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Key Factors in Developing, Enhancing and Validating Internal Ratings Systems for Internal Ratings Based Approaches Under Basel II Using Standard & Poor's Ratings Default Data

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Summary

- 'Low default' sectors present a particular challenge for Internal Rating System (IRS) development and validation due to either the limited number of defaults or small sector sample sizes on which to develop models based purely on a bank's historical default experience.

- In this context, 'low default' would typically include, Large Corporate Sectors, Public Sector, Financial Services and Specialised Lending.

- The stability across geographies and sectors of Standard & Poor's (S&P's) ratings default histories provides an alternative data set to help meet this data gap.

- Use of S&P ratings default data in this context relies on the assumption that an IRS reaches sufficiently similar conclusions to S&P ratings. In S&P Risk Solutions experience, this requires confidence that the IRS and S&P ratings methodologies are sufficiently aligned, such that similar results are likely.

- The issue of methodological alignment is not a question of one method being viewed as superior to another. Rather it reflects the need to validate the suitability of use of S&P ratings default data when calculating IRS default probabilities.

- The treatment of qualitative factors in a template or model, and application of these to the unrated segments of low default sectors, present particular challenges that can easily lead to significant divergence in outcomes between an IRS and S&P ratings (or S&P credit estimates on unrated counterparties).

- In practice adapting an existing IRS methodology to become more aligned with the S&P methodology does not typically require radical change or loss of valuable work already established in an IRS. It does, however, need detailed and precise gap analysis between the methodologies.

- With a transparent, aligned methodology as the base, bank specific customisations can typically be easily executed while retaining high confidence in the use of S&P ratings default data.

- Regular (typically annual) reviews of the alignment of the methodology are key to using ratings default data in an IRS with confidence as, in order to keep long run ratings performance stable, ratings methodologies continuously evolve to reflect changes in the credit drivers in any given industry or segment.

Overview

In our recently published paper 'Use of S&P Ratings Default Data in Internal Rating Systems for Low Default Portfolios' S&P Risk Solutions describes the relevance and context for methodological alignment between an IRS and S&P ratings when using S&P ratings default data.

This data is most commonly used via a mapping of a bank's master rating scale to S&P's long-term ratings scale or via creation of a 'consensus' Probability of Default (PD) for model or template development in low default sectors where ratings default data is the prime data source.

It is important to stress that the context for this paper is therefore that a bank is seeking to use S&P's ratings default data to support calculation or validation of internal default probabilities for use in economic or regulatory capital calculation. This paper is not intended as a discussion of the advantages or disadvantages of one PD calculation methodology compared to another.

The focus on the role of methodological alignment has prompted many market practitioners to request from us further details on the analytical and practical issues involved. This paper seeks to address these queries by outlining the main analytical components an aligned ratings methodology could be expected to contain, and a summary of the background to these. It also covers our extensive experience of the execution of such methodologies within banks.

Among the most common issues we observe are the challenges around the treatment of qualitative factors. These include factors such as Industry Risk, Market Position and Management Quality. Such factors are fundamental to S&P's forward looking rating opinions. Consequently, IRS approaches benchmarked to S&P default data that ignore qualitative factors can result in substantial divergence of performance (as defined by the ability to consistently map to S&P's ratings) over time. Some techniques seek to handle this problem by collecting samples of the bank's own scores of qualitative factors and then derive algorithms that attempt to predict S&P ratings using these. However, such an approach is predicated on a range of assumptions about the extent to which the bank's scores on qualitative factors used for the model building approach are consistent enough with the qualitative analysis within the ratings process to produce a consistent and stable mapping. In particular in terms of factor definition, factor evaluation and the proportionate importance of different factors within different industry sectors and for different overall credit profiles. There are, not surprisingly, a number of challenges with this approach.

A particular and fundamental problem is the unrated universe (i.e. the universe where no public S&P rating exists). That is, if an IRS master scale or consensus PD approach maps to S&P ratings or ratings default data, how is this developed and validated for the unrated part of a bank's portfolio? This challenge is particularly acute as, for a variety of reasons, the rated universe is often a poor proxy for the unrated universe. We cover this issue in more depth later in this paper but, in essence, this reflects the largely self-selecting nature of the rated universe (organisations who issue bonds in the public markets) making it challenging to build systems based on public ratings that then perform well on the unrated universe. Hence, techniques based on advanced regression, rank ordering, or other statistical methods to predict the rated universe

may lack sufficient predictive power on the unrated universe to easily justify their wider use. This problem is made more profound by the fact that it is often the key qualitative factors within the S&P ratings methodology that have most impact on the difference between the rated and unrated universes.

However, notwithstanding the fundamental nature of these challenges, and the details behind them as outlined further in this paper, radical changes to an IRS to achieve methodological alignment are rarely necessary. Rather the key to enhancing the performance and stability of an existing IRS in terms of robustly mapping to S&P ratings is in the precision of the gap analysis between the S&P and existing IRS methodologies. Having established this an IRS can typically then be successfully adapted without undue disruption to a bank's operations or loss of valuable existing investment in its existing IRS.

Section A
Methodological Considerations

i) Consistency of the overall underlying methodology

A self evident but often overlooked issue is simply whether the IRS of a bank is based on a fundamentally consistent methodological approach or not to that of S&P. Of course, a bank may simply have a different view from S&P as to how best to evaluate default probability in a given sector. However, if a significant methodological difference exists then it can be very difficult to demonstrate that the use of S&P's rating default data within the Bank's IRS is appropriate since the probability that both methods will reach sufficiently similar conclusions on the unrated universe must be highly questionable.

Moreover, even if both methods currently generate similar results on the rated universe there is no guarantee that they will continue to do so in the future. Indeed, S&P Risk Solutions has noted that results from divergent methodologies can rapidly and significantly diverge as the economy or sector undergo even quite modest change. As an IRS is used to forecast future default risk, a periodic 'with hindsight' adjustment or recalibration of a model based on a divergent methodology to S&P data is not ideal. Far more stability would be expected from a methodology that is fundamentally aligned and, hence, reacts to changes in credit drivers in a sector in a consistent way to that being applied by the ratings agency.

Where the methodology is fundamentally inconsistent, commonly it is due to the lack of sufficiently-weighted qualitative credit risk factors within the IRS compared with the S&P's ratings methodology. This may the reflect the absence of some key factors altogether, or their weighting. Given the importance of qualitative factors in the ratings' methodology of many sectors this may well lead to a weak alignment between the methodologies.

To a great extent the importance of qualitative credit risk factors derives from the fact that S&P's ratings are forward-looking. Hence, from generic factors such as 'industry risk', to company specific issues such as 'market position', S&P's analysts use these as leading indicators of the rated organisations prospective creditworthiness. That is, qualitative factors are crucial to S&P's analysis of how current, point in time,

creditworthiness of an organisation is likely to evolve from the position observed in the most recent financial statements. Consequently, they are central to forward looking rating outcomes. An IRS that does not sufficiently incorporate these factors, or effective proxies for them, is likely to struggle to produce results sufficiently consistent to rating outcomes over time to justify using ratings' associated empirical default data.

However, even where such differences exist, modification rather than radical change to an IRS can often produce sufficiently significant changes in the ability to consistently map to S&P ratings. As described in section 2i) this typically reflects the impact of a precise gap analysis in methodologies, which in turn allows relatively straightforward, albeit detailed, modifications.

Other fundamental differences can also exist. For example, some project finance practitioners rely predominantly on 'cash-flow' based simulation approaches to evaluate the credit quality of a project. But, S&P's project finance ratings group has a materially different methodology reflecting a 'semi-weakest link' approach across a wide range of factors not limited to the evaluation of solely the expected project cashflows. (see non-linear and rule based factors under section A (ii) c).

It is not the purpose of this paper to discuss the relative merits of these two analytic approaches towards project finance credit risk but as far as methodological alignment (and hence use of S&P's default data) is concerned the implication is straightforward. Namely that a 'cash-flow' simulation based technique is unlikely to reliably map to S&P's ratings based on 'semi-weak link' methodology in a way that robustly justifies use of S&P's default data within an IRS. Again, however, even such a fundamental difference in methodology can often be addressed via modifications.

ii) Selection and weighting of basic credit risk assessment factors

Once past the issue of fundamental methodological alignment, we then reach the specific questions around what is required in order to develop a well-aligned methodology?

In the first instance this is a process of identifying the qualitative and quantitative factors required within a credit risk assessment framework and how to weight or combine them.

a) Quantitative Credit Risk Factors

Quantitative factors are the numerical variables and ratios derived from financial statements, funding arrangements and cash flow projections. It is often assumed that these quantitative factors are the dominant component of a rating analysis. In fact, this is often not the case in the context of low-default asset classes. Nonetheless they are very important. Financial projections could be argued to be qualitative in that they are forward looking judgments but we include them here as they lack some of the definitional and evaluation complexities of other qualitative factors (see below).

Broadly four issues need to be considered in the selection of quantitative factors;

- Which and how many numerical variables and ratios make a material difference to a rating in a given sector?

- How are these defined and what levels of each of the given numerical variables or ratios would qualify it as strong, average or weak in a given sector?

- How should national accounting differences be treated (or divergent accounting practices within a country)?

- How is the choice of quantitative factors to be utilised in the IRS linked to the rating philosophy (e.g. one-year financial data used as inputs for a multi-year rating horizon)

Having selected and defined the factors and identified required accounting adjustments, the issue then becomes to determine, in a clear and consistent manner, the impact that these factors have in the overall rating outcomes. Two aspects need to be considered:

- First, what is the overall importance of the quantitative factors vs. qualitative factors?

- Second, how much weight should be assigned to each quantitative factor, or cluster of factors?

Having addressed these issues, the fundamental starting point for the financial analysis of a particular counterparty involves the consideration of whether the latest financial statements are representative of the counterparty's inherent financial performance. If the accounts include the impact events of a non-representative and non-recurring nature then they are not a genuine reflection of past performance. Equally, and more importantly, they will not be reflective of future performance. Accordingly, the selection of the appropriate financial statements for computation of financial variables requires careful consideration.

b) General Qualitative Credit Risk Factors

As noted above, qualitative factors play a fundamental role in S&P's ratings methodology in many sectors, often providing the critical forward-looking context to the current and historic quantitative information.

The same issues addressed for quantitative factors in terms of selection, definition and weightings apply here too.

However, qualitative factors present some additional challenges in definition and selection. Analytic discussions of qualitative factors can often be hard to define and there is a risk that multiple different interpretations of the same analytical concept may exist.

The problem can amplify further in the testing of a model or template in development if incorrect assumptions have already been applied in the initial definition and

incorporation of the qualitative factors. For example, an incorrect assumption at the outset of the model or template development process may not necessarily ever be identified in the subsequent testing process and the result would be likely to be weights in the template that are skewed to 'fit' the universe of currently observed ratings in order to 'compensate' for the unidentified initial error. This can easily lead to a poor mapping performance going forward as the methodological alignment will, in practice, be partially spurious. Something that may remain hidden for some time if it impacts primarily the unrated universe performance.

Having selected and defined the qualitative factors a further challenge is then defining in a consistent manner how these factors are evaluated for each counterparty.

S&P Risk Solutions addresses these challenges via detailed methodological discussions with the ratings agency and reviews of the analysis of specific factors (including, as noted later, for the unrated universe using S&P credit estimates).

The importance of this, and the detail required, can be illustrated below with an extract from S&P Risk Solutions template for Real Estate Investment Companies (see below):

LEASE STRUCTURE AND STRATEGY FOR REAL ESTATE INVESTMENT COMPANIES

Score	Description
1	The company has almost all the portfolio based on long-term leases with upwards-only rent reviews. The lease maturity profile is smooth. Even under severe downturn scenarios, the company would not face a significant rollover problem. The tenant base is very well diversified and the company continuously pursues a tenant diversification strategy. The top 5% of the clients represent less 1% of the company's revenues.
3	The company has a significant part of its portfolio based on long-term leases with upwards-only rent reviews. The lease maturity profile is not concentrated in any particular year. The company has a strong track record of rolling over leases without major impacts from economic cycles. The tenant base is well diversified and the company pursues a tenant diversification strategy. No single client represents more than 1% of the revenues.
5	The company has a balanced mix of short and long-term leases with adjustment clauses. Although not heavily concentrated, the company has some exposure to rollover risk. Although with a positive track record, the company's ability to renegotiate leases in influenced by economic cycles. The tenant base is diversified. No single client represents more than 5% of the revenues.
7	The company's lease mix is somewhat weak with a significant exposure to short -term leases. The lease maturity profile evidences some concentration in next 3 years. Rollover risk is significant. The tenant base is concentrated and the company faces important exposure to single tenants.
9	The company's lease mix is weak with a major exposure to short-term leases. The lease maturity profile evidences concentration in next year. Rollover risk is significant and track record evidences poor ability to renegotiate terms in downturn scenarios. The tenant base is concentrated and the company faces major exposure to single tenants.

Clearly, training around how to apply such definitions remains crucial but in our experience such an approach can provide a robust basis for high quality and consistent execution within a bank of qualitative factor analysis.

Indeed the importance of this objectification of qualitative factors within an IRS in the context of IRB is two fold. In addition to helping ensure methodological alignment and hence supporting the use of the ratings default data, it also supports demonstration of consistent implementation of the qualitative component of the methodology within the bank. S&P Risk solutions observes that it is often qualitative factors that drive 'overlays' within bank credit decisions and, accordingly, the rigour of defining their initial weighting in a transparent way becomes even more important.

iii) Special Analytic Issues

Having addressed the basic issues of quantitative and qualitative factors a number of case specific consequences of the ratings process then need to be considered.

In particular, rating analysis in many sectors require an additional overlay to an individual counterparty-specific model, others need 'non-linear' and 'rules based' components in addition to a linear weighting approach to sufficiently mimic the ratings process and, in some sectors, S&P generic sector risk factor metrics are key to template performance in mapping to S&P ratings.

a) Parental & state support

Large corporate and financial groups may operate with tens, and sometimes hundreds, of discrete legal entities globally. While specific funding vehicles are often guaranteed, operating subsidiaries generally are not. Moreover, the creditworthiness of even large operating subsidiaries may well fall far short of the credit strength indicated by the parent's rating. Conversely the analysis of a subsidiary may need to reflect weakness in a parent organisation.

S&P has developed a specific methodology for assessing the impact of the affiliation between different entities on their credit quality. This methodology is based on an analysis of the gap between the stand-alone creditworthiness of the subsidiary and its ultimate parent, and considers the quantitative and qualitative factors that help define the degree of support the subsidiary could be expected to receive from its parent. The ultimate rating of the subsidiary would therefore be the result of this two-stage analysis. Equally, the credit quality of the parent would reflect the relationship with its subsidiaries. Accordingly, this analytical process would need to be included in an IRS, wherever relevant, for successful alignment of methodologies.

A similar issue exists within the public sector where support from, or risks due, to the local, regional or national public finance system can have a profound impact on the rating of a given counterparty.

b) Holding company analysis

Non-operating holding companies pose two key aspects that need to be addressed. First, to the extent the bank is exposed to a holding company counterparty the IRS methodology needs to factor risks such as the holding company's legal and regulatory distance from the operating company (ies) and hence from the source (s) of earnings.

Second, the operating company analysis below the holding company needs to reflect the cost of servicing debt held at the holding company and the indirect leverage represented to the operating companies by the holding company debt. i.e. while in theory the holding company is legally discrete, in practice the operating company (ies) ability to treat the debt as 'arms length' is often minimal until actually in default (and not always even then).

Occasionally there are also additional assets held at the holding company level (beyond simply the ' investments in subsidiaries') which also need to be considered.

c) Non-linear behaviour and rule based factors

The importance of some credit factors in the ratings process is not linear. For example, capital adequacy in financial services organisations invariably becomes disproportionately important as it, and overall credit quality, decreases. Conversely, among strongly capitalised financial institutions, earnings quality is often the more dominant differentiating rating factor (since it is seen as a leading indicator of future capital adequacy).

As mentioned above, some sectors, such as project finance, take this 'single factor' importance further with a semi-weakest link based analytical approach, which then requires a rule based framework application.

d) S&P-generated qualitative factors

In some sectors, for an IRS to successfully produce outcomes that map reliably to S&P's ratings, an S&P generated input factor (or a highly robust estimate of this) is simply a requirement as it has such potential significance on the result.

e) National Differences

A common misconception is that ratings methodologies are adapted for different countries, requiring substantially different local factors. In fact the issue is the reverse. Rating methodologies are, with some exceptions, generic by sector or sub-sector. What varies is how national or local accounting, economic or industry factors are mapped back to these methodologies. Adjustments for the impact of accounting differences for example are key in understanding the strengths and weaknesses of a rated organisations financial position versus its non-domestic peers. This is in turn crucial in assigning a rating using S&P's global scale.

An example that illustrates this comes from the insurance industry. A number of jurisdictions around the world allow insurers to set aside additional reserves, tax-free, to help meet rare, but severe, catastrophe or other losses. These are usually shown in the balance sheet as separate from risk capital and allocations to or from these reserves in any given year directly impact pre-tax earnings. However, in practice, from the rating analyst's point of view, these reserves are typically viewed as risk capital and are included in capital ratios, with allocations to or from them excluded from earnings.

A framework that did not include this adjustment in input factors would be unlikely to successfully align with S&P's insurance ratings methodology since both risk capital and earnings volatility could be significantly understated.

iv) The Unrated Universe

In S&P Risk Solutions experience the assumptions made when addressing the application to the unrated universe of an IRS based on observing the S&P rated universe are typically those where the supporting evidence and rationalisation are weakest.

The relevance of this problem however is profound as in many cases the unrated part of a bank's low default portfolios can be far bigger than the rated part. In its public sector book, for example, a bank may have hundreds of counterparties of whom no more than a handful might be publicly rated.

In essence the problem is simple; namely that the rated universe is unlikely to be a good proxy for the unrated universe. As a consequence techniques that rely on a predominantly statistical approach to produce models or templates that reliably map to the current S&P rated universe, may at best have only moderate ability to reliably map to the unrated universe and, in our experience, can at times produce substantially different results.

The reasons for this have to do with what defines the population of the rated universe. Understanding this is critical to understanding the extent to which modelling based on the rated universe as a 'sample set' for producing rating prediction models on an overall sector can be misleading. In particular the rated universe in most sectors primarily represents those organisations that wish to access debt capital markets where a public rating is typically required. This makes it a self-selecting sample set which, by definition, would tend to exclude the following:

- Organisations that believe they would get better pricing in other markets as their public rating would imply more expensive debt than other borrowing sources currently impose.

- Operating companies within a group whose ratings and debt issuance is via a holding company or specialist vehicle.

- Organisations that believe others would take a more generous view of some key factors in their profile than S&P.

- Organisations whose ownership, organisational structure, financial profile, mission, or culture makes resort to the debt capital markets unlikely notwithstanding any of the above.

S&P Risk Solutions addresses this issue using S&P credit estimates. S&P rating analysts with the relevant sector specific experience produce these on a sample of counterparties selected to generate a good representation of the unrated portion of a bank's book. This allows a robust testing and additional calibration of a template as required.

Central to this process are the analyses of individual credit factors provided by the rating analysts on each analytical dimension of the credit estimates. This allows a detailed review and refinement of the factors in the context of the analytic logic being applied.

Others, may also take this approach of course. However in S&P Risk Solutions experience, the use of such third party credit estimates on the unrated universe in order to build a model or template that uses S&P ratings default data can be more challenging than may be readily apparent. In particular because of the following factors:

- Sector specialisation within a methodology can be increasingly important in the unrated universe, increasing the need for 'non-generic' approaches.

- The lack, by definition, of observed rating examples in many sectors can lead to either an assumption of too much consistency with the rated universe or selection of significant major deviations without any robust public rating reference point to justify or calibrate these.

- Frequently, good proxies for the relevant S&P defined input factors (e.g system scores in the public sector) are not publicly available meaning such inputs are either ignored or can only be guessed at by comparisons with publicly rated examples with limited true analytical overlap.

- The often limited examples of publicly rated companies within a given country make definition of the accounting, economic and industry adjustments for the national environment very challenging and open to a wide range of interpretation.

- The rating impact of factors that can be a direct function of size (e.g. market position, financial flexibility, diversification etc.) are very difficult to estimate simply by reviewing the rated universe for organisations that are materially smaller than the bulk of the publicly rated universe. Not least because these size related factors have a strong qualitative analytic component.

This is of course not to suggest that banks and other cannot make high quality credit evaluations outside the publicly rated universe. But, as noted previously, that is not the issue in this context. Rather the issue is, how does a bank ensure it maps its master

scale accurately and consistently to the S&P ratings scale if it wishes to use S&P default data in producing PD's on the unrated universe?

v) Sector selection and specialisation

A straightforward consideration that is, nonetheless, often observed by S&P Risk Solutions is that a bank assigns a counterparty to a different sector or sub-sector than would have been chosen by S&P's ratings analysts.

As with the discussion of fundamental differences in project finance methodologies noted above, the question as to which choice is the correct one is not to be discussed here. Rather, the point is that unless the allocation to sectors is consistent, the methodologies employed will not align and hence the mapping to ratings default data may not be robust.

This point leads us to the question of how much sector specialisation (i.e. sector specific templates or models) within the IRS is necessary?

From a practical point of view this partly depends on the significance of a sector within a bank's overall portfolio. Clearly, the greater the importance of a sector, the more significant the degree of accuracy and stability in the mapping becomes.

But, assuming a sector has a material relevance in the context of a bank's overall portfolio S&P's Risk Solutions experience is that considerable sector specialisation is needed to deliver a sufficiently accurate and stable mapping. As a context, S&P Risk Solutions has developed over 100 sector and sub sector credit assessment templates.

Section B
Practical, regulatory and executional considerations

i) How easily can an existing IRS methodology be adapted?

While an IRS bank using S&P ratings default data in its IRS clearly needs to be able to validate this use, in many cases a radical rebuild of an IRS to achieve methodological alignment is neither a practical nor a desired option.

However, in S&P Risk Solutions experience, the methodological adjustments needed are most commonly modifications and refinements of the existing IRS approach. Indeed this can be true even if the underlying S&P ratings and IRS methodologies appear fundamentally different.

The reason for this is in the nature of what is required for successful alignment. The majority of the issues addressed in section A can be handled by the following modifications to an existing IRS:

- Recalibration for weighting adjustments
- Application of additional factors to the existing system
- Objectification of qualitative factors
- Refinement of a standard methodology to be more sector specific
- Application of rule based overlays to handle non-linearity and parental support

However, the key to this is the degree of detail, precision and clarity in the definition of a well aligned methodology on a given sector. Once this is established the potential to apply these modifications is very substantial since the causal 'gaps' between an IRS and the S&P ratings methodology can be precisely identified and addressed using the above techniques. This ensures that it is those factors most likely to cause different results that can be focussed on. It also provides the critical platform for testing deliberate differences. I.e. Where a bank wishes to use S&P ratings default data but nonetheless has different methodological views, these can be incorporated and the impact in the template's ability to reliably map to ratings tested.

In S&P Risk Solutions experience, this kind of modification process can take place without undue disruption to the bank's operations and retaining the valuable embedded investment in the existing IRS.

ii) Practical use of an external ratings aligned methodology within a bank

A potential concern when considering the comments in section A can be whether, once developed, an IRS with these sector specific details and qualitative factors could be practically used within a bank on an ongoing basis?

In fact, in S&P Risk Solutions experience, a framework of sector-specific templates, combining objectified qualitative factors and defined quantitative factors derived from the S&P ratings methodology, can lead to highly efficient execution within a bank. The reasons for this are as follows;

- Transparent templates, combined with detailed documentation and training, create a 'common platform of execution' within a bank leading to significant operational efficiencies.

- Only information typically available to a bank is required. This is achieved via enhancing the weights of those factors dependent on data that a bank has that most closely correlate to any information in the ratings process that a bank may not have. Standardised quantitative metrics from a database can be directly mapped into a template.

- The standardisation of execution can lead to profound 'learning curve' efficiencies. In particular the 'objectification' of qualitative factors provides a framework for a bank's analysts that enables both structured and efficient analysis by the individual analyst and transparency and efficiency within a bank's overall credit review processes.

- Template transparency means the override process too can be highly efficient as the exact drivers of the original outcome are explicit and, hence, an override discussion can be easily focussed (and the result clearly and easily recorded). In particular the existing degree of significance in the result of any given factor that is related to a subsequent override discussion can be seen and hence issues like double counting a strength or weakness through an override process are easy to identify.

- Discussions on this type of methodology with internal audit, regulators or others are both clear and efficient due to its transparency, supporting documentation and the explicit clarity of the override process.

iii) Consistency with Basel II Internal Ratings Based criteria

While, to support use of external ratings default data, we suggest there should be sufficient methodological alignment to the external ratings process, clearly an IRB bank must be executing the IRS itself and reaching its own conclusions.

Three elements of an approach based on templates that align with the ratings methodology fundamentally support this:

- Having developed a methodology to maximise alignment, it is then possible to review the potential impact of methodological differences a bank would like to incorporate in the IRS. Typically such changes can be incorporated in a transparent fashion that allows the bank to monitor the impact while still reliably mapping to S&P's ratings default data.

- Many of the individual input factors in such templates require a decision by the bank's analysts. Hence the result for any given counterparty is clearly a decision derived by the bank.

- Not only does full override potential exist but, crucially, because the methodology is transparent, a bank can do this in full knowledge of the 'cause and effect' impact relative to the calculation of the initial result (i.e. as noted above there should be no accidental 'double counting' of an override of a factor already in the template since the template calculation is fully transparent).

iv) The importance of regular review, update and maintenance of the methodology and its execution

A critical point about S&P's ratings methodologies is that they constantly seek to evolve to match the changing circumstances of the sector they follow. Indeed, it is this process which permits historical default and transition data to be used on the current ratings universe. Were rating methodologies to remain static it would be difficult to justify use of historical default data unless creditworthiness drivers were also viewed as fixed over time, which is clearly not S&P's experience. Thus rating methodologies must continually evolve in order for ratings performance to remain consistent over time (and hence justify use of historic data). It is important to note this is a different issue from the 'through the cycle' ratings approach (which assumes default probability changes within an expected range due to the economic cycle) and relates to structural not cyclical changes in creditworthiness drivers.

Two fundamental implications for maintaining ratings aligned methodologies within a bank derive from this;

- Specialist ratings analysts are constantly observing trends that drive creditworthiness within their sector. This means they evolve the relative importance of different factors within the ratings process over time. This does not necessarily mean adding new factors or removing old ones but rather the degree of relevance they assign to each factor when reaching rating decisions.

  In order to be confident that an IRS methodology that had been well aligned initially remains so, an annual review for this 'evolution of factor importance' is necessary in our experience. Either to identify any need for recalibration, or to clarify that this is not needed.

- Periodically, industry risk changes take place that lead the rating agency to explicitly adjust its criteria. A recent example is changes to the measurement of catastrophe risk exposure for reinsurers. An annual review is typically sufficient to capture such changes.

Moreover, changes within the bank also lead to a need for regular review:

- A bank's portfolio is likely to evolve over time and annual reviews of sector selection and template performance on the unrated universe are necessary in S&P Risk Solutions' experience.

- Personnel changes within a bank suggest it is important to periodically review template execution such that it remains consistent with the ratings methodology.

v) Consistency of S&P's default and transition data and its adaptation to Basel II default definitions.

An important question in using S&P ratings default data within an IRS are potential differences between S&P's default definition (non-payment of interest or principal subject to a grace period) and either the bank's own definition and/or the Basle 2 guidelines.

In practice, for Basel 2 (which is a weaker default definition and hence leads to lower observed PD's) we have found that, with detailed analysis of the S&P default data it is relatively straightforward to produce a robust mapping that produces a Basle 2 aligned result.

A detailed discussion of this is not the purpose of this paper but S&P Risk Solutions has carried out extensive work in this area and readers are invited to contact us directly if they wish on this topic.

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