20. Operational Risk

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20.1 Introduction

The Basel Committee has defined operational risk as "the risk of loss resulting from inadequate or failed internal process, people and systems or from external events" (see Figure 1. This excludes strategic and reputational risk. It introduced capital requirements for Operational Risk as part of Basel 2 in 2006.

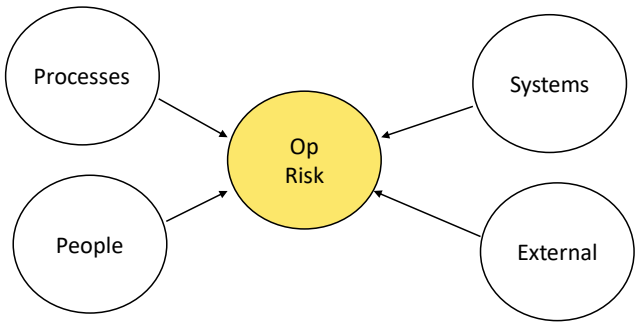

FIGURE 1: THE BASEL SCHEMA OF SOURCES OF OPERATION RISK

Typical event categories for OR are listed (with some examples given) in Table 1 (Attachment E of APRA's APS 115 gives more detail).

TABLE 1: OPERATIONAL RISK CATEGORIES AND EXAMPLES

Category	Examples of causes of losses

Internal Fraud	Unauthorised activity (such as rogue traders) or theft by employees
External Fraud	Robbery or "hacking" of computer systems
Employment Practices & Workplace Safety	Workers compensation, legal proceedings regarding discrimination
Clients, Products and Business Practices	Breaches of suitability, disclosure and fiduciary requirements, improper business/market practices, flaws in products, unsuitable advice
Damage to Physical Assets	Weather events, vandalism
Business Disruption and System Failures	Telecommunications failures, software or hardware failure
Execution, Delivery & Process Management	Data/accounting entry errors, missed delivery deadlines, non-compliance with reporting requirements, incomplete documentation/authority for transactions

At a general level the types of operational risk outlined in Table 1 are relevant to any type of business, and not specific to banks (or other financial institutions). But the various activities of banks may create particular exposures to certain types of events. And one problem for bank management and for the design of regulatory arrangements aimed at ensuring bank safety is that losses from such events will vary in size and frequency and be of different significance in different parts of bank activities. In some areas there may be quite frequent losses of small amounts, while in others there is risk of a very unlikely event which involves very large losses. This heterogeneity has meant that the application of statistical modelling to derive overall operational risk capital requirements, initially favoured by the Basel Committee, has proven unsuccessful and led to the subsequent adoption of less technical approaches.

The types and level (the possible losses) of operational risk will vary across different bank activities. The Basel Committee's original *Standardised Approach* for OR provides some indication of *their view* of its relative importance for different activities. That approach linked OR capital requirements to gross income (defined as Net Interest Income (NII) plus Non Interest Income (NON)) of categories of

business activities, with different weights for each category. (NII can be seen as a proxy for the scale of bank intermediation via raising funds and lending/investing, while NON is a proxy for the scale of other activities)[1]. Table 2 illustrates, where the numbers in brackets indicate the ranking in importance as inferred from the associated capital requirements. (More detail on activities in each of these activities can be found in Attachment D of APRA's APS 115.

TABLE 2:BASEL COMMITTEE IMPLIED OPERATIONAL RISK RANKINGS OF BUSINESS UNITS

Business Unit Operational Risk Ranking
Corporate Finance (1)
Trading/Sales (1)
Retail Banking (3)
Commercial Banking (2)
Payments & Settlements (1)
Agency Services (2)
Asset management (3)
Retail brokerage (3)

There is a wide range of OR events which give rise to losses, ranging from very small amounts to very large amounts. Some, such as system failures leading to non-functioning of merchants' EFTPOS terminals, involve losses for customers (cancelled sales) as well as for the bank (via lost merchant fees). And such events can also impact adversely on the reputation of the ADI (not categorised as an OR) and affect future business.

Some of the very large OR events are worth briefly reviewing

Rogue Traders and Operational Risk

Experience, both domestically and overseas, has shown that banks can suffer extremely large losses when inadequately controlled traders undertake transactions which are inconsistent with the limits meant to apply to their activities. In some cases, the activities may have been undertaken to

[1] They are imperfect proxies. While fees associated with intermediation could be included in NON, it can be expected that an increase in such fees would be offset by a lower NII.

deliberately defraud the bank, including by reporting fictitious profits to generate salary bonuses. But in some others it is a cumulative process arising from failed attempts to hide trading losses in the hope that further profitable trading will enable the position to be rectified. In some cases ,the rogue trading remains disguised for a number of years.

Arguably, remuneration structures which reward profitable traders with very large bonuses create a moral hazard problem by encouraging them to take on high risk positions. Regulators have responded to this source of risk by attempting to ensure that remuneration arrangements are conducive to appropriate risk taking.

International examples of "infamous" rogue traders include (with amounts involved in USD):

- Nick Leeson whose losses of over $1 billion in the mid 1990s led to the collapse of the 233 year old Barings Bank;
- The "London Whale" (Bruno Iksil), at JP Morgan, whose losses of $6.2 billion were discovered in 2012
- Jerome Kerviel of Societe Generale whose losses of over $7 billion were exposed in 2007
- John Rusnak of Allfirst Financial, part of Allied Irish bank, whose trading losses of $700m were exposed in 2002

The last example is particularly interesting since the bank commissioned the consultancy firm *Promontory* to investigate and report on the failings in risk management and compliance that allowed this to happen – and released that report publicly. Most major banks took notice of the report and asked consultants it investigate whether they were at risk of similar activities.

One Australian bank to do so was NAB, and the consultant's report did not identify problems for the bank. But, nevertheless, within two years NAB discovered that it had been home to a group of rogue traders and suffered a loss of AUD 360million. Both a report commissioned by the NAB Board and an APRA report into the control and risk management failings were publicly released. Ultimately the scandal let to the exit of the Chief Executive Ofiicer, other senior management and members of the Board. The Bank was required to undertake a program of remediation.

AML/CTF and Operational Risk

One illustration of the relevance of operational risk can be found in the massive penalties imposed on CBA and Westpac in 2018 and 2020 respectively by AUSTRAC. On its website AUSTRAC describes

its role as being "responsible for preventing, detecting and responding to criminal abuse of the financial system to protect the community from serious and organised crime". CBA paid a penalty of $700 million and Westpac a penalty of $1.3 billion, equal to around 7 and 20 per cent respectively of prior year profits. Details of the failures by the banks to identify and report suspicious transactions involving money laundering can be found on the Austrac list of enforcement actions

The legal basis for these fines derives from a set of regulatory arrangements developed internationally by the inter-governmental body, the Financial Action Task Force (FATF) which was established in 1989. AUSTRAC and similar government organisations in other countries monitor the actions of financial institutions and others with the aim of eliminating money laundering and terrorist financing. In effect, the approach involves outsourcing responsibility for policing these illegal activities to banks and other private sector entities. Banks are required to identify and report to AUSTRAC "suspicious" transactions, including any cash transaction above $10,000, and to take actions to prevent such transactions unless determined to be legitimate. While some transactions should be easily identifiable as suspicious, identification is made difficult by the disguising of money laundering transactions as business payments and receipts using fake invoices.

Huge penalties have also been imposed on banks in other jurisdictions for breaches of their AML/CTF obligations. But some would argue that the regulatory structure which has been put in place is inappropriate. The banks, after all, are not the ones actually undertaking illegal acts. They are involved because they operate the payments system through which transfers of funds are made. Imposing a "policing" role on them requires them to incur very large costs of compliance staff and software development to fulfil the task they have been assigned. While penalties for not adequately fulfilling the task should incentivise them, the rationale for the scale of those penalties can be questioned. Indeed Ronald Pol has argued in a 2020 article in the journal *Policy Design and Practice* that the approach of using money flows to detect and prevent serious crime is extremely ineffective in stopping and penalising crime – which is (or should be) the objective.

The Hayne Royal Commission and Operational Risk

It could be argued that the Hayne Royal Commission, which was charged with examining misconduct in the financial sector, was actually all about examining certain types of operational risk. Justice Hayne found many examples of miss-selling of products, poor financial advice, non-adherence to contract terms, fees for no service, etc. by ADIs and other financial institutions. Consequently there

have been large amounts of remedial payments to affected customers by the institutions concerned, as well as penalties imposed by regulators.

Whether the institutions have actually suffered losses as a result of the misconduct, and its exposure, is an open question. Activities such as sales of unsuitable products, or charging excessive fees, generate profit for the ADI. Subsequent remedial payments and penalties may be less than the profits which were generated. Consider a very simple, hypothetical example. Suppose a bank had a deposit of $1 million from a customer for one year and paid zero interest on the deposit rather than the correct amount of $50,000 based on the proper interest rate of 5 per cent p.a. It used those funds to make a $1 million one year loan at 10 per cent p.a. generating income of $100,000. The error is discovered at the end of the year and a remedial payment of $50,000 made to the customer. The banks still makes a profit of $50,000 (rather than $100,000 which it would have made if the error had not been discovered).

Of course, in more realistic, complex, examples the bank may incur significant operational costs in identifying and investigating thousands of cases where customers may have been mistreated. And additional financial penalties may be imposed by regulators. Clearly, getting caught out for misbehaviour imposes costs on the bank, but whether those costs are sufficient for the bank to expend the resources required to ensure no future repetition of similar events is another matter. But some penalties imposed have been relatively large – particularly by reference to earlier years (when ASIC's approach to misconduct had generally been to encourage negotiation of a settlement with customers (with no admission of liability) rather than to prosecute). In its enforcement update (Report 688) for the second half of 2020, ASIC stated that penalties of $57.5 million had been imposed by the courts on two NAB subsidiaries for fees-for-no-service misconduct.

The amounts involved for the large Australian banks have been extremely large. Since the Hayne Royal Commission of 2018, each of the major banks has made provisions in its accounts for remediation expenses (payments to customers and additional operating costs in dealing with the issues) of well over $1 billion. Getting precise information on the actual, cumulative, amounts over a multi-year horizon is not simple, since the banks (naturally) do not emphasize these in the public reporting.

20.2 Attempting to Quantify Operational Risk

Quantifying operational risk is problematic, given the range of possible events and different scales of events. Similar to its approach to credit and market risk, the Basel Committee initially adopted an approach of attempting to derive a Value at Risk estimate for operational risk which could be used for setting capital requirements. To quantify probability and size of possible losses, approaches which have been used include

- Loss distribution approaches – estimating probability distributions based on historical data
- Scenario Analysis
- Scorecards – "expert" judgement of probability and size of losses from various types of events

For banks accredited to use what was called the "*Advanced Management Approach*", a value at risk type estimate could be obtained from such approaches and a capital requirement obtained. For smaller institutions and those not accredited to use internal models, Basel 2 capital requirements used either a *Basic Indicator* approach or a *Standardised Approach.* The latter related the risk to the gross income from various activities with different weights for each activity (as implied in Table 2) to get a total. The capital requirement ranged from 12 to 18 per cent of gross income (over the last three years – only counting years where it was positive) where

Gross income = NII + NON = (approximately) non interest expenses + profits

For the *Basic Indicator* approach, a 15 per cent multiplier was applied to the average annual gross income of the bank as a whole over the previous three years (only counting positive cases).

Why would a capital requirement for operational risk in the basic indicator approach of Basel be related to gross income rather than profits or net income? Will this choice imply different impacts upon different types of deposit taking institutions? If the capital charge for OR is linked to gross income, how will it vary with changes in the level of interest rates?

Initially the Basel Committee proposed a calibration of the capital requirement for OR such that it would be equal to 20% of total capital requirement (and subsequently reduced this to 12%).

APRA's implementation of the standardised approach involved a bank doing the following.

1. Dividing activities into retail banking, commercial banking, and other activities
2. Applying specified OR capital requirements to each component and aggregating.

The OR capital requirements for retail and commercial banking areas are related to the size of gross outstanding loans and advances in those areas, while for other activities, "adjusted gross income" (AGI) which excludes income from those two areas is the basis for calculation. The calculation uses the average of the last six half years. For retail banking the capital required is 0.12*0.035* LAR and for commercial banking it is 0.15*0.035*LAC where LAR and LAC are gross loans and advances in retail and banking areas respectively. (The 0.035 is a scaling factor). For "other activities" the capital required is twice the average of max[(0.18*AGI), 0]. Once the aggregate capital requirement is calculated it is multiplied by 12.5 to convert to a risk-weighted asset equivalent.

Would APRA's standardised approach be likely to lead to higher or lower OR capital requirement than if it used the Basic indicator Approach? (Hint: Compare the 0.035 scaling factor with Gross income/Assets)

20.3 The "new" Basel Approach

Recently, as part of the Basel III finalisation, the Basel Committee has eschewed the Advanced Management Approach, which reflects the difficulties with modelling OR and the Standardised Approach. This was signalled in a consultation paper released in March 2016. It proposed, for larger banks, an alternative Standardised Measurement Approach (SMA) which combines the *Business Indicator* approach with historical loss data from the bank's experience. In its December 2017 paper (summarised here) it adopted such an approach, to be implemented by 2023.

This approach, to apply to all banks other than smaller institutions which follow the simplified framework, specifies:

Required Operational risk capital = BIC x ILM.

where

- BIC is the business Indicator component defined as a weighted sum of (i) interest, leases & dividends component (ii) services component, and (iii) financial component, with weights related to the total value of activities

- ILM (the internal loss multiplier) incorporates a measure of the average historical losses over the preceding 10 years.

Many critics have pointed out that the ILM could lead to some strange time-series behaviour (and cross- sectional inequities) in the capital requirement, such as when a bank had a very large operational loss event 10 years ago and virtually none since. The following year the large figure would drop out of the calculation and see a marked decline in the required capital position.

There are three key points to note about the BIC, which APRA has largely followed (other than rejecting the inclusion of the ILM multiplier). First, rather than apply different weights to different activities, the method of calculating each of the three components is different. Second, to allow for different business models, the calculations are often based on the higher or lower of two variables. Third, in general, the calculations are done for an average over the preceding three years to reduce short run variability in the OR capital requirement.

20.4 The "new" APRA Approach

In December 2019, APRA finalised its updating of the prudential standard APS 115.0 on the Standardised Measurement Approach for operational risk capital requirements, and released ARS 115.0, the Reporting Standard in March 2021. The new APS115.0 standard takes effect from 1 January 2023 (changed from 1 January 2022).

Smaller ADIs

In its December 2020 consultation, APRA signalled a simpler approach for smaller ADIs (assets less than $20 billion) in which there would be a flat operational risk capital charge of 10 per cent of RWA. This is aimed at reducing compliance and regulatory burdens for smaller institutions under the objective of "proportionality", without compromising prudential safety. For smaller, less complex ADIs, APRA has decided to adopt a "flat-rate capital add-on" This approach is to apply to ADIs with less than $15-20 billion in total assets, provided their activities are relatively simple and domestic in nature. This would "exclude any ADIs with a trading book, material non-centrally cleared derivatives exposures, offshore funding and purchased payment facility providers" as well as foreign subsidiary banks and foreign banks.

Larger ADIs

APRA rejected the use of the internal loss multiplier approach for the SMA approach on the grounds of complexity and potential volatility. But otherwise it generally follows the new Basel approach. It requires ADIs to calculate the OR capital charge as 12 per cent of its *business indicator (BI)* plus additional amounts if BI exceeds $1.5 billion and if BI exceeds $45 billion. The increase in the marginal capital charge with BI (which is related to the ADI size) is argued to be appropriate given the increased complexity of larger institutions.

Business Indicator (BI) value ($billions)	OR capital charge
< $1.5	0.12 x BI
$1.5 < BI < $45	0.12 x BI +0.03 x (BI – 1.5)
BI > $45	0.12 x BI +0.03 x (BI – 1.5) +0.03 x (BI-45)

Unlike the *basic indicator* which previously applied to smaller institutions (and which has now been replaced by a *flat rate capital add-on* or the standardised approach, the BI involves a somewhat obscure calculation. The BI value is calculated as the sum of three components:

$$BI = ILDC + SC + FC \quad (1)$$

where:

- ILDC is the interest leases and dividend component
- SC is the service component
- FC is the financial component.

Calculation of these components is complex, and generally involves averaging over the past three year's figures to reduce year by year variability in the components. In deriving the formulae, the Basel Committee aimed "to avoid penalising certain business models, such as those based on the distribution of products bought from third parties, and those based on high interest margins".

The three components of BI in equation (1) are broadly related respectively to the Income Statement items (NII + Fees + Trading Income) that add up to Gross Income (ie Income before operating expenses). But since some items in some years could be negative (eg trading income), the absolute values are taken such that a loss in one year and a profit in another year of the same

amount would contribute equally in the calculation. The reason is that it is the scale of the activities which is likely to be related to operational risk. In addition, rather than netting some items of income and expense, both income and expense are included as better reflecting operational risk contributors.

Knowledge of the precise formulae used is obviously important to the bankers and regulators with responsibility for calculating the OR capital charge, and potentially relevant for researchers who may want to examine the merits of the formulae. But for others, it is a mind-numbing complexity which is best avoided. In case any readers are interested, the box below provides some of the detail.

Calculating the BI Components

ILDC can be thought of as similar to NII (but also incorporating leases etc), although if the sum of an *asset component,* defined approximately as 2.25 x gross financial assets, and the *dividend component* (dividends received from investments in stocks etc) is smaller, that latter figure is used. Thus a bank engaged in activities which have a very high NIM, would have the ILDS calculated using the asset and dividend component estimate. (Notably, whereas the Basel Committee used a 3.5 multiplier of gross financial assets, APRA has adopted a 2.25 figure).

The SC calculation is quite complex. It is based essentially on the sum of two main components. One is the maximum of fee and commission income and expenses, such that it is the scale of these activities which matters since that (rather than the net amount) better reflects potential operational losses. (A very complex adjustment to this component aims to offset a potentially excessively high OR capital requirement from banks with business models emphasising fee income). By taking the maxima, the Basel Committee argues that this does not create unwanted biases in the OR capital charge between those banks that both originate and distribute mortgages by way of securitisation and those banks which purchase loans from third parties to securitise. The latter would incur fees and expenses in the loan purchase activity, whereas the former would not. The second component is, for similar reasons, the maximum of other operating income and other operating expenses.

FC comprises a trading book component and a banking book component, both based on three year averages. The former is the three year average of the absolute values of trading book profit or loss. The banking book component is similarly calculated using profit or loss on “mark to market” items in the book.

20.5 Discretionary Changes in Operational Risk Capital requirements

APRA has imposed additional operational risk capital charges on ADIs in response to identified deficiencies in their governance, accountability and risk-management frameworks. There are two possible rationales for such changes.

One is that the ADI is perceived to have a heightened level of risk as a result of those deficiencies and thus higher level of capital than prescribed by the usual requirements is needed to act as a buffer for possible losses. It is unlikely that APRA would publicise such measures in order to avoid reducing public confidence in the ADI.

The other is that imposing such an additional capital charge will provide an incentive for the ADI to quickly rectify those deficiencies. If the requirement to have a higher level of capital imposes costs on the bank (which occurs if the cost of funding via equity exceeds that of other non-equity funding) the adverse impact on profitability should spur quicker rectification of those deficiencies. To the extent that there are no concerns about the ADI's immediate prudential position (such as from having a night capital ratio) then publicising the add-on should not reduce public confidence in the ADI's solvency, and may increase incentives to act quickly through reputation effects on the ADI's board and management.

In May 2018, APRA used this approach following the findings of the Prudential Inquiry into CBA and announced a $1 billion capital add-on. Subsequently in November 2020 the add-on was reduced to $500 million as a result of the bank's progress in implementing the agreed Remedial Action Plan (RAP).

In July 2019 APRA applied $500 million OR capital requirement add-ons to ANZ, NAB and Westpac "to reflect higher operational risk identified in their risk governance self-assessments" conducted following the Prudential Inquiry into CBA. Then in December 2019, APRA increased the Westpac add-on to $1 billion. The additional impost was in response to the bank's slow progress in rectifying matters (including breaches of APRA's liquidity standard). The December 2019 Media Release emphasised that "Westpac is financially sound".

In April 2021 APRA also applied higher OR (and liquidity) capital requirements on Macquarie Bank in response to breaches of prudential and reporting standards, arising from inadequate arrangements for managing operational risk due to it complex intra-group structure. The media release stressed

that these “breaches are historical and do not impact on the current overall soundness of Macquarie Group’s capital or liquidity positions.” The penalty involved an extra $500 million OR capital requirement (as well as adjustments to the bank’s LCR and NSFR calculations).

What are the effects of such add-on capital requirements. First they don’t immediately require the banks to raise extra equity capital. They have capital surplus to the regulatory minimum requirement, so the main effect is to reduce the size of this buffer (of the ratio of CET1 capital to risk weighted assets (RWA)) by 15-20 basis points for the major banks, because the capital ratio falls. But if banks raise capital or keep it unchanged, why would the capital position (the numerator of the capital ratio) cause a reduction in the ratio?

The reason is that, APRA having decided on a dollar amount of capital add-on requirement, that number (eg $500 million) is converted into a Risk Weighted Assets (RWA) equivalent by multiplying it by the 12.5 multiplier used for operational risk capital calculations. (So $500 capital is equivalent to $6250 million of additional RWA). With a resulting higher level of RWA and unchanged current level of actual capital, the banks’ capital ratios therefore initially decrease.

Whether this would have caused any change in bank loan interest rates probably depends on the size of their capital buffers and views on likely duration of the impost. Probably the main benefit from this action is the reputation “game” it introduces. Banks had been sluggish in addressing issues in risk culture. Each bank could be expected to want to win the public race to be first to have the capital impost removed as a signal to markets that it has a superior risk culture to its peers.