Why the Implementation of Advanced Measurement Approach in Operational Risk Management Isn't A So Good Idea: The Albanian Banking System Case

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Abstract

Operational risk management is still a new concept for the entire albanian banking system. Basically Basel II represented a green light for the next future in this context while dealing in a complex environment. And then, it was the right time for the international banking groups' affiliates operating in Albania to undertake the necessary measures in order to implement the proposed Operational Risk Management Methodology. Nowadays the albanian banking system is concentrating the synergies to the Advanced Measurement Approach (AMA) regarding the operational risk capital estimation. By hopping that AMA would save capital, every single effort made is justified for the time being. But preliminary the system is suggested to analyze if it'll be worth all this.

***Key words**: advanced measurement approach, albanian banking system, operational risk*

1. Introduction

The underlying idea of AMA is that banks use their internal models to estimate the necessary capital for operational risk management, which would align it with economical capital. By this way, using AMA instead of other much simpler alternative approaches in operational risk management such as Basic Indicator Approach (BIA) and Standard Indicator Approach (STA) it can be allocated a lower capital charge related. Within the available guide regarding, the system can't be totally convinced if it's profitable to use AMA in terms of cost–benefit analysis which can further contribute in a better operational risk management as well as on building a safe banking business as pretended. Consequently we will be briefly focused on the Advanced Measurement Approach aiming to identify the main issues faced from the albanian banking system while trying to implement it.

2. What does AMA represents?

Generally the literature describes AMA with two components the LDA (Loss Distribution Approach) and IMA (Internal Measurement Approach) which encompasses scenarios and scorecards without precise restrictions.

In any case for adopting this approach is necessary for a period of time to be under supervisor monitoring, which reserves the right to determine if the internal approach of the bank is appropriated and credible. The most important is that the internal measurement system estimates reasonably well operational risk expected and unexpected losses based on the combined used of data about internal losses calibrated with relevant external losses and use of scenario analysis adjusted with information from business environment and internal control factors as also mentioned from Rao and Dev (2006).

By this way the system should be capable of allocating economical capital for operational risk in each business line acting as an incentive to improve its management in the business lines.

2.1Internal data

If, banks collect 3 to 5 years of historical data about operational risk events, they will be able to use the methodology denominated "Loss Distribution Approach". This approach assumes that by using these data it's possible to build 2 distributions:

1. Frequency distribution;
2. Severity distribution.

And the next step accordingly, is to aggregate both distributions using the Monte Carlo simulation by resulting in one distribution the Aggregated Loss Distribution (ALD).

2.2 External data

The use of external data is also an AMA requirement from Basel II. The collected data can be used in two different methods:

1. Scenario analysis as quality data (very conservative approach);
2. LDA approach as quantitative data.

Referring to the second method (as the first one will be explained in the next section), before the banks include the external data on their own modelling process is necessary to define some elements:

1. Data treatment:
   a. Linear adjustment: a unique coefficient is applied for adjusting data to institution dimension;
   b. No-linear adjustment: define specific coefficients for each type of event using regressions;
   c. Data filter: guarantee that the data are used from institutions with similar dimensions;
   d. Not doing any data adjustment but just integrate them on the modelling process.

2. How to join internal and external data:
    a. Common usage: Aggregate external data to internal database, creating a more robust base and apply previously presented methods;
    b. Separate usage: Internal and external data are analyzed separately; creating a specific ALD just for this set of data and after integrates both using one of the following techniques: qualitative integration, aggregation throw linear combinatory Bayesian aggregation or Convolution.
3. If the previous choice is the common usage, then define how to treat losses amount:
    a. Aggregation made without consider loss amount;
    b. Aggregation made using loss amount criteria: internal data are used to model losses below a specific level and extremes for modeling loss above this level.
4. Define external data proportion in the final data base used to estimate capital adequacy ratio.

2.3 Scenario analysis

Scenario analysis is an important element for AMA in operational risk management. As known one of the major problems that the Albanian banking system faces when tries to model operational risk is the lack of information either internal or external. But, this factor is critical for statistical estimation of event's severity distribution and according to Basel, institutions are obligated to use scenario analysis to validate or incorporate additional data to their previous results, mainly for extreme events.

The goal of scenario analysis is to create fictional events , with the same event's characteristics happened in the past, but due to lack of information they can't be included in the statistical analysis.

2.4 Business Environment

For AMA's implementation another necessary requirement is adjusting results of modelling internal data by using institution's risk factors identified as cause of the loss events.

The above mentioned information is used in several levels:

- Indirect calibration while implementing scenario analysis (methodology presented in above);
- Direct calibration after aggregating LDA approach with scenario analysis.

3. Issues derived while implementing AMA?

As foreseen, the AMA's implementation requires the fulfillment of a lot of preconditions from the institutions (see Table 1) and the major part of the second level banks operating in Albania could not be expected to meet them for years especially when regulatory requirements regarding operational risk management are basic. But it should be also considered that, generally the operational risk quantification as per AMA's requirements is still a difficult task for the time being due to: data shortages, the nature of operational risk and lack of a strongly risk-sensitive exposure measure in operational risk modelling. Anyway the major part of the banks in the albanian banking system are trying to make a step ahead regarding the own operational risk management as per respective group requirements.

Let's discuss in turns, the issued faced while trying to implement AMA.

3.1. Internal Data Collection Process

For the first time albanian banking system started to collect and report the respective loss events data Bank of Albania, 2011), even the loss data collection process had already started as a necessity of international banking groups operating in Albania through respective affiliates (but none of them has actually more than 3 years of loss historical data).The internal loss data collection process assumes that historical losses are a good indicator for predicting future losses, meaning that the risk management

process keeps them equally and in fact this is difficult to be guaranteed. In any case is necessary a large set of data with a certain number of losses for a consistent measurement.

As of today the process wasn't encouraged enough due to the very basic requirements established in the above mentioned regulation, but the system is determined in approaching operational risk differently even risking.

3.2. External Data Collection Process

From the other side is quite impossible to exchange the loss data in the Albanian banking system without having a loss data pool (it should be the regulator's responsibility to collect and make available these data to the entire system) but it remains still a prospective.

It should keep in mind the problematic of external data usage as argued from Allen and Bali (2004), that operational risk datasets tend to suffer from under representation of low frequency, high severity events and from the respective confidentiality even are mandatory to be reported. Under this context the problem can be solved by using a common data pool as previously mentioned (which should be developed and managed from the regulator based on loss data collected from the banks aiming to share the same risk factors such as : business activity, size, business and control environment, etc.) which will be useful to the system itself.

Despite this fact the risk data gathered during an economic expansion can't be used in a recession period. But anyway, it should be underlined that the establishment of a data pool is an emergency for the regulator in order to support and manage not only the loss data collection process but also to make aware the albanian banking system for the respective operational risk size. However it doesn't represent consistency with each bank operational risk's profile as mainly operational risk events are considered uncorrelated. In fact, mainly AMA is a LDA which depends on internal and perhaps on external loss data, whereas the other techniques are used to supplement the historical loss data are also required to be implemented.

Furthermore the view held by Haubenstock and Hardin (2003), argue that the LDA utilizes internal and external data but it involves additional steps, including the development of scenarios for stress testing and incorporating scorecards and risk indicators.

Later on, regarding the LDA, Hausebenstock and Hause (2006) suggested that it may be used for the whole firm, whereas scorecards can be used for business lines (which they call a hybrid approach) and the issue here refers to the loss allocation in the business line's in case of multiple losses.

3.3. Scenario Analysis

The scenario component of an operational risk model is predominantly determined by two steps: the definition of scenarios and their calibration. For both of these tasks, an integration of expert judgment for tailoring the scenarios to the bank's operational risk profile is a common approach. However, expert judgment should only complement industry information instead of totally replacing it. In particular, industry information on tail distribution characteristics of common scenarios contains significantly more robust information than an often arbitrary expert calibration at high severity quintiles.

The definition of scenarios should cover all potential high severity risks and result in a longer term-invariant of the model. The tail calibration of scenarios is pre-dominantly a mid-term invariant "worse cases assessments should no change frequently", however it requires at least a yearly review based on the current business environment and on the information collected. Problems are also associated to the scenarios analysis, the scenario elaboration process requires significant resources including the direct

participation of a broad range of senior managers to understand the scenarios that could impact the business. The scenarios almost are built by using empirical expert's knowledge of different banking areas. At the current stage for the albanian banking system the scenario development perception is a very complicated process which represents just a potential loss initiating from the fact that operational risk losses are considered uncorrelated and there is no memory related due to a proactive operational risk management. It is considered a novelty for the Albanian banking system which remains still on theoretical terms of scenario development, therefore somehow questionable.

But referring to the literature, Kaiser and Kohne (2006) express the view that a simple summation of high percentile of VARs implies that worst case scenarios occur simultaneously. Thus, if the proposition of perfect correlation across risk types and business lines is accepted, the capital charges assigned to risk type/business lines should be summed, probably leading to a higher capital charge than what is produced by using the BIA and STA.

3.4. Business Environment

Business environment and internal control mechanism should be defined by Top Management with a list of Key Risk Indicators (KRI's). Each KRI is classified considering his impact on operational risk by using scorecard. The scorecard is used to evaluate the bank's exposure to each KRI.

The scorecards usage for AMA implementation is subjective as they are typically mapped in a subjective manner to monetary loss amounts, particularly in case of human risks (inadequate or failed people or management processes). The KRIs identification requires an intensive dedication to the business lines through proactive control mechanisms aiming to capture the gaps in order to establish the necessary KRIs that should be analyzed for operational risk events mitigation purposes.

That's another complex approach considering the typology of operational risk events in different business lines. On the other hand there isn't any benchmark in place in the system regarding the KRI's typology even for the eleven KRIs established to be reported and monitored from our regulator and that's why the integration of the KRIs data in the bank's operational risk management process is difficult concerning to the external data comparison and usage.

By leaving apart all the mentioned issues, the Albanian banking system can find an alternative for the operational risk management by following Nash (2003), who describes AMA as "not the single approach that banks can use and adopt". Thus, the system should be continuously encouraged to test and choose "the best and the most sophisticated approach which will provide it with the lowest capital charge" and against the difficulty regarding to the validation process can be switched to the regulator.

As understood, it can be concluded that it remains still unclear where the system can use the two approaches separately or just one of them only for the operational risk management under AMA. Until another specific definition the Albanian banking system can explore by supporting additional costs for operational risk management aiming at least to achieve testing results.

4. AMA's cost-benefit analysis

The AMA's implementation is recognized as complex and expensive, what is also explained quite frequently in the operational risk management literature.

It seems reasonable to start our analysis with AMA's expected benefits:

- It would reduce or eliminate incentives for regulatory arbitrage since the capital charge would reflect the bank's own estimate of risk;

- It would deal in a more flexible manner with financial innovations incorporating them in a regulatory framework as soon as they are incorporated in the bank's own risk management models;
- It would provide banks with an incentive to improve their risk management processes and procedures in order to be qualified for AMA;
- And compliance cost would be reduced to the extent that the business is regulated in the same way that it is managed.

Moreover, the BCBS (2006) suggests that if banks move from the BIA along a continuum towards the AMA, they will be rewarded with a lower capital charge. The perceived benefits of AMA rest on the following propositions:

a. Aligning regulatory capital with the economic capital is a good idea;
b. Internal models are relevant and conducive to sound risk management;
c. An incentive to use AMA is that it produces a lower capital charge than the BIA and STA.

According to Rebonato (2007) who argues the differences between regulators and risk management, it can be affirmed that regulators especially are concerned about catastrophic events (represented by the 99.9 'th percentile of the loss distribution), managers instead are more concerned about aspects of risk management other than avoidance of rare events. Risk managers think differently from the regulator due to their focus and responsibilities related with the bank.

Thus, if we accept this logic, the proclaimed novelty of AMA of aligning regulatory capital with economic capital evolves in malpractice. The last one, due to the fact that regulatory capital is supposed to protect banks from the catastrophic events, whereas economic capital represents what is needed to run the bank efficiently.

Against by Rebonato (2007) the quantitative approach remains the high route to risk management, a lot of very effective risk management can be done with a much simpler approach and also we can be convinced that it's quite difficult for the risk managers to move from the probabilistic assessment of risk to risky decisions.

It could be more appropriate to let the banks act according their needs for the operational risk management purposes by developing internal models without assuming double responsibilities.

The next obstacle as per Basel II is that only large internationally active banks will be allowed to use the AMA. So Basel II boosts the competition of big banks relative to that of small banks in the reduction of respective capital charge.

Herein the banks should deeply reflect on the approach which can allow them to reduce the capital charge as per internal needs without forgetting that AMA could provide a lower capital charge under the assumption of an imperfect correlation between business lines and event types. However the Basel document (BCBS 2006) allows, by being subject to supervisory approval "the incorporation of a well-reasoned estimate of diversification benefits" which would be "factored in at the group wide level or at the banking subsidiary level ". And the last one is a hardly guarantee that AMA can produce a lower capital charge than BIA or STA.

Another suggestion under which AMA can permit lower capital charge estimation (based on the unexpected loss only) is that it takes into account the risk mitigation such as insurance even under stringent restrictions that have to be satisfied before the effect of insurance can be incorporated in the calculation of the capital charge. Furthermore the insurance companies acting in the albanian market

cannot provide to the system every single request due to their limited offer as per operational risk management purpose.

The last reason why AMA would produce lower capital charges is that if it takes into account risk controls and the quality of risk management systems in the construction of internal models, banks using this approach will have proportionately lower capital requirements and it isn't the real case.

Whether the development of internal models can permit the banks to estimate lower capital charges for operational risk exposure, the banks are interested to reveal and find out the best way through which it can be reached the final goal without considering the AMA's components, than why to limit them. It's also true that the internal models used for the mentioned scopes have to be approved from the regulator and this isn't the most difficult step for the international banking groups prepared for AMA.

The most important part is that the international banking groups' affiliates operating in Albania remain consistent with the albanian banking business needs according the respective risk profile and size in respect of operational risk capital estimation.

Under this context, these banks should be comfortable with the operational risk capital estimation done by taking into account the potential internal gaps such as: lack of automatic processes, procedures, professional staff, risk–oriented products designation, marketing risk strategies, apposite/alternative systems, specified business expectations, revised risk budgets, internal control culture and external attempts even when this one results to be greater than the other estimated through AMA.

So for the time being,crucial related the operational risk management in the albanian banking system isn't the estimation of a low capital charge but the initial estimation of the adequate capital which will help it in a better understanding of the business necessities as well as in a better management of the processes from which operational risk derives by allowing the banks later to adopt appropriate control measures and then thinking above an alternative approach which can equally handle this.

5. Conclusions

The AMA's implementation brings troubles for Albanian banking system since the conditions under which it could be prepared for are not enough. Different objectives from the regulators point of view and bank's managers are set almost for the banking subsidiary level. Thus, this methodology will be complaint from the domestic banks and not only even with a lower capital charge the international banking group's affiliates will be not satisfied due to a complex and expensive implementation requested just for group compliance purposes. See (Table 2), were are presented the necessary input data for operational risk capital calculation under AMA.

From this prospective the small banks will be better positioned as they have not to allocate resources in order to develop internal models for the operational risk management purpose as per Basel II requirements. We should agree with Pezier (2003) who argues that banks have natural incentives to improve the quality of their risk management, which means that they will develop internal models if they feel that these models are conducive to a better risk management.

If banks themselves believe to the risk modeling for non-regulatory-group purposes, they would strive to develop internal operational risk models, just like they develop exchange rate forecasting models ,model–based trading rules, reprising models, etc.

What's important to be recommended to the system in this case:

- don't be focused only to AMA for your own operational risk management purposes;
- don't stop providing to the group and to the regulator the necessary data for AMA;

- and the last but not the less important is to think differently by ensuring a solid operational risk management within the institution according to your business typology.

The Albanian banking system should feel free to allocate the necessary resources aiming the internal modelling if it really believes that it could be interesting and effective even from cost-benefit analysis point of view and not only. From the customer's point of view also AMA couldn't be the most preferred operational risk management methodology as the respective developing cost will be switched to them. Obviously the bank's customers could benefit from a better operational risk management methodology but as AMA's consistency isn't tested yet, in the current circumstances they aren't ready to support additional expenses for testing purposes as for them is sufficient to be served safely.

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The necessary steps to be established for a Loss Distribution Approach

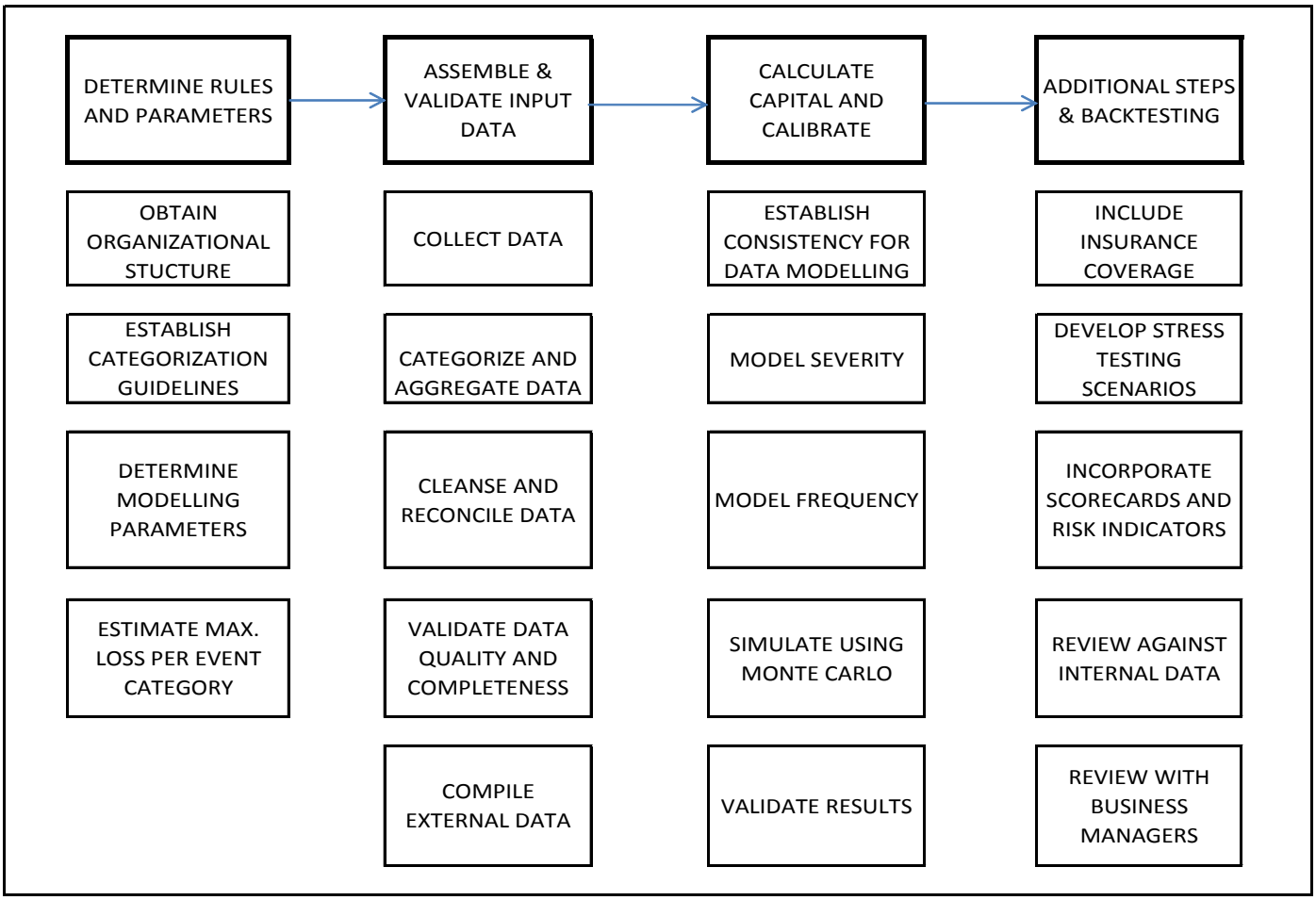

Table 1 - Typical approach to build an LDA model

Source: Alexander, C. (2003).*Operational Risk: Regulation, Analysis and Management*. London: Prentice Hall-Financial Times.

Input data required for operational risk capital calculation

Internal loss events
Indicators
Internal near-miss events
Scenarios
External consortium losses
External public domain losses

Table 2 - Summary of input data available for operational risk capital calculation

Source: Alexander, C. (2003).*Operational Risk: Regulation, Analysis and Management*. London: Prentice Hall-Financial Times.