of 5 subjects; 1 <sup>st</sup> rank in School
Class X (1996)	AIC, Kanpur	State Board	81.6%	Distinction in 5 out of 6 subjects; 1 <sup>st</sup> rank in School

\*5 year dual degree (B.Tech + M.Tech) program

### ACADEMIC ACHIEVEMENTS

- Ranked among the top 0.5% (AIR-1195) in IIT-JEE, admission test for elite Indian Institutes of Technology
- Achieved Percentile of 99.90 in XAT (XLRI Aptitude Test)
- Ranked 6<sup>th</sup> on All India basis and 1<sup>st</sup> in South zone in Graduate Aptitude Test in Engineering (GATE-2001)
- Ranked 35<sup>th</sup> on All India basis in the UP State Engineering Entrance Test
- First position in school/college throughout from 6<sup>th</sup> std to plus 2

### WORK EXPERIENCE

Assistant Systems Engineer      Tata Consultancy Services (India)      Sep 2003 – May 2005

### INTERESTS

- Writing poetry. Have a collection of more than 200 Hindi and English lyrics. Shared dais with famous poets and lyricists including Gopal Das 'Neeraj' and Javed Akhtar
- Traveling. Have visited more than 45 cities across states in India.
- Reading fiction (Fan of John Grisham)

**Date**

October 16, 2006

Saurabh Mishra

## Table of Contents

<b><u>PROFILE OF THE AUTHOR</u></b> .....	2
<b><u>TABLE OF CONTENTS</u></b> .....	3
<b><u>1.0 EXECUTIVE SUMMARY</u></b> .....	4
<b><u>2.0 INTRODUCTION</u></b> .....	5
<b><u>3.0 WHY QUANTIFICATION OF OPERATIONAL RISK?</u></b> .....	5
<u>3.1 THE UNIVERSAL REASONS</u> .....	5
<u>3.2 REASONS EXCLUSIVE FOR INDIA INC.</u> .....	6
<u>3.2.1 Expanding Frontiers (Size, Areas of Operations) of Firms</u> .....	7
<u>3.2.2 Rise of Data Sensitive Industries</u> .....	7
<u>3.2.3 Emerging Financial Services Market and Implementation of Basel II</u> .....	7
<u>3.2.4 Rising levels of Frauds</u> .....	8
<u>3.2.5 Time for Stricter Corporate Governance Codes</u> .....	8
<b><u>4.0 HURDLES FOR IMPLEMENTATION OF QUANTITATIVE MEASURES OF OPERATIONAL RISK</u></b> .....	9
<u>4.1 LACK OF ORGANIZATIONAL ACCEPTANCE AND SUPPORT</u> .....	9
<u>4.2 ABSENCE OF LOSS DATABASES</u> .....	10
<u>4.3 INADEQUACY OF CURRENT MIS STRUCTURE</u> .....	10
<u>4.4 LACK OF WELL-DESIGNED METHODOLOGIES AND MODELS</u> .....	11
<u>4.5 NEED OF LARGE INVESTMENTS</u> .....	11
<b><u>5.0 OVERCOMING THE HURDLES AND THE PREPARATION OF THE ROADMAP FOR IMPLEMENTATION</u></b> .....	12
<u>5.1 GOVERNMENT FACILITATION</u> .....	12
<u>5.2 ESPOUSAL BY INDUSTRY REPRESENTATIVE ASSOCIATIONS (IRAs)</u> .....	12
<b><u>6.0 CONCLUSION</u></b> .....	14
<b><u>APPENDIX-A</u></b> .....	15
<b><u>APPENDIX-B</u></b> .....	16
<b><u>APPENDIX-C</u></b> .....	18
<u>SAMPLE LOSS DATABASE PRO-FORMA (MAINTAINED BY CORPORATION BANK, MANGALORE)</u> .....	18
<b><u>APPENDIX-D</u></b> .....	19
<u>A SEPARATE RESEARCH FOR THE CURRENT STUDY</u> .....	19
<b><u>BIBLIOGRAPHY</u></b> .....	21

## **1.0 Executive Summary**

This paper deals with the relevance and applicability of quantitative measures of operational risks for Indian industries. Besides giving the fundamental logic of aligning the value at risk with the risk appetite of a firm for why quantification of operational risk (OR) is must, this paper explores exclusive reasons for India Inc, such as rapid expansion of the firms, rise of data sensitive industries, emerging financial services industry, imminent Basel II implementation in banks, rising levels of frauds and need for strict corporate governance regulations. Currently only banks seem to have started considering, more so to comply with Basel II, quantitative measures of OR. The paper identifies lack of organizational acceptance and support, absence of loss databases, inadequacy of current MIS Structure, lack of well-designed methodologies and models, and need of large investments as major hurdles towards implementing quantitative measures of OR. Finally a detailed step-by-step roadmap, which envisages prominent roles by the government and the Industry Representative Associations, is suggested. The incentive for both the parties to come forward arises because of role of ORM in promoting sound corporate governance practices.

## 2.0 Introduction

“December 2001, the US Energy giant Enron with \$62 billion in assets files for bankruptcy caused by accounting scandal (overstatement of profits)”

“February 2002, Disclosure of alleged fraudulent trading at a US subsidiary of Allied Irish Banks of UK leading to losses of around \$750 million”

“July 2002, WorldCom Inc., the second largest long-distance telecom company in US with \$107 billion in assets files for largest bankruptcy ever, caused again by crooked accounting”

Above are just a few of the several high profile cases where once seemingly infallible companies like Enron, WorldCom, Kmart, Polaroid, Arthur Anderson, Qwest etc came crashing down. The one common theme which connects all these cases is the failure of one or the other operational processes. As per Basel II, the capital accord targeted at banks, the operational risk is defined as *the "risk of loss, resulting from inadequate or failed internal processes, people and systems, or from external events."* In simplest terms OR can be understood to cover operational breakdowns in processes. Strategic or reputation risks are normally kept out of the purview of the OR.

## 3.0 Why Quantification of Operational Risk?

(Refer to Appendix-A for a brief discussion about quantitative measures of operational risks)

### 3.1 The Universal Reasons

“What cannot be measured, cannot be managed” *Anonymous*

“What cannot be measured, cannot be improved” *Edward Deming (Quality Guru)*

The two famous quotes above speak loud and clear about the importance of the quantification. Operational risk is a fundamental part of doing business and as such cannot be eliminated: the common interest of firms and regulators is that such risk is identified, measured, monitored and controlled.

The quantification techniques can help in determining the value at risk in different scenarios faced by the firm, business-line wise or for the firm as a whole. Once a firm determines the risk amount at stake, it can compare it with its own risk appetite and do the cost-benefit analysis. Depending upon this analysis, firm can decide the rigor of the operational risk management policies it needs to implement. Thus quantification may help in galvanizing the whole organization towards honest implementation of ORM.

The increased importance of quantification of risk management is reflected in progressively greater weightage being given to quantification aspects in various popular frameworks like Basel II, targeted at banking institutions, Committee of Sponsoring Organization Commission (COSO): Enterprise Risk Management – Integrated Framework which is very popular in the US, Australia/New Zealand Standard: Risk Management (AU/NZS 4360) and Risk Management Standards by the Association of Insurance and Risk Managers (AIRMIC). In fact COSO came out with a separate application techniques guide in September 2004 in an attempt to provide more emphasis on practical and quantitative aspects of risk management.

### ***3.2 Reasons exclusive for India Inc.***

During the last decade and half, the landscape of Indian industries has changed in an unprecedented manner but commensurate with the economic liberalization started in

1991. Sound operational risk management of which quantification measures are integral part makes all the more sense for Indian firms in current scenario.

### **3.2.1 Expanding Frontiers (Size, Areas of Operations) of Firms**

The increasing competition at home and opportunity to realize global dreams has put several Indian firms on the expansion path to gain the advantages derived from the economy of scale and the economy of scope. Appendix-B gives details about how corporate finance deals have picked up in recent years. Moreover this expansion is not limited to national boundary. Several firms have established their subsidiaries abroad. In such an aggressive expansion spree the risk of operational losses increases significantly as close control on different processes across geographical locations is no longer feasible.

### **3.2.2 Rise of Data Sensitive Industries**

As China is known for its manufacturing capabilities, India is poised to become a global player in knowledge based industries. Several cities like Bangalore, Hyderabad, Gurgaon have become centers of new age industries such IT, KPO, BPO, Financial Services and Biotechnology. These industries are highly data sensitive. The safety of data in such industries is of paramount importance. Any data theft or careless handling of data can lead to loss of precious reputation for the entire industry, not just the thousands of dollars as a penalty to the clients. Decisive ORM is, therefore, a must for such industries.

### **3.2.3 Emerging Financial Services Market and Implementation of Basel II**

Basel II holds special significance for banks and burgeoning financial services industry in India. While banks are required to implement the Basel II guidelines by March 2007, in next few years' large financial services firms would also be looking at the prospects of complying with such regulations.

RBI is allowing, initially, banks to adopt simple non-probabilistic technique such as The Basic Indicator Approach and The Standardized Approach but the banks are expected to move towards advanced quantification methods in future. Moreover, the implementation of Basel II is likely to lead to consolidation in banking industry. For large banks, it is even more important (also required by the regulator) to adopt advanced operational risk models.

### **3.2.4 Rising levels of Frauds**

Ernst & Young's 9<sup>th</sup> *Global Fraud Survey 2006, Fraud Risk in Emerging Markets*, reveals that levels of frauds have increased drastically in India in the last few years. A significant number of Indian organizations, (42%, in comparison to global 27%) believe that levels of fraud have increased in the last two years. Over 38% of the organizations do not even have a formal anti-fraud policy which does not augur well as future of more and more stakeholders is getting dependent upon them. The other firms which claimed to have internal mechanisms to deal with frauds were more dependent upon the managerial expertise and their experience to predict frauds and other operational losses. The situation looks even grimmer when we consider that the participants in the survey were 50 leading corporate houses.

### **3.2.5 Time for Stricter Corporate Governance Codes**

As government progressively withdraws from the market (e.g. through divesting its stake in PSUs) and provides greater and greater freedom to business houses (remember draconian FERA?), the importance of good corporate governance has increased considerably. In this phase of large growth, this is the right time for government to provide more teeth to corporate governance rules; something the US has done by

enacting Sarbanes-Oxley Act in 2002. Unlike the credit risk and market risk which can be limited to few departments or customers classes, the scope of the operational risk includes entire organization. Sound ORM ensures safety of interests of all stakeholders of a firm and thus can help a firm in maintaining better corporate governance.

## **4.0 Hurdles for Implementation of Quantitative Measures of Operational Risk**

### ***4.1 Lack of Organizational Acceptance and Support***

One single and the most crucial hurdle towards adoption of quantitative measure of any type of risk is the endorsement by managers at all level, specifically the top management in the firm. Following are some reasons why ORM has not got the rightful place in ERM in India.

- Many of the advances in OR quantification have been made in the recent past. The managers are not aware of them. In fact for this study when we contacted Risk Management departments of some of the major public sector banks, most of the professionals there seemed to be unaware of advanced quantification techniques (mentioned in Basel II) in OR. Remember banks in India need to implement Basel II from March 2007.
- Closed nature of economy till 80's affected the mindset of Indian managers in two major ways. First due to small scale of operations, they had better control on everything happening inside the firm and that made them indifferent towards active risk management. Secondly, with the limiting revenue side the focus was more on cost cutting. This made them ignore resource consuming risk management.

- Lack of support from Industry associations or government. Except banking industry where regulator RBI has mandated strict regulations, there are no regulations which require firms to take up ORM seriously. No industrial body in India has so far espoused the cause of sound ORM in a big way.

#### ***4.2 Absence of Loss Databases***

The first requirement for a well-structured quantitative framework is the historical loss data (3-5 years), internal as well as external which is necessary for the benchmarking purposes. Data collection and maintenance is a complex resource intensive process as the data is gathered across the business lines and cover a gamut of loss events, many times unheard before. Co-ordination among different departments and availability of modern MIS is a must for preparation of a truly representative loss database. So far only Banks have started data collection exercise, mainly to meet regulatory requirements. A sample loss database pro-forma supplied to us by the Corporation Bank is given in appendix-C.

#### ***4.3 Inadequacy of Current MIS Structure***

The implementation of the advanced quantitative models of the operational risk requires extensive use of MIS throughout the organization, and not just few departments. MIS of the organization should be able to record the loss events, organize the loss data, maintain the data integrity, and finally help risk management professionals through decision models and their interpretation. The IT infrastructure of Indian firms is still at the preliminary phase of development and it is more inclined towards achieving merely data recording, that is, act as Transaction Processing System.

The lack of IT infrastructure is not restricted to the firm side alone. The Internet connectivity which is necessary for the real time data collection and management is not

available in the rural areas of the country and therefore the firms having business units there cannot integrate the ORM processes.

#### ***4.4 Lack of Well-Designed Methodologies and Models***

Unlike credit and market risk quantification tools, operational risk quantification tools are still at a relatively early stage of development. Even Basel II, the most advanced and the most widely accepted framework across the globe, provides a lot of freedom to banks to devise their own models as far as they conform to its broader set of guidelines. Clearly if a firm is desirous of implementing sophisticated operational risk techniques, it has to show a lot of commitment towards fixing the methodology and the model for its own use. Simpler techniques, as proved by our research for this study (Refer to appendix-D) do not provided sufficient motivation to firms as they seem to be punishing better risk managing firms.

#### ***4.5 Need of Large Investments***

We have already stated that a comprehensive IT infrastructure is mandatory for implementing sophisticated operational risk techniques. The firm has to either develop its own quantification models, which does not look feasible at this stage in India or buy the proprietary software which would require a large investment in terms of initial and maintenance costs. But all this is not enough. There has to be a substantial investment in recruiting the highly skilled risk management professional and training and educating the entire employee base who are critical to the successful implementation of ORM. The firms which can afford such a large investment may not be ready to do that without any regulatory compulsions.

## **5.0 Overcoming the Hurdles and the Preparation of the Roadmap for Implementation**

We have seen in section 3 why ORM (which envisages fundamental role of quantitative measures) is necessary: so that firm can protect the interests of its own and the stakeholders, of course good corporate governance is a desired by-product. While visionary firms may adopt ORM as it is after all for their own good, we cannot expect, due to several hurdles discussed above, all the firms to appreciate ORM. Here arises the possibility of constructive role by other parties, the government and the widely regarded Industry Representative Associations such as FICCI, ASSOCHAM and various other industry specific bodies such as Society of Indian Automobile Manufacturers (SIAM).

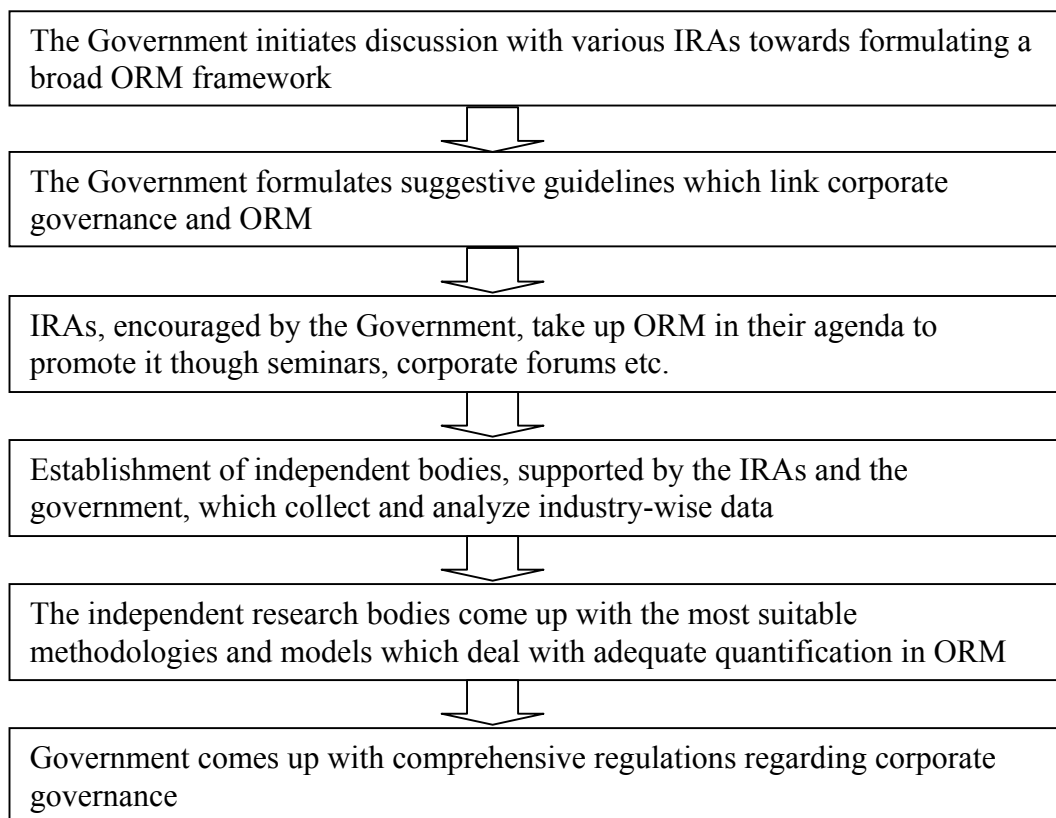
### **5.1 Government Facilitation**

The government can make important contribution in promoting spread of ORM, and thus good corporate government practices by performing its legitimate roles as regulator and the provider of public goods. As a regulator, the government has to formulate regulations, in the line of Sarbanes-Oxley Act of 2002 in US, which require firms to take up ORM in a wholehearted manner to comply with them. But this must be done by taking industries in confidence and in a systematic manner. At the same time, as a provider of public goods the government needs to ensure that the basic infrastructure like internet, phone etc necessary for ORM implementation are readily available to firms situated at far flung areas of the country.

## **5.2 Espousal by Industry Representative Associations (IRAs)**

IRAs have the most significant role to play in creating the industry-wide opinion in favor of ORM. These bodies enjoy deep understanding about particular industries as well as great influencing power. By conducting seminars, raising the issues in various corporate forums and government-corporate meetings the IRAs can initiate consensus building towards formulation of appropriate frameworks. Figure 1 below describes a step by step approach which can lead to scenario where ORM becomes standard among Indian industries.

**Figure 1:** Road map for the implementation of ORM across India Inc.



## **6.0 Conclusion**

Looking at the great speed of changes in Indian business scenario in last 15 years, the significance of operational risk management has increased tremendously in overall enterprise risk management policy of an organization. The challenges before Indian firms are two-fold, though in phases: First they need to be sensitized for implementing a broad ORM policy which can be more in qualitative nature and, in the second phase they need to adopt quantitative measures of OR which are must to know where firms stands with respect to the value at risk vis-à-vis its risk appetite. They are especially relevant for firms having several business lines spread across geographical locations. Fortunately, all the parties, the government as regulator, the individual firms and the Industry Representative Associations have their own incentives to promote effective ORM, with achievement of good corporate governance unifying all the three.

## **Appendix-A**

### **Quantitative Measures of Operational Risks**

Operational risk quantification techniques can broadly be divided into two categories: probabilistic techniques and non-probabilistic techniques. Probabilistic techniques require two vital inputs: frequency of the loss events and the severity (financial impact) of the loss events. The statistical techniques can be used to obtain the most appropriate loss distributions as per the actual risk profile faced by the particular firm and then risk amount, also called value at risk in “at risk” models, can be calculated.

Non-probabilistic techniques depend more on the managerial expertise and the prior experience of the firm and the managers regarding the operational losses. Firm can decide to adopt some parameter such as gross income, net sales, or cash flows as the proxy for its exposure to operational losses and accordingly treat a certain percentage of the exposure as the value at risk.

Non-probabilistic techniques offer simplicity at the cost of accuracy but are good to start with as probabilistic techniques are highly resource (Data, IT infrastructure, skilled professionals) intensive. Advanced measurement techniques such as Internal Measurement Approach (IMA), Loss Distribution Approach (LDA) which find explicit mention in Basel II require collection of operational loss data categorized by the event type such as Fraud, Damage to Physical Assets, Business Disruption and System Failure and Practices and Workplace Safety for different business lines of a firm. There is a

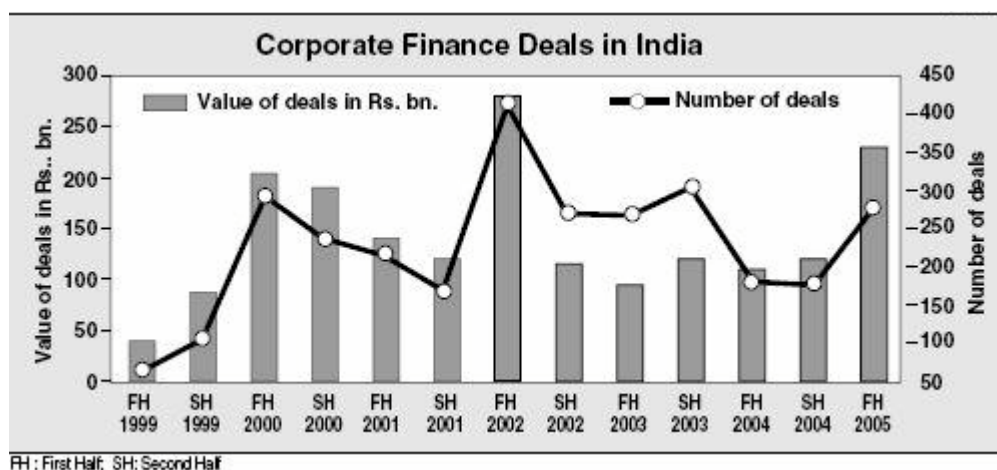
plenty of scope available for sophistication in terms of collecting loss data (internal/external, Monte Carlo simulation) and determining loss distribution (Normal, Generalized Pareto, Weibull etc).

## Appendix-B

### India Inc on the Roll in M&A Market

From M&A deals worth under US\$ 3 billion in 1999 to the projected deals worth more than US\$25 billion in 2006-07 (Source: Business India, October 2006), Indian business scenario has never looked so promising. The hunger of expansion in India Inc is visible from their aggressive participation in domestic as well as overseas M&A deals. While the data in figures 2, 3 and 4 speak volumes about the amazing show of Indian firms, they also raise concerns about their operational transparency and adherence to the corporate governance as they grow bigger in terms of both operational area and number of stakeholders.

**Figure 1: M&A in India in recent years**



Source: Report on M&A deals in by India Advisory Partners, London

**Figure 2: International acquirers**

% of deals by value	1999	2000	2001	2002	2003	2004	H1 2005
By International acquirers *	52	50	41	38	50	73	52
By Indian acquirers	48	50	59	62	50	27	48

\* includes Indian subsidiaries of International companies

Source: Report on M&A deals in by India Advisory Partners, London

### Figure 3: Overseas deals

		2002	2003	2004	H1 2005
Total number of overseas acquisitions	Nos.	28	49	60	42
Total Value of overseas acquisitions	Rs. bn	9.4	80.4	76.5	41.2
	US\$ mn	209	1,789	1,700	948

Source: Report on M&A deals in by India Advisory Partners, London

## Appendix-C

### ***Sample Loss Database Pro-forma (Maintained by Corporation Bank, Mangalore)***

To have an idea about the exact pro-forma in which Indian banks have started to construct a Loss Database of their own, we contacted Corporation Bank which is one of the best managed banks in India. Based on our questionnaire they provided us details about their loss database construction strategy. Salient features of their loss database are as following:

1. Bank records only those losses which are equal or more than Rs. 10,000. This minimum limit is set by the assessment of their own risk management department as per what they consider a significant loss.
2. Bank categorizes losses into seven event types, as suggested in Basel II. These event types are: Business Disruption and System Failure, Clients, Products and Business Practices, Delivery and Process Management, Internal Fraud, Employee Practices and Workplace Safety, Damage to Physical Assets and External Frauds.
3. External frauds and Damage to Physical Assets are the most dominant loss events for Corporation Bank.
4. Currently the bank records loss events for the banks as a whole. It does not designate losses to its business-lines.

5. Bank intends to follow the Basic Indicator Approach till it builds sufficiently large database of its own. This is expected to take 5 years. The bank also intends to utilize external loss database of other banks then.

## **Appendix-D**

### ***A Separate Research for the Current Study***

#### **Why Simpler Operational Risk Quantification Techniques do not Motivate Good Firms?**

Indian banks are set to implement Basel II guidelines from March 2007. RBI is allowing banks to follow the Basic Indicator Approach, the simplest of all, to start with. We conducted a secondary research to see if this approach does justice (in terms of low risk, low risk capital required) with the better managed banks.

We formed two categories of the banks; category-1 banks consisted of Corporation bank and HDFC banks while category-2 banks consisted of Dena bank and UCO bank. Based on certain parameters such as Business per Employee, Capital Risk-weighted Asset Ratio (CRAR), Net NPA as %age to net Advances, Profit per Employee and Return on Assets for last ten years we termed category-1 banks as better managed banks and category-2 banks as badly (relatively) managed banks. Category-1 banks outperformed category-2 banks with wide margin in all the parameters. We then calculated two ratios Capital Charge/Total Assets (CCTA) and Net Profit/Total Assets (NPTA). The tables below give these two ratios for banks of both categories.

#### **Category-1 Banks**

(Capital charge figures are in Rs. Crore)

#### **Corporation Bank**

<b>Year</b>	<b>Capital Charge</b>	<b>CCTA</b>	<b>NPTA</b>
-------------	-----------------------	-------------	-------------

FY05	200.21	0.74%	1.02%
FY06	225.88	0.74%	1.09%

**HDFC Bank**

<b>Year</b>	<b>Capital Charge</b>	<b>CCTA</b>	<b>NPTA</b>
FY05	150.07	0.63%	1.29%
FY06	160.56	0.67%	1.18%

**Category-2 Banks****Dena Bank**

<b>Year</b>	<b>Capital Charge</b>	<b>CCTA</b>	<b>NPTA</b>
FY05	150.07	0.74%	0.25%
FY06	160.56	0.73%	0.27%

**UCO Bank**

<b>Year</b>	<b>Capital Charge</b>	<b>CCTA</b>	<b>NPTA</b>
FY05	228.93	0.62%	0.63%
FY06	259.87	0.58%	0.32%

The Net Profit to Total Assets ratio (NPTA) is much higher for category-1 banks. These banks seem to manage their assets in much better way than their counterparts in category-2. By this logic we can expect that, ceteris paribus, banks in category-1 should need to set aside less capital (with respect to total assets under management) for operational risk in comparison to banks in category-2. But when we see the ratio of Operational Risk Capital Charge to Total Assets (CCTA), entirely different picture emerges. The BIA approach mandates low performing banks (note low net profit to total asset ratio) to maintain same or lower capital (compare capital charge to total asset ratio). This tantamount to punishing banks for better management and violates the spirit of Basel II which provides incentives for better risk mitigation.

## Bibliography

### Books

- Alexander Carol, *Operational Risk: Regulation, Analysis and Management*, Prentice Hall, 2003
- Cruz, Margelo G, *Modeling, Measuring and Hedging Operational Risk*, Wiley Finance Series, Wiley New York, 2002

### Papers/Articles

- 9<sup>th</sup> Global Fraud Survey: *Fraud Risk in Emerging Markets*, Ernst & Young, 2006
- *Enterprise Risk Management – Integrated Framework: Technical Applications*, Committee of Sponsoring Organizations of the Treadway Commission, 2004
- Klugman, S., Panjer, H. and Wilmot, G., *Loss Models*, Wiley Series in Probability and Statistics, Wiley New York, 1997
- Pulavarti Vidyasagar, *Choices, Choices: Basel II Op Risk Calculation Options*, Repelling Operational Risk, GARP Risk Review, September / October 2004

### Internet Websites

- An Overview Comparison of the AIRMIC/ALARM/IRM Risk Mangement Standards with AS/NZS 4360:2004 and the COSO ERM Framework, AIRMIC, 2005

[http://www.rudnicki.com.pl/pub/RM\\_Standards\\_Comparison\\_V3.pdf](http://www.rudnicki.com.pl/pub/RM_Standards_Comparison_V3.pdf)

- Buseiness India News, *India Inc Likely to See Merger and Acquisitions Deals of USD 25 bn in FY07*, October 11, 2006

<http://www.newkerala.com/news4.php?action=fullnews&id=34594>

- Comprehensive Version of Basel II, 2006

<http://www.bis.org/publ/bcbs128.htm>

- *Draft Guidance Note on Management of Operational Risk*, RBI, 2004

<http://www.rbi.org.in/>

- Kemp Brian, Bohn Christopher, *Enterprise Risk Management Quantification – An Opportunity*, February 2006

[http://www.aon.com/about/publications/issues/wp\\_2006\\_erm\\_quantification\\_opportunity.jsp](http://www.aon.com/about/publications/issues/wp_2006_erm_quantification_opportunity.jsp)

- *Observed Range of Practice in Key Elements of Advanced Measurement Approaches (AMA)*, October, 2006

<http://www.bis.org/publ/bcbs131.htm>

- Samad Khan, Ali, *Assessing & Measuring Operational Risk: Why COSO is Inappropriate*, January 2005

[http://www.isda.org/c\\_and\\_a/ppt/Assessing-MeasuringOpRiskSama-Khan011805.ppt](http://www.isda.org/c_and_a/ppt/Assessing-MeasuringOpRiskSama-Khan011805.ppt)

- Taraporevala Kai; Winterbotham James, *India Inc High on Merger and Acquisitions*, August 12, 2005

<http://www.thehindubusinessline.com/2005/08/12/stories/2005081200541100.htm>