Basel Committee Newsletter No. 8 (March 2006)

Use of Vendor Products in the Basel II IRB Framework

This Newsletter sets forth the views of the Basel Committee Accord Implementation Group's Validation Subgroup (AIGV) relating to the use of vendor products within internal ratings-based (IRB) approaches of the Basel II framework. The AIGV developed this Newsletter in response to industry questions about supervisory expectations for incorporating vendor products into banks' IRB processes. The purpose of this note is to further elaborate on supervisory expectations regarding how banks might satisfy IRB validation requirements when vendor products, which frequently introduce information transparency issues, are used within banks' IRB processes. In drafting this document, the AIGV also benefited from recent meetings with various vendors.

What is the intended scope of this newsletter?

Vendor products comprise risk measurement models and data that have been developed by parties external to the bank to assist institutions in their risk measurement and management functions. While in concept vendor products can be classified into two types -- vendor models and vendor data -- in practice this distinction is often blurred. For instance, vendor models are often developed and calibrated using external, vendor-supplied data. Similarly, datasets purchased from vendor firms often incorporate some type or degree of modelling, for example in the forms of smoothing or adjustment of the data or compensation for missing data.

This document focuses on those vendor developed models and datasets used within the context of banks' IRB processes to assign exposures to certain rating grades, or segments, or to estimate IRB risk parameters.[1] The principles outlined in this note are intended to apply equally to the use of vendor models and vendor data to the extent these products are incorporated within a bank's IRB processes.

What are industry's concerns?

Industry participants have expressed concern about the application of validation standards to vendor products given the common and reasonable desire on the part of vendors to maintain confidentiality over certain key aspects of their products. The Basel II Framework does not

[1] The use of external ratings as an input into banks' IRB approaches is also covered by this note (in a manner analogous to the use of consumer bureau scores). However, the discussion of external ratings as IRB inputs in this note is not applicable to the use of external ratings as defined within the Basel II standardized approach or securitization framework.

make any exceptions from minimum requirements when vendor products are used within banks' IRB processes.[2] However, AIGV members recognize the unique challenges in achieving complete transparency in the development of IRB risk estimates when vendor products are used. AIGV members do not view the proprietary nature of certain aspects of vendor products as necessarily disqualifying their use in the bank's IRB quantification and validation processes. Rather, when full and complete details concerning aspects of a vendor product are lacking, it will be necessary for banks to rely more heavily on other validation techniques or methods designed to compensate for the lack of access to full information. As examples:

- If, due to the proprietary claims of a vendor, a bank is unable to document the statistical weights of model parameters used within a vendor model, it may compensate for this lack of developmental information by employing other validation techniques. Such techniques might include comparing vendor model results against alternative internal model results or external reference data sources (benchmarking), or outcomes analysis, whereby the risk parameter estimates produced by vendor models are compared with actual bank portfolio outcomes; and
- If the applicability of the vendor model to the internal portfolio relies on the characteristics of certain exposures included in a vendor's proprietary database, the bank could establish a protocol with the vendor to gain access to a sample of the exposures in this database in order to test if the exposures in the vendor's developmental database meet certain requirements (eg, timeframes of exposures, types of exposures, geographic distribution, etc).

To encourage transparency, some industry representatives have suggested that supervisors consider establishing minimum product disclosure requirements or vendor product accreditation processes. The AIGV does not believe it is either feasible or necessary to issue a set of prescriptive disclosure requirements for vendor products or to develop a process whereby vendor models are approved by supervisors for use in banks' IRB processes. AIGV members believe an appropriate balance can be found between the need for banks to be transparent in developing their IRB risk estimates and the need for vendors to protect the intellectual property that accompanies their proprietary models. The principles outlined below are an attempt to elaborate on and define this balance.

Supervisory expectations for the use of vendor products in IRB processes

The AIGV believes that vendor models should generally be held to the same minimum validation standards as internally developed models in assigning exposures to rating grades or segments, or in estimating IRB risk estimates. Specifically, the AIGV believes that standards contained in the Basel II Framework as well as the principles on validation contained in the January 2005 Basel Committee Newsletter No. 4, "Update on work of the Accord Implementation Group related to validation under the Basel II Framework" (referred to hereafter as the Validation Principles) should be applied in a similar manner, whether a bank is using external or internal products in its IRB processes.

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[2] Paragraph 421 of the Revised Framework states as follows: "Use of a model obtained from a third-party vendor that claims proprietary technology is not a justification for exemption from documentation or any other of the requirements for internal rating systems. The burden is on the model's vendor and the bank to satisfy supervisors."

AIGV members believe it is appropriate to scale supervisory expectations by the relative importance of vendor models or data within the bank's IRB processes. For instance, if results produced by a vendor model rely heavily on external data inputs, and that model in turn plays a material role in estimating a bank's IRB parameters, then the principles outlined below should be applied to the fullest extent possible to both the vendor model and the external data inputs used by the model as they relate specifically to a bank's IRB risk quantification and validation processes. If, in another instance, external data are used only to provide broad benchmarks for certain IRB risk parameters, a bank's validation efforts might be limited to processes that ensure the integrity of the data and their applicability to the bank's exposures.

Beyond these general principles, following are some specific corollary principles relating to the use of vendor products within banks' IRB processes:

1. Banks must be able to document and explain the role of vendor products and the extent to which they are used within their IRB processes.

Vendor products can play a number of roles within a bank's IRB processes. For example, they can be used as input into the assignment of exposures to rating grades or segments, they may be used as inputs into quantifying PD, LGD, and EAD risk estimates, or they can help evaluate or benchmark the reasonableness and consistency of internally developed risk estimates.

Consistent with the Validation Principles noted above, it is the responsibility of the bank to demonstrate and document how its risk estimates are derived and validated. When vendor products play a material role in either deriving or validating these risk estimates, it is important that banks clearly articulate what role these products play in the estimation process and the extent to which these products are used in arriving at Basel IRB parameter estimates. At a minimum, banks need to describe the particular portfolios to which the vendor products are applied as well as how these products are applied. To improve both supervisory and internal understanding of the bank's IRB processes, banks should be prepared to explain the underlying rationale for choosing third-party products over internally developed models and data (e.g., lack of default data or internal resources). Supervisors also might expect a bank to be able to explain what alternative solutions it has considered, and, if possible, how results using the vendor products compare to those of alternative products or solutions.

2. Banks must be able to demonstrate a thorough understanding of vendor products used in their IRB processes.

In general, when banks use vendor products in their IRB processes, they must be able to demonstrate a thorough understanding of those products. Additionally, if banks integrate vendor models within their IRB risk quantification processes, banks need to demonstrate how those models effectively contribute to IRB risk quantification. This in-house knowledge of vendor products might be demonstrated by the following:

- In-depth knowledge of the methodological underpinnings and basic construction of vendor models, including an understanding of the models' capabilities, limitations, and appropriateness for use in developing IRB risk estimates for the bank's own portfolio of credit exposures;
- Demonstration of a full understanding of the effect and significance of the proprietary elements in the vendor models;

- Documentation of the rationale behind any judgment-based overrides or any other adjustments made to vendor data sets or vendor model outputs; and
- Retention of in-house expertise on the vendor products for as long as these products are used within the bank's IRB processes.

3. Vendor products must be appropriate to the bank's exposures and risk rating methodologies and suitable for use within the IRB framework.

IRB banks must be able to demonstrate clear linkages between vendor model inputs, data sets, and estimates and the bank's own portfolio characteristics and risk rating methodologies. This requirement does not imply that vendor model inputs and data need to mirror those of the bank's portfolio in detail. Nevertheless, there should be a reasonable degree of consistency between model inputs and the risk drivers of the bank's internal portfolio as well as a reasonable comparability between the data that were used for building the model and the bank's internal portfolio characteristics in order to produce meaningful risk rating assignments or risk parameter estimates. As examples:

- In the case of the use of a vendor rating model, the bank should be able to demonstrate how well the historical reference data used to develop this model map into the bank's existing portfolio in terms of significant risk characteristics; and
- In the case of vendor models used to assign exposures to risk grades or segments, if there is material information (e.g., expert judgment) not incorporated into the vendor model, the output of the vendor model should be supplemented to incorporate such information.

Banks must also ensure that vendor products are consistent with the requirements for use in an IRB context. The output of the vendor products may be consistent with the Basel II standards and requirements but, in themselves, may not achieve full compliance. That is, the vendor product outcomes may require adjustment or supplementation in the form of additional information (e.g., qualitative information not included in the vendor model) or a mathematical adjustment or transformation (e.g., conversion to logarithms). The bank must recognize the need for such supplementation and incorporate the combined results in its IRB processes to achieve full compliance. As examples:

- In retail, it is common to use external scores as an element of the segmentation process. This external score might be based on data history that covers a short span of time and a non-IRB definition of default. In order to be compliant with the Basel II framework, the PD estimates will have to be based on a longer timeframe and on the IRB definition of default; and
- When corporate vendor products use non-IRB definitions of default to estimate PDs, the bank must ensure that the final estimates are compliant with the IRB definition of default. A bank may achieve this requirement by transforming (e.g. scaling up or down) the PDs of the vendor product to account for material differences between the vendor's definition of default and the IRB definition of default.

4. Banks must have clearly articulated strategies for regularly reviewing the performance of vendor model results and the integrity of external data used in their IRB risk quantification processes.

As indicated above, a fundamental difference between internally and externally developed models is the degree to which banks are able to provide transparent descriptions of a model's development. When the developmental evidence is less than fully transparent in the case of vendor models, the bank will have to rely more heavily on alternative validation

approaches. Accordingly, banks should implement clear strategies designed to periodically (at least once a year) assess the performance of any vendor models used in the bank's IRB processes to ensure the models continue to function as intended. Since vendor model parameters and weights may have been calibrated using external data, it is critical for banks to test the performance of vendor models against the bank's own portfolio of exposures. Where there is a scarcity of internal performance data (e.g. low-default portfolios) with which to perform back-testing or outcomes analysis, bank's performance reviews will have to rely more heavily on alternative performance measurement techniques. Some of these alternatives are highlighted in the September 2005 Basel Committee Newsletter No. 6, "Validation of low-default portfolios in the Basel II Framework." In addition, banks should develop and implement strategies designed to verify the accuracy and consistency of any external data used within the bank's IRB risk quantification processes. This can be done, among other ways, by comparing the results obtained using the external data to the results obtained using a bank's own portfolio data in the same risk rating, segmentation, or parameter estimation models or methods.

What should banks expect from vendors?

The AIGV is cognizant of bank concerns over restricted vendor product disclosures. Although the AIGV believes it is not necessary for supervisors to establish accreditation guidelines or documentation standards for vendors, banks may reasonably expect certain things from vendors. Ultimately, in accordance with Validation Principle 2, the responsibility rests with the bank for determining whether or not the use of vendor products is appropriate within its overall IRB processes.

First and foremost, banks should ask vendors themselves to follow good model validation practices (e.g., in line with those specified in the Validation Principles). However, it is expected that the scope of these validation activities will focus on the vendor model itself and not on IRB processes. Vendors should be willing to demonstrate these practices to their clients and should always be willing to furnish documentation and reports relating to the validation of their models and the mapping (applicability) of developmental data used in those models to a client bank's portfolio. When new versions or releases of their products are released, banks should obtain documentation that describes the recalibration or conversion from the old product to the new product as well as information on the validation of the new versions. Banks are expected to obtain from vendors descriptions of key model parameters and the sensitivity of model results to changes in these parameters and their statistical weights. Perhaps the most critical expectation of banks should be the ability to test the performance of the vendor model against the bank's own portfolio when those models are used in the IRB processes.

In the case of sensitive, proprietary data and model information that is not disclosed, vendors should nonetheless provide descriptions of the general nature, model characteristics, and sources of development data. Proprietary elements often include technical model characteristics, such as the equation specifications and statistical weights; in some cases details of the datasets used in the formulation of the model are also not disclosed. While the evaluation of such developmental information is a key component of banks' validation processes, the AIGV believes that banks, in most cases, could compensate for the non-disclosure of proprietary information by applying the principles outlined in this note. Banks should be able to demonstrate to their supervisors that they have taken sufficient measures to ensure that proprietary elements of vendor models do not inhibit them from meeting the four principles outlined above and in particular principle 2. The extent of the measures required will depend on the relative importance of a vendor product within a bank's IRB

processes and may be material when a bank relies heavily on vendor products with non-disclosed elements.

Conclusion

The AIGV believes that a bank's conformance with IRB requirements and standards should be evaluated on the basis of the combined performance of the different components. Accordingly, the AIGV believes that vendor products can successfully be integrated into a bank's IRB processes as long as the bank can demonstrate to its supervisors that its overall risk rating process and risk parameter estimates, when incorporating vendor products, are compliant with the IRB requirements. The supervisory expectations articulated in this note are intended to be helpful to banks in their efforts to fulfil those requirements when employing vendor products.