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Operational Risk Management in Transition – The Recent RBI Master Direction on Minimum Capital Requirement for Operational Risk

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ABSTRACT

The Reserve Bank of India, Master Direction on Minimum Capital Requirement for Operational Risk (OR), released on June 26, 2023, replaces all the existing Basel II risk approaches. The capital estimation in the new and revised approach, i.e. Standardised Approach (SA) of Basel III is based upon the financial statement based business indicator (BI) and the bank's historical loss data, which adds risk sensitivity in capital framework. Business Indicator (BI), is an exposure indicator, which replaces, Gross Income considered under Basel II. The alpha factor deliberated under Basel II is now replaced with coefficient under Standardised Approach (SA) of Basel III. The revised methodology is also a transition from the model based methodology, i.e. Advanced Measurement Approach (AMA) of Basel II. It would help the banks in maintaining minimum capital for Operational Risk in line with their Operational Risk profile.

Keywords: Banks, Operational risk, Capital adequacy, Risk management, Basel Accord

JEL Classification: G18, G21, G32

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Operational Risk Management in Transition –
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I. Introduction

With the increase in the size and complexity of bank's operations, the likelihood of operational risk exposure to manifest in various activities, processes and businesses, of banks and financial institutions, surges, mainly on account of various unexpected events like Global Financial Crisis, Covid 19 pandemic, increasing financial frauds, ransomware and phishing attacks, cyber risks etc. Operational Risk is defined in the Reserve Bank of India (RBI) Guidance Note on Operational Risk (2005) and (RBI, 2023), as "*the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events*". This definition includes legal risk, but excludes strategic and reputational risk. Operational Risk is the cost of doing business (Alexander, 2003) and an effective management of this risk is important to protect depositors' interest and run on a bank. It is interesting to note that this risk is the second largest contributor to the total risk-weighted assets (RWA) after credit risk for a typical scheduled commercial bank (SCB) in India, (Regulatory Consistency Assessment Programme, RCAP, 2015)[1]. The existing Basel II (2006) norms for estimating capital charges for operational risk are: Basic Indicator Approach (BIA), Standardised Approach (TSA), Alternative Standardised Approach (ASA) and Advanced Measurement Approach (AMA). All banks in India implemented the BIA by March 2009. Subsequently, guidelines on Capital charge estimation under TSA and ASA were issued in March 2010 and AMA guidelines in 2011.

RBI, recently, in June 26, 2023 finalised and issued, 'Master Directions on Minimum Capital Requirement for Operational Risk', called Basel III Standardised Approach (SA). Consequently, this document scraps the Basel II, 2006 approaches. This revised Master Direction is representation of the changing regulatory landscape to deal with the rising Operational Risk in Indian Financial System from the year 2015 and same is reported in Financial Stability Report[2] (RBI, 2022). The objective is to hold sufficient regulatory capital against the exposure of the bank towards operational risk. RBI states that the effective date of implementation of these directions would be communicated separately to the regulated entities, like public sector banks, private sector banks and foreign banks[3]. But, these banks are supposed to follow Master Circular – Basel III Capital Regulation, dated May 12, 2023 until then. This gives sufficient time to banks in India to improve their 'Internal Loss Data' collection, assessment and management processes. Moreover, banks are not required to carry out parallel run with respect to the revised approach. For the computation of capital charge for Operational Risk, the local area banks, payment banks, regional rural banks, and small finance banks are excluded from the application of these directions.

[1]https://www.bis.org/bcbs/publ/d320.pdf

[2]https://rbidocs.rbi.org.in/rdocs//PublicationReport/Pdfs/0FSRDECEMBER2022F93A2F188A394ACDB2FDDC2FCC0D07F0.PDF

[3] The banks incorporated outside India and licensed to operate in India.

II. Summary of the Master Direction

The recent Master Direction suggests the new method of estimating the capital charge for Operational Risk, i.e. Standardised Approach (SA) under Basel III. The revised methodology has been introduced to make the Operational Risk capital charge estimation methodology, more risk sensitive, simpler and comparable across scheduled commercial banks (SCBs). It is based upon the assumption that a bank's capital requirement for operational risk increases with its income and past operational losses[4]. This assumption affects banks to varying degrees. The operational risk capital charge under SA is based on the bank's financial statement based business indicator (BI) (computed from various items such as income, expenses and profitability parameters) and the bank's Internal Loss Multiplier, which is a reflection of the Bank's historical losses (captured through the ratio of loss component to Business Indicator Component). BI is the replacement of Gross Income (GI) considered under Basel II approach. The capital charge under SA is computed as BIC * ILM, where, Business Indicator Component (BIC), is regulatory driven and, Internal Loss Multiplier (ILM) is bank led. The applicability of ILM in capital charge estimation varies at each level of BI. The operational risk capital of a bank would be multiplied by 12.5 percent to estimate operational risk weighted assets for the bank, as per the revised methodology, whereas the same is 11.11 as per Master Circular - Basel III Capital Regulations (RBI, May 2023). RBI has explicitly pointed towards incorporation of various qualitative information to have in place a strong operational risk management framework. Moreover, Risk and Control Self-Assessment (RCSA), Key Risk Indicators (KRIs), scenarios analysis, etc., are expected to outlive, even though they are no longer considered under Pillar I capital estimation (Principles of Sound Management of Operational Risk, (PSMOR), 2021).

III. New Components of Basel III SA

The Business Indicator (BI) under SA is considered as an exposure indicator, which is based upon financial statement-based proxy for calculating the capital requirement for operational risk. It measures the size of the operations[5] based on income, expense and profitability measures factored through Interest, Lease and Dividend Components, Service Component and Financial component, i.e. BI = ILDC+SC+FC. The formula provided for the estimation of these components are detailed as below (RBI, 2023):

(i) Interest Lease and Dividend Component (ILDC)

(ii) Service Component (SC)

(iii) Financial Component (FC)

[4] Box E: Reforms to the Basel III Capital Framework | Financial Stability Review – April 2018 | RBA

[5] https://www.bis.org/fsi/fsisummaries/oprisk_sa.pdf

Here,

$$ILDC = Min[\overline{Abs\ (Interest\ Income - Interest\ Expenses)}; 2.25\%\ \overline{Interest\ Earning\ Assets}] + \overline{Dividend\ Income}$$

$$SC = Max[\overline{Other\ Operating\ Income}; \overline{Other\ Operating\ Expenses}] + \text{Max}\ [\overline{Fee\ Income}; \overline{Fee\ Expenses}]$$

$$FC = \overline{Abs(Net\ P\ \&\ L\ Trading\ Book)} + \overline{Abs(Net\ P\ \&\ L\ Banking\ Book)}$$

The data relating to the constituents of BI are collected from the various schedules of the bank's financial statements. The regulator will provide information about these schedules later. A glance through these variables clearly indicates that, whatever was omitted and netted earlier from gross income estimation, are now considered for estimation of business indicator (Basel 2014). In the formula above, a bar above the term indicates that the financial statements considered in the BI estimation items are calculated as the average of the latest three years: t, t-1 and t-2 data or rolling quarters, whichever is higher. This means that, in case a bank is computing capital charge for operational risk for the year 2023, the financial statement items considered would be for the year 2023, 2022 and 2021.

The Table I presents the above-mentioned components of BI for various public sector, private sector and foreign banks in India as on March 2021. It is clear from the Table I that Interest Income constitute the major portion of Total Income of scheduled commercial banks in India. However, foreign banks like AB Bank, American express, JSC VTB, Sberbank, and Sonali bank etc. are exception to it. Further look at the major constituents of other income of banks, it is observed from the Table I that Profit/loss from Trading Book and Other operating income form the major part in public sector banks, with an exception of State Bank of India, whereas fee income and Profit/loss from Trading Book constitute major portion of other income among many private sector banks and foreign banks operating in the country. The Table I clearly shows that the interest expenses are the major portion of total expenses (interest expenses, operating expenses and provision and contingencies) in many public sector and private sector banks in India. In contrast, operating expenses to total expenses ratio is observed more in many foreign banks operating in India.

The BI parameter, listed above, clearly reflect on the improvement of Business indicator estimation methodology over and above the gross income. Same is highlighted as below:

(i) The ILDC component is the reflection of Bank's Revenue and Size. In the revised approach, NIM is capped at 2.25 percent. Whereas, no such cap was imposed under gross income estimation, which makes gross income greater than business indicator for the banks with high Net Interest Margin (NIM). Another variable, i.e. dividend is considered for business indicator estimation under ILDC, whereas, same was earlier excluded from the gross income estimation.

(ii) The Service component includes both fee and other operating, income and expenses, although, expenses were earlier excluded from the exposure indicator

estimation under BIA. However, they are reflection of the bank's operational risk profile. Thus, the revised SA takes into account both fee and other operating expense.

(iii) Similarly, the Banking Book was earlier excluded from Basel II methodology, whereas the Basel III income estimator does take into account the profit and loss, both on Trading Book and Banking Book.

Under Basel II, the capital charge under BIA increases linearly in proportion to the bank's gross income (Bajaj, 2016), whereas the complexity of a bank increases with its size. This actually makes the relationship between gross income and risk exposure, non-linear. In order to deal with the non-linearity[6] issue, Basel III SA, has introduced bucket-wise marginal coefficients in capital charge estimation. The bucket approach based on the BI present that, as the BI increases, the marginal coefficients become larger. These coefficients are reflection of the bank's size of the BI, which assumes increase in operational risk exposure with the size of the institution. So, a bank in India with BI being greater than Rs. 8,000 crores needs to maintain higher capital charge as, they are banks of big size (Bajaj, 2023). The BI Component (BIC) is calculated by multiplying BI with marginal coefficient as evident from the Table II (RBI, 2023).

The another input to SA capital charge estimation is **Internal Loss Multiplier (ILM),** which is considered as a scaling factor based on the ratio of Loss Component (LC) to Business Indicator Component (BIC). Here, loss component is equal to 15 times a bank's average annual historical operational losses, net of recoveries, incurred over previous 10 years. The loss data was considered in capital charge estimation only under the Basel II bottom-up approach, i.e. AMA. Banks are required to capture loss event types, date of occurrence and discovery, loss amounts, in their historical data base. In India, minimum loss data collection threshold[7] as suggested by RBI under SA is at Rs 100,000, whereas same was not more than Rs 50000 under AMA.

The residual/net Loss, which goes into estimation of SA capital charge is net of `both, insurance and non-insurance recoveries', from Gross (Actual) losses of a bank. Whereas, a cap of 20 percent of operational risk capital charge on Insurance as a mitigant was imposed under AMA. The insurance recovery, actually, reduces the bank's operational risk exposure and capital charge of the bank under SA.

On the whole, the revised Basel III, SA methodology calls for recalibration of the model parameters in the presence of the actual loss data with banks, which is a clear reflection of the bank's risk profile. The biggest issue, here, is how previous 10 years of historical internal loss data is a reflection of the bank's current risk profile[8]? Same issue was also raised by the US Fed[9]. The ILM, under Basel III SA, is defined as (RBI, 2023):

[6] https://bfsi.economictimes.indiatimes.com/blog/basel-iii-implementing-new-standardised-approach-for-operational-risk/96484807

[7] Minimum level above which bank have to collect internal loss data.

[8] http://kalkbrener.at/Selected_publications_files/AueKalkbrener06.pdf

[9] https://www.federalreserve.gov/econres/notes/feds-notes/operational-risk-regulation-forward-looking-and-sensitive-to-current-risks-20180521.html

$$ILM = \ln[exp(1) - 1 + \left[\frac{LC}{BIC}\right]^{0.8}]$$

When

- LC < BIC, the ILM is less than one (few operational losses in the banks with stronger controls)

- LC = BIC, the ILM is 1

- for the bank with LC > BIC, the ILM is greater than one, two, three etc. (means banks with high operational losses)

The Chart I, indicates that the ILM increases with the increase in the ratio of LC: BIC. The chart indicates that if the losses of a bank increased from 0.5 or 3 percent of BIC, the ILM increased from 0.83 to 1.42. The ILM incorporation in SA capital charge is detailed in Table III (RBI, 2023).

In case, a bank does not have 10 years of high quality operational loss data, the regulator shall allow the banks to use the five years and above of the high quality operational loss data for loss component estimation. Like, for a bank with 6 years of operational loss data, ILM would be based upon 6 years only. Every year, the additional data point would form part of ILM estimation.

After estimating the BIC and ILM, the risk weighted assets of the bank is computed as under:

RWA for Operational Risk = 12.5 percent*BIC*ILM

IV. Implication on Banks

The RBI Master Direction of June 2023 outlines the method of estimation of capital charges under the revised standardised approach in line with Basel III post crises reforms (2017). Basel Committee on Banking Supervision (BCBS)[10] analysis has indicated that changes in the operational risk capital charge estimation methodology would decrease the operational risk capital by 19.6 percent in banks in United States and increase in European banks to the extent of 31.3 percent. Hence, the present paper is an attempt to discuss the essence of the Master Direction on Operational Risk and its implication on banks in India.

The Chart II (a) and (b) shows the transition from BIA and the impact of revised approach on six public sector and private sector banks in the country under different scenarios of ILM for the year 2019, 2020 and 2021. This clearly shows that capital requirement under SA increases with the increase in ILM and SA capital charge is expected to be high for large banks than the small and medium banks in the country. This is in line with the study made by European Banking Authority (EBA, 2018)[11].

[10] https://www.bis.org/bcbs/publ/d477.pdf

[11] https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2380948/e2e09646-2594-48a5-b794-a7c2348257db/2018%20Basel%20III%20Monitoring%20Exercise%20Report.pdf?retry=1

In addition, the revised Pillar I approach makes the disclosure on BI of the last three years and loss experience of last 10 years, very important. This would make BI based BIC more comparable across scheduled commercial banks and their specific internal loss experience of the past 10 years (a sum of individual losses above the loss data collection threshold of Rs. 1,00,000) may provide the information about effectiveness of their internal controls to market participants. And, any data point, which is not in alignment with loss data criteria may be excluded and disclosed. Banks will also have to annually disclose the qualitative information on their operational risk management framework, policies and processes, organisation structure, risk appetite and risk culture, insurance, outsourcing and IT infrastructure in line with Guidance note on operational risk, principles of sound management of operational risk and operational resilience.

Thus, under SA, a big size strong bank with sound operational risk management with less historical losses, may need to maintain less capital[12]. The idea behind this is to incentivise a bank, with strong controls, with lower operational risk capital requirement and insurance recoveries, provides added advantage. Hence, the revised methodology is in transition from statistical estimation based AMA and the advantage of improved controls over time is factored in estimation in revised Basel III methodology. Upon the implementation the new guidelines on operational risk and capital charge under Basel III in the near future, it becomes necessary to strengthen efforts of banks to collect internal loss data and expose their concerned officers to best practices followed in management of operational risk.

References

Alexander, C. (Ed.). (2003). Operational risk: regulation, analysis and management. Pearson Education

Basel Committee on Banking Supervision (2006), Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework, BCBS Publications, June.

Bajaj, Richa Verma (2016), Operational risk capital estimation under BIA and TSA: a study of public sector and private sector banks in India, DECISION: Official Journal of the Indian Institute of Management Calcutta, Springer; Indian Institute of Management Calcutta, vol. 43(1), pages 67-92, March.

Bajaj, Richa Verma (2023), Operational Risk: The Changing Regulatory Landscape, paper presented at Global Conference on Financial Resilience-Keeping the Financial System Resilient, Future-Ready & Crisis Immune, Smelling Distress in Advances, College of Supervisors, Reserve Bank of India, April 27-29, 2023.

Basel (2014), Operational risk - Revisions to the simpler approaches, October, available at www.bis.org/publ/bcbs291.htm.

Basel (2017), Basel III - Finalizing post-crises reforms, December 7.

[12] https://www.wtwco.com/en-gb/insights/2020/10/basel-iii-and-operational-risk

Reserve Bank of India (2005), Guidance note on Management of Operational Risk, Department of Banking Operations and Development, Central Office, Mumbai.

Reserve Bank of India (2023), Master Circular on Basel III – Capital Regulation, May 12. https://rbidocs.rbi.org.in/rdocs/notification/PDFs/31MCE5308DBA8F0D411C80989DDF3259E843.PDF

Reserve Bank of India (2023), Master Direction on Minimum Capital requirement for Operational Risk, June 26. https://rbidocs.rbi.org.in/rdocs/notification/PDFs/103MDCAPITALREQUIREMENTS50C9076B7D494F259CC908D618297293.PDF

Table I: Components of Business Indicator (in percent)

	Interest Income/ Total Income	*Other Income to Total Income*	*Fee Income to Other Income*	*P/L from Trading Book to Other Income*	*Other Operating Income to Other Income*	*Interest Expenses to Total Expenses*	*Operating Expenses to Total Expenses*
Public Sector Banks							
BANK OF BARODA	84.50%	15.50%	19.49%	38.62%	41.89%	50%	25%
BANK OF INDIA	85.58%	14.42%	16.17%	56.04%	27.79%	58%	24%
BANK OF MAHARASHTRA	81.87%	18.13%	39.62%	27.47%	32.91%	50%	26%
CANARA BANK	82.28%	17.72%	13.67%	32.68%	53.65%	55%	24%
CENTRAL BANK OF INDIA	87.95%	12.05%	33.43%	45.44%	21.13%	54%	25%
INDIAN BANK	87.38%	12.62%	13.57%	37.19%	49.24%	56%	25%
INDIAN OVERSEAS BANK	75.32%	24.68%	17.06%	43.59%	39.35%	51%	26%
PUNJAB AND SIND BANK	88.53%	11.47%	10.23%	49.07%	40.70%	44%	23%
PUNJAB NATIONAL BANK	87.14%	12.86%	32.21%	33.67%	34.11%	55%	22%
STATE BANK OF INDIA	85.91%	14.09%	54.07%	19.41%	26.53%	54%	29%
UCO BANK	80.84%	19.16%	4.47%	49.98%	45.55%	51%	27%
UNION BANK OF INDIA	85.41%	14.59%	10.57%	38.25%	51.17%	57%	22%
Overall	85.17%	14.83%	31.11%	32.05%	36.84%	54%	26%
Private Sector Banks							
AXIS BANK LIMITED	83.78%	16.22%	76.31%	20.80%	2.88%	49%	27%
BANDHAN BANK LIMITED	86.10%	13.90%	41.52%	11.00%	47.48%	40%	23%
CITY UNION BANK LIMITED	85.72%	14.28%	7.46%	44.91%	47.63%	54%	25%
CSB BANK LIMITED	86.07%	13.93%	16.41%	35.37%	48.22%	48%	37%
DCB BANK LIMITED	88.58%	11.42%	43.87%	35.35%	20.78%	61%	24%
FEDERAL BANK LTD	87.54%	12.46%	52.97%	41.69%	5.34%	58%	26%
HDFC BANK LTD.	82.74%	17.26%	64.15%	25.02%	10.83%	49%	28%
ICICI BANK LIMITED	80.66%	19.34%	55.29%	37.38%	7.33%	49%	26%
IDBI BANK LIMITED	81.39%	18.61%	38.33%	44.81%	16.86%	49%	26%
IDFC FIRST BANK LIMITED	87.84%	12.16%	67.81%	31.23%	0.95%	48%	40%
INDUSIND BANK LTD	81.56%	18.44%	53.03%	42.80%	4.16%	47%	26%
JAMMU & KASHMIR BANK LTD	92.14%	7.86%	29.99%	34.06%	35.95%	52%	34%
KARNATAKA BANK LTD	81.61%	18.39%	25.34%	39.23%	35.43%	57%	23%
KARUR VYSYA BANK LTD	85.62%	14.38%	59.66%	27.08%	13.26%	52%	33%

	Interest Income/ Total Income	*Other Income to Total Income*	*Fee Income to Other Income*	*P/L from Trading Book to Other Income*	*Other Operating Income to Other Income*	*Interest Expenses to Total Expenses*	*Operating Expenses to Total Expenses*
KOTAK MAHINDRA BANK LTD.	83.10%	16.90%	61.99%	27.59%	10.43%	45%	34%
NAINITAL BANK LTD	92.80%	7.20%	9.06%	35.44%	55.49%	57%	25%
RBL BANK LIMITED	81.55%	18.45%	76.21%	23.06%	0.72%	47%	28%
SOUTH INDIAN BANK LTD	85.60%	14.40%	4.07%	41.60%	54.33%	58%	23%
TAMILNAD MERCANTILE BANK LTD	84.85%	15.15%	26.38%	28.00%	45.61%	57%	27%
THE DHANALAKSHMI BANK LTD	88.39%	11.61%	4.17%	46.66%	49.17%	59%	36%
YES BANK LTD.	86.94%	13.06%	41.01%	45.93%	13.05%	48%	22%
Overall	83.29%	16.71%	57.74%	31.16%	11.10%	49%	28%
Foreign Banks							
AB BANK LIMITED	17.83%	82.17%	85.85%	2.00%	12.15%	5%	73%
ABU DHABI COMMERCIAL BANK PJSC	97.13%	2.87%	0.00%	0.00%	100.00%	0%	77%
AMERICAN EXPRESS BANKING CORP.	45.43%	54.57%	98.41%	0.00%	1.58%	6%	78%
AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED	83.45%	16.55%	17.81%	35.41%	46.78%	36%	41%
BANK OF AMERICA , NATIONAL ASSOCIATION	71.45%	28.55%	18.69%	72.87%	8.45%	27%	35%
BANK OF BAHRAIN & KUWAIT B.S.C.	90.58%	9.42%	44.59%	45.44%	9.97%	73%	23%
BANK OF CEYLON	83.82%	16.18%	33.53%	26.67%	39.79%	35%	24%
BANK OF CHINA LIMITED	92.19%	7.81%	247.81%	-147.81%	0.00%	5%	93%
BANK OF NOVA SCOTIA	96.32%	3.68%	63.76%	-35.84%	72.08%	48%	47%
BARCLAYS BANK PLC	72.34%	27.66%	66.11%	31.24%	2.65%	23%	37%
BNP PARIBAS	79.14%	20.86%	14.69%	76.71%	8.59%	35%	33%
CITIBANK N.A	78.53%	21.47%	34.44%	59.31%	6.25%	29%	37%
COOPERATIEVE RABOBANK U.A.	94.75%	5.25%	226.50%	-137.01%	10.51%	46%	38%
CREDIT AGRICOLE CORPORATE AND INVESTMENT BANK	96.07%	3.93%	61.39%	-5.08%	43.69%	62%	47%
CREDIT SUISSE AG	85.19%	14.81%	13.05%	74.79%	12.17%	45%	14%
CTBC BANK CO., LTD.	83.73%	16.27%	16.51%	81.79%	1.71%	43%	41%
DBS BANK INDIA LTD.	76.76%	23.24%	41.49%	57.60%	0.91%	44%	42%

	Interest Income/ Total Income	*Other Income to Total Income*	*Fee Income to Other Income*	*P/L from Trading Book to Other Income*	*Other Operating Income to Other Income*	*Interest Expenses to Total Expenses*	*Operating Expenses to Total Expenses*
DEUTSCHE BANK AG	85.22%	14.78%	36.67%	57.90%	5.43%	37%	38%
DOHA BANK Q.P.S.C	83.59%	16.41%	35.59%	60.73%	3.68%	56%	41%
EMIRATES NBD BANK (P.J.S.C.)	82.51%	17.49%	17.98%	67.36%	14.66%	34%	46%
FIRST ABU DHABI BANK PJSC	86.57%	13.43%	46.98%	50.02%	3.00%	35%	25%
FIRSTRAND BANK LTD	66.88%	33.12%	6.27%	34.85%	58.87%	28%	68%
HONGKONG AND SHANGHAI BANKING CORPN.LTD.	84.35%	15.65%	28.89%	69.99%	1.12%	35%	37%
INDUSTRIAL AND COMMERCIAL BANK OF CHINA	84.94%	15.06%	43.53%	55.58%	0.90%	45%	22%
INDUSTRIAL BANK OF KOREA	79.67%	20.33%	43.94%	54.73%	1.33%	11%	43%
JPMORGAN CHASE BANK NATIONAL ASSOCIATION	64.96%	35.04%	16.68%	82.13%	1.19%	21%	22%
JSC VTB BANK	13.59%	86.41%	0.00%	99.93%	0.07%	0%	35%
KEB HANA BANK	85.12%	14.88%	23.03%	76.67%	0.30%	39%	37%
KOOKMIN BANK	96.68%	3.32%	47.00%	51.74%	1.26%	42%	40%
KRUNG THAI BANK PUBLIC COMPANY LIMITED	97.67%	2.33%	9.15%	90.85%	0.00%	52%	41%
MASHREQ BANK PSC	74.65%	25.35%	98.35%	0.29%	1.37%	17%	63%
MIZUHO BANK LTD	82.71%	17.29%	37.34%	63.17%	-0.52%	44%	33%
MUFG BANK LTD	77.43%	22.57%	19.50%	64.58%	15.92%	49%	29%
NATWEST MARKETS PLC	99.20%	0.80%	0.00%	10.83%	89.17%	7%	61%
PT BANK MAYBANK INDONESIA TBK	67.82%	32.18%	44.33%	36.79%	18.89%	1%	99%
QATAR NATIONAL BANK (Q.P.S.C.)	79.65%	20.35%	99.29%	0.71%	0.00%	44%	46%
SBERBANK	6.35%	93.65%	1.97%	97.11%	0.92%	1%	31%
SBM BANK (INDIA) LTD.	76.01%	23.99%	45.66%	32.64%	21.71%	54%	44%
SHINHAN BANK	88.83%	11.17%	19.86%	79.79%	0.35%	60%	24%
SOCIETE GENERALE	75.60%	24.40%	26.14%	70.45%	3.41%	31%	42%
SONALI BANK	31.51%	68.49%	81.89%	18.11%	0.00%	19%	59%
STANDARD CHARTERED BANK	80.76%	19.24%	48.93%	46.54%	4.53%	40%	34%
SUMITOMO MITSUI BANKING CORPORATION	88.76%	11.24%	51.76%	46.90%	1.34%	55%	19%

	Interest Income/ Total Income	*Other Income to Total Income*	*Fee Income to Other Income*	*P/L from Trading Book to Other Income*	*Other Operating Income to Other Income*	*Interest Expenses to Total Expenses*	*Operating Expenses to Total Expenses*
UNITED OVERSEAS BANK LTD	76.89%	23.11%	30.06%	69.80%	0.14%	44%	35%
WOORI BANK	86.07%	13.93%	49.66%	50.32%	0.02%	55%	27%
Overall	79.26%	20.74%	85.85%	2.00%	12.15%	35%	36%

Source: Database of Indian Economy, RBI

Table II: BI ranges and marginal coefficients

Bucket	*BI range (Rs. in crores)*	*BI marginal coefficients (αi)*
1	≤ 8000	12%
2	8000< BI ≤ 240000	15%
3	>240000	18%

Source: RBI Master Direction, June 2023

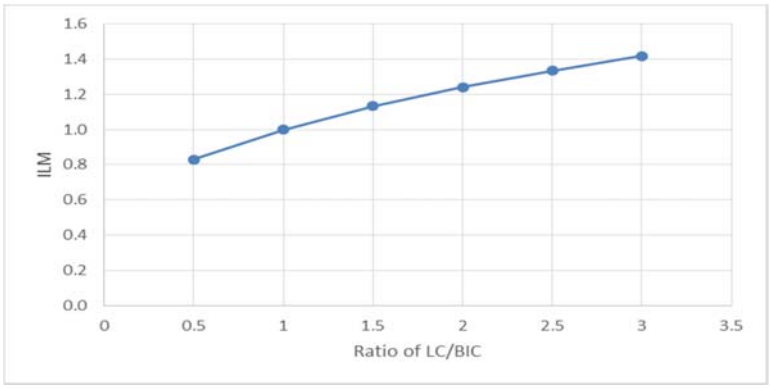
Table III: BI Buckets and ILM

BI Buckets and Loss Data	*ILM*	*SA Capital Charge*
For Banks in BI Bucket 1 and Banks in Bucket 2 and 3 (with loss data of <5 years)	ILM<1	ORC = BIC
Bank in Bucket 2 and 3 (with loss data of (i) < 5 years and (ii) 5 years and above of high quality operational Loss Data)	ILM>1	ORC = BIC *ILM

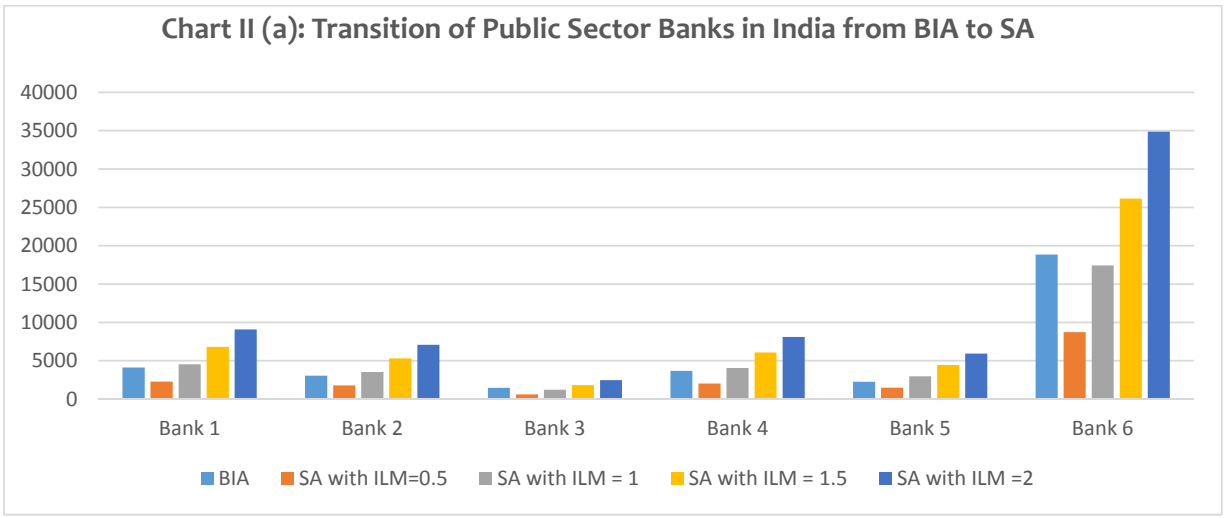
Source: RBI Master Direction, June 2023

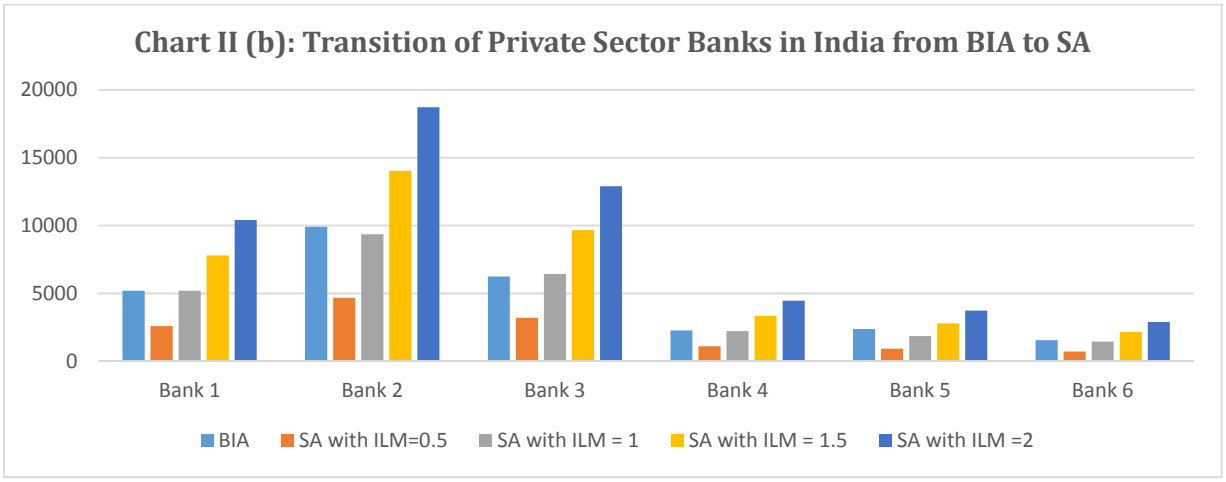
Chart I: Internal Loss Multiplier

(Ratio of Loss Component to Business Indicator Component)



Source: Authors own





Source: Authors own