



Michael J. Cavanagh
Chief Financial Officer

January 25, 2005

Office of the Comptroller of the Currency
250 E Street, S.W.
Public Reference Room, Mail Stop 1-5
Washington, D.C. 20219
Attention: Docket No. 04-22
regs.comments@occ.treas.gov

Robert E. Feldman
Executive Secretary
Attention: Comments/Legal ESS
Federal Deposit Insurance Co
550 17th Street, N.W.
Washington, D.C., 20429
Comments@FDIC.gov

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Ms. Jennifer J. Johnson, Secretary
Board of Governors of the
Federal Reserve System
20th Street and Constitution Avenue, N.W.
Washington, D.C., 20551
Attention: Docket No. OP-1215
regs.comments@federalreserve.gov

✓ Regulation Comments
Chief Counsel's Office
Office of Thrift Supervision
1700 G Street, N.W.
Washington, D.C. 20552
Attention: No. 2004-48
regs.comments@ots.treas.gov

Re: Internal Ratings-Based Systems for Retail Credit Risk for Regulatory Capital

JP Morgan Chase & Co. ("JPMC") is pleased to provide comments on the Proposed Supervisory Guidance for Internal Ratings-Based ("IRB") Systems for Retail Credit Risk for Regulatory Capital (the "Retail Guidance"). We appreciate the opportunity to have a constructive dialogue concerning the evolution of regulatory capital requirements. The proposed new capital framework is more risk sensitive than the current regime and should provide important incentives for better risk management and measurement. We believe further enhancements would be appropriate, as discussed in detail throughout this letter. We look forward to working with the U.S. regulatory body (the "Agencies") to incorporate best practices in the risk management of Retail exposures into the regulatory capital framework.

Summary

Although we agree wholeheartedly with the spirit of Basel II to build a more risk-sensitive capital framework, we believe the requirements for allocating capital to Retail exposures as outlined in the Retail Guidance are overly prescriptive. JPMC has a sound, risk management practice with established capital allocation processes, many of which are consistent with best practice in the industry. The 58 Retail Standards ("RS"), if viewed as requirements, would create unnecessary implementation costs and burdens with only minor, if any, improvements in the soundness of our capital allocation process.

With respect to the Agencies request for recommendations regarding which of the Retail Standards should be (1) mandatory minimum qualifying criteria for use of the retail IRB approaches, or (2) criteria for supervisory guidance purposes only, our response on each of the 58 Retail Standards is contained in the Appendix of this letter. We recommend the Agencies classify the approximately 20 essential Standards as 'mandatory' and label the other Standards as 'guiding principles', with appropriate rewording to incorporate greater flexibility, for institutions intending to build or improve upon their capital allocation framework. The Agencies will have ongoing interaction with institutions through the validation and Pillar II process to ensure institutions are progressing under these guiding principles.

Following are comments on the particular issues identified by the Agencies in their request for comment:

1. Qualifying Revolving Exposures ("QRE") Volatility Requirement

We caution against using historical portfolio level data on credit card loss rates to assess volatility for the purposes of qualifying for QRE capital treatment. There are a number of reasons why historical volatility of an institution's loss rate may not be indicative of the current portfolio risk, which ideally should be the deciding factor. Some of these reasons include:

- Changes in underwriting standards, account management practices, and charge-off policies;
- Changes in personal bankruptcy laws and consumer behavior in response to those laws;
- Strategic shifts in the institution's appetite for risk, including portfolio acquisitions or divestitures, and;
- Portfolio aging and migration across risk segments.

The Agencies can address these issues by collecting the raw segment-level data used in QIS-4, including the annual default data that was compiled for Probability of Default ("PD") estimation. Armed with this information, the Agencies can calculate an estimated loss rate going back over time. One important step would be to keep the mix across segments consistent across time, preferably by weighting the segments to match the mix of the current portfolio. We are happy to provide the Agencies with this level of detail if it will help them gain comfort around this issue.

One remaining issue, however, is defining what constitutes a "low ratio" of loss rate volatility to average loss rate for purposes of qualifying for QRE capital treatment. Even armed with robust historical data across various products, any cut-off number will be somewhat arbitrary. At the same time, the negative capital impact for an institution in missing such a standard could be significant.

Due to the shape of the Asset Value Correlation ("AVC") curves, a low-risk portfolio that fails the test for QRE treatment will be more adversely impacted than a high-risk

portfolio. Exposures above a 7.33% PD (the intersection of the QRE and "Other Retail" AVC curves) will experience capital reduction by not qualifying for QRE treatment. We hope the Agencies develop a qualification test to address the key issues mentioned above without providing undue burden to IRB institutions. As a large Card issuer with a seasoned portfolio, we would oppose a continual qualification test for QRE treatment. Hopefully, Agencies can acquire the data needed reach a comfort level around the sound treatment of QRE exposures prior to final implementation. If the test remains, institutions initially passing the qualification criteria should be exempt from continued testing as long as portfolio-level losses remain within a predetermined range.

2. Definition of Default

One key area where the Retail Guidance is overly prescriptive is RS-18, which lists the definition of default. The requirement to include the earliest of FFIEC loss recognition, any full or partial charge-off, or non-accrual status is significantly inconsistent with JPMC's risk management practices and would be burdensome to implement. We understand the Agencies' desire to maintain a common default definition across its IRB institutions. However, this will be difficult, if not impossible, to achieve considering institutions have varying non-accrual and/or loss recognition policies, including the flexibility to recognize charge-off earlier than stated in the FFIEC guidelines. In addition, institutional policies may differ by product.

We fully support the ability for each institution to define default consistent with their view of prudent risk management, subject to a requirement that they use the selected definition consistently across products. Our preference is to use the first incidence of charge-off as our definition of default. We believe there are several strong supporting reasons to use the first incidence of charge-off, including:

- **Consistency with how we manage risk in the business.** The parameters that are generated using first incidence of charge-off are consistent with estimates used daily by the line-of-business ("LOB") risk officers. For example, each LOB risk officer can provide a reasonable estimate of the dollar recovery on an account that charged-off today. With a Basel-specific definition of default, such as the one outlined in RS-18, the degree of certainty around the Loss Given Default ("LGD") estimate would be far less clear, increasing the difficulty for the LOB risk officer to sign-off on the soundness of that Basel-specific estimate.
- **Significantly easier to implement.** The cost of incorporating non-accrual accounts into JPMC's capital process solely for Basel purposes would be significant, especially given the Basel requirements around data history. In addition, since many accounts entering non-accrual cure rather than charging-off, their inclusion in the default definition clouds the Basel parameter estimates. Such accounts would then have to follow the treatment of defaulted accounts as outlined in RS-2, a process requiring additional management intervention (see below) that is difficult to embed into an automated capital framework. Our strong preference is to exclude non-accrual from the default definition in order to

continue treating non-accrual accounts along with other non-defaulted accounts, using our current framework.

- **Minimal capital impact.** Applying a default definition that differs from the Retail Guidance would have little effect on the overall capital at an institution. Any movement in PD in either direction resulting from definitional changes would be offset by corresponding changes to the LGD estimate. Due to the non-linear relationship between PD and Capital and the linear relationship between LGD and Capital in the Basel formulas, a Charge-Off default definition can be expected to produce slightly higher capital requirements (see table below using sample Auto segments as an example).

Segment	Basel Definition			Charge-Off		
	PD	LGD	Cap%	PD	LGD	Cap%
A	0.37%	30.1%	1.46%	0.31%	36.5%	1.57%
B	0.38%	34.2%	1.66%	0.33%	38.9%	1.75%
C	1.23%	37.1%	3.28%	1.06%	43.0%	3.58%
D	0.37%	36.1%	1.75%	0.33%	40.6%	1.83%
E	2.88%	39.5%	4.38%	2.45%	46.4%	5.00%
F	1.23%	39.2%	3.47%	1.10%	43.7%	3.71%
G	0.37%	38.3%	1.85%	0.34%	41.8%	1.91%
Total	0.98%	37.9%	2.55%	0.85%	43.8%	2.76%

We believe that any one of the three aspects described above would be sufficient to justify the first incidence of charge-off as the optimal definition of default. The combination of the three strengthens this position. In summary, JPMC's proposed default definition is easier to implement, consistent with the business model and more conservative from an overall capital standpoint.

3. LGD Estimation

While we generally agree with the approach to LGD estimation as outlined in RS-21, we believe that many of the requirements in this section create unnecessary implementation burden. These include:

- **Discounting losses and recoveries.** Discounting all losses, recoveries and costs back to the time of default adds several layers of complexity to the LGD estimation process. For many retail products, the typical time horizon between default and resolution of loss/recovery is quite short. Discounting back to the time of default would have very little capital impact but large implementation costs. For those products with a longer resolution period, e.g. mortgages, for Basel purposes JPMC accounts for the time value of money by including in the loss all interest due but uncollected during the default period. We would recommend this approach to the Agencies as simpler, introducing no additional

layers of complexity (e.g. calculating a discount rate), and as one that is likely already implemented in many IRB institutions.

- **Implementing downturn LGD.** The Asymptotic Single Risk Factor (“ASRF”) model underlying the Basel II framework assumes that LGDs are independent and LGD volatility can safely be ignored in large portfolios. Unexpected Loss (“UL”) is attributable only to variation in the default rate, which is tied to the systematic factor. It is clear that the Agencies have grown increasingly concerned that this treatment of LGD is inadequate and have attempted to provide a remedy in the form of a stressed LGD, which would replace expected LGD in the capital formula. While we regard LGD correlation as a worthy subject for further study, we do not believe that simply substituting a stressed LGD into the current framework is the correct solution.

First, we refer to the principle that capital is intended to cover the difference between a particular quantile of the loss distribution and the Expected Loss (“EL”). A stressed LGD is inappropriate to use when computing the expected loss in the context of the capital formula. Furthermore, use of stressed LGDs to determine the loss at confidence interval for each exposure would implicitly assume that LGDs are perfectly correlated, and that this correlation is fully explained by the single systematic factor influencing default rates. Our experience during recent recessions does not support that implicit assumption.

Finally, stressed LGD is not currently common practice among IRB institutions and would be extremely difficult to implement. Key issues include:

- Selecting an appropriate historical downturn period(s), including deciding whether the downturn period should be industry-, firm-, product- or segment-specific;
- Capturing diversification benefits, and;
- Data availability and applicability.

Most, if not all, major U.S. institutions remain some distance away from meeting the stringent Retail Guidance standards for LGD estimation. We look for further dialogue regarding definitional items and potential approaches around the key issues mentioned above. As active participants in the Risk Management Association’s (“RMA”) Capital Working Group, we generally support the RMA’s comment letter listing possible approaches to these issues and the pros and cons of each. We urge the Agencies will allow a significant amount of latitude as best practices of LGD estimation evolve throughout the industry.

4. Assigning Exposures to Retail Categories.

We support the development of additional risk categories and risk-weight functions. Specifically, we favor a separate Asset Value Correlation curve for home equity lines of credit below the current Mortgage constant of 15%. We hope the fact that HELOC

exposures were distinct from the "Other Mortgage" worksheet in the recent QIS-4 survey is a positive indication that the Agencies are considering this approach. We are happy to provide additional data if needed to assist the Agencies in coming to this conclusion.

Following are comments on specific Retail Standards that raise significant concerns for JPMC:

RS-2: Treatment of Defaulted Accounts

As mentioned above, defaulted accounts require a separate treatment as outlined in the ANPR under RS-2. Paragraph 128 of the Retail Guidance states that IRB institutions calculate a Best Estimate of Expected Loss ("BEEL") and Loss Given Default (assumed to be the Potential LGD, or "PLGD", per the QIS-4 instructions), holding capital against the difference between the two estimates. Clearly, this requirement stems from the fact that defaulted accounts (PD=100%) would attract 0% capital under the normal Basel RWA formula. Although we agree that there is uncertainty around future losses/recoveries of defaulted assets, the BEEL/PLGD framework is foreign to the industry and not something that can be implemented easily. Paragraph 128 states the BEEL estimate should be based on "current economic circumstances and risk characteristics," requiring banks to come up with new estimates on an ever-changing pool of accounts every quarter. We believe that this is unreasonable, if not impossible, given the regulatory reporting time constraints under which all IRB institutions operate.

Estimated loss data may exist for some defaulted accounts still in recovery, however under the non-accrual default definition, the pool of accounts falling under this treatment would be larger than those the firm would consider to be in default. This framework would require separate and unique segmentation and methodologies and would have significantly less robust data to create meaningful estimates as compared to the normal treatment of non-defaulted accounts.

RS-19: Treatment of Unseasoned Accounts

The requirement for separate treatment of unseasoned accounts (RS-19) adds another layer of complexity and extra implementation burden to the Retail framework while the resulting capital impact remains unclear. Key issues include:

- **Contradicts Basel Fundamentals.** The Basel framework is built on the concept of one-year PD. The existing AVC curves and confidence intervals were calibrated with a one-year PD in mind. A long-run annualized PD should only be implemented concurrent with a lower confidence interval corresponding to a longer time horizon. Additionally, an annualized PD can only be implemented appropriately if it is utilized across all accounts within a product or portfolio, not solely on an arbitrary subset of accounts within a segment.

- **Unclear Impact.** We believe the Basel II provisions regarding segmentation already imply that accounts should be differentiated by age where age is found to be a significant predictor of PD, LGD, or EAD. By observing this practice, we ensure proper differentiation between the risks of seasoned and unseasoned accounts while retaining our focus on the one-year loss distribution. We will update our estimation of minimum capital requirements at least quarterly and capital will adjust dynamically (across all risk drivers including age where appropriate) to changes in the portfolio mix. The target degree of protection against unexpected losses will be consistently maintained. In other words, at no point in the account life cycle is the capital held against it less than sound.
- **Overly Conservative.** Essentially, this separate treatment would levy artificial conservatism against unseasoned accounts, even for segments that have a long history of performing along an expected path. Institutions using an annualized cumulative approach in their internal economic capital models apply it to all accounts across the product to smooth capital across the expected life of the loan. Generally speaking, capital is higher early in the account life and offset later in the account life. The proposed separate treatment solely for unseasoned accounts increases capital early in the life, but reverts to a one-year PD as the account ages, eliminating any offset.

Although we advocate eliminating separate capital treatment for unseasoned accounts, if the Agencies maintain this requirement, we would propose simply adding slightly higher AVC curves for unseasoned accounts while keeping the one-year PD framework (unless an institution can demonstrate that the long-run annualized PD is not materially greater than the one-year estimate by segment or product). Under this scenario, institutions could avoid unnecessary implementation costs while still providing Agencies with extra capital protection against unseasoned accounts. However, this change must be accompanied with a corresponding reduction in AVC for seasoned accounts.

RS-11: Quarterly Update of Basel Parameters

The requirement to update our Basel parameters every quarter, as outlined under RS-11, is extremely onerous. It should be noted that our Basel parameters are currently derived using historical data that is generally collected and analyzed annually. The parameters are then applied to the current portfolio mix across segments at least quarterly. Quarterly quantification of the Basel parameters will introduce significant implementation costs, while leading to only slight, if any, changes in the overall capital quarter-to-quarter. Any significant shifts in the overall portfolio risk will be largely captured in the application phase, as the portfolio mix changes across segments. Shifts in the risk dynamics of a particular segment will be captured gradually, since the Basel parameters are based on long-run historical performance. As such, quarterly updates of intended long-run parameters would introduce inappropriate volatility.

RS-20, RS-23, RS-26: PD, EAD & LGD Floors

Applying floors to each of the Basel parameters introduces several adverse effects, including:

- Adding unnecessary and compounding levels of conservatism to the capital system;
- Arbitrarily distorting the estimation of EL;
- Diminishing incentives to invest in superior risk separation techniques;
- Introducing incentives to game the system to avoid the parameter floors; and,
- Diminishing the strength of Pillar III.

In our QIS-4 survey, we found that the existence of floors for PD, EAD and LGD increased Risk-Weighted Assets by over \$4 billion relative to internal estimates used for economic capital purposes.

We strongly believe that an institution should be able to use below-floor parameter estimates if meaningful segments can be identified and the estimates are backed by long-run historical performance. For example, inactive but open credit card lines have historically shown a PD of less than 3 basis points. A below-floor PD estimate is appropriate, considering it is backed by the long-run through-the-cycle performance of millions of accounts.

Similar problems exist with the EAD floor. Some revolving product segments show negative Loan Equivalent Exposure (“LEQ”) between the beginning time period and the time of default. In addition, most non-revolving segments experience principal amortization prior to default. Forcing an EAD floor of 100% of the beginning balance without allowing an adjustment in LGD to capture amortization arbitrarily adds extra capital and distorts the EL estimate. We recommend that if the Agencies keep the EAD floor, the Retail Guidance should explicitly state that the LGD estimate, in such a case, should be the ratio of credit-related economic losses net of recoveries divided by the beginning balance (or EAD post-floor).

Any limitation on an institutions’ ability to use internal estimates diminishes the incentive to find new tools or identify new risk drivers that may better identify risk in these low risk pools. The table below shows an example Mortgage segment that has a PD estimate of 3 basis points. An investment to further separate this segment into two pools – a low-risk pool (1.5 bp) and a relatively high-risk pool (4.5 bp) – will increase the overall regulatory capital charge significantly. An institution facing this investment decision may not develop advanced risk management techniques if the negative capital impact outweighs the positive business impact. We hope that the final Basel II guidance will support further advancements in risk management by rewarding institutions that raise the bar of best practice with lower overall capital requirements.

Table B: Capital Impact of Introducing New Risk Driver			
Segment	Scenario A	Scenario B	
	1	1-Low	1-High
Accounts	90,000	45,000	45,000
Avg Balance	\$300,000	\$300,000	\$300,000
PD	0.03%	0.015%	0.045%
PD post-floor	0.03%	0.03%	0.045%
EAD	100%	100%	100%
LGD	20%	20%	20%
Basel Curve	Mortgage	Mortgage	Mortgage
AVC	15.00%	15.00%	15.00%
RWA	\$497.4 MM	\$248.7 MM	\$343.8 MM
RWA Impact		+\$95.1 MM	

The floors also introduce the inverse incentive to game segmentation by combining segments that are below the floor with segments that are above the floor. An outsider analyzing the Pillar III reports of two institutions will not know the existence or extent of gaming used by the individual institutions, and may not be able to make informed decisions on the true relative underlying risk of the institutions.

RS-4, RS-55: Relationship between Basel Capital and Economic Capital

Paragraph 239 under RS-55 (“IRB risk parameter estimates of PD, LGD, and EAD should be incorporated in credit risk management, internal capital allocation, and corporate governance”) implies that institutions must use the exact same parameter estimates for both internal economic capital and Basel II purposes. Although for the most part our current internal process closely matches the Basel framework, it is not certain that this will always be, or should always be, the case. For example, internally we may prefer to use annualized cumulative default rates for PD estimation of specific products. Additionally, in the future we may develop and implement a more advanced capital allocation system that is foreign to the Basel PD/LGD/EAD construct. Institutions must have the flexibility to employ other approaches if the ability to measure and allocate risk is improved or product dynamics demand it without being restrained or disincented by regulatory requirements. Finally, it is our understanding that the Agencies’ intent is to guide the calculation of regulatory capital, aligning it more closely with internally-estimated economic capital, rather than mandate economic capital methodology directly and permanently.

Quantification of IRB Risk Parameters

The Retail Guidance is overly prescriptive with respect to how exact calculation of PD (paragraph 101) and EAD (paragraph 139). These paragraphs are helpful for institutions building a Basel or economic capital framework today, however these should be ‘guiding principles’ rather than mandatory requirements.

Probability of Default

Paragraph 101 defines the one-year default rate as the “number of accounts that default at any time within a one-year period divided by the number of accounts open at the beginning of the year”. An institution could implement a default model that calculates an estimated PD at the individual loan level, however it appears that such an institution would be non-compliant with the Retail Guidance. We recommend changing the definition of PD in the Retail Guidance to: “PD equals the expected probability of an account in the segment defaulting over the following year”, leaving flexibility in the calculation of that estimate.

Exposure at Default

It is clear that the Agencies prefer the LEQ method of computing EAD. However, LEQ may not be the preferred or most accurate method for all products or segments. For example, an LEQ estimate on credit card accounts with current balances over their prescribed credit line is not meaningful, especially when attempting to apply that LEQ estimate to the current portfolio where the average balance or credit line of accounts in that segment has changed.

Currently, there are a number of different EAD methodologies used by industry. Some of these approaches include:


- LEQ: Percentage of remaining undrawn line used prior to default
- Usage at Default: Percentage of total credit line drawn at default
- Ratio of exposure of defaulters at default over exposure of defaulters at beginning period
- Ratio of exposure of defaulters at default over exposure of all accounts at beginning period

Best practice has yet to settle on any one approach, probably because there are positive and negative aspects to each approach within specific products and segments. IRB institutions should be allowed flexibility to choose the EAD approach most appropriate for each segment.

Summary

In summary, we generally support the approach outlined in the Retail Guidance and agree with the overall objective of Basel II to build a more risk-sensitive capital framework. However, we remain concerned with the prescriptive language in the Retail Guidance, as well as other key issues addressed in this letter. We look forward to further collaboration with the Agencies to incorporate best practices in the risk management of Retail exposures into the regulatory capital framework.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. J. Cavanagh', written in a cursive style.

Michael J. Cavanagh
Chief Financial Officer

Appendix: Recommended Separation of 58 Retail Standards between ‘Mandatory’ and ‘Guiding Principles’

MANDATORY REQUIREMENTS

- RS-1: Banks must segment exposures into pools with homogeneous risk characteristics. Banks must separately segment exposures in each distinct product line within each of the three retail risk categories (mortgage, QRE, and other).
- RS-3: A retail IRB risk segmentation system must produce segments within each retail risk category that adequately differentiate risk and produce reliable estimates of the IRB risk parameters.
- RS-5: Banks must develop and document their policies to ensure that risk driver information is sufficiently accurate and timely to track changes in underlying credit quality and to migrate exposures between segments.
- RS-6: Banks must review their segmentation system at least annually and have clear policies to define the criteria for modifying the system.
- RS-8: Banks must validate that their retail IRB risk segmentation process separates exposures into segments with homogeneous risk characteristics that generate reliable long-run estimates of the IRB risk parameters.
- RS-11: Banks must have a fully specified process covering all aspects of retail quantification. The quantification process must be fully documented and updated periodically.
- RS-12: Quantification must be based upon the best available data for the accurate estimation of IRB risk parameters.
- RS-21: The estimates of LGD must reflect the concept of “economic loss.”
- RS-22: The estimated LGD must reflect loss severities during periods of high credit losses.
- RS-25: The bank must provide an estimate of EAD for each segment in its retail portfolio.
- RS-28: A validation process must cover all aspects of IRB retail quantification.
- RS-29: A bank must establish policies for all aspects of validation. A bank must comprehensively validate risk segmentation and quantification at least annually, document the results, and report its findings to senior management.
- RS-35: The bank must collect and maintain sufficient data to support its IRB retail credit risk system.
- RS-39: Retained data must be sufficient to support IRB validation requirements.
- RS-41: At each reporting period, aggregate exposures across all risk segments must be reconciled to ensure that all exposures are accounted for appropriately.
- RS-42: Banks must develop and document the process for ensuring data integrity and for delivering, retaining, and updating inputs to the IRB data warehouse. Also, banks must develop comprehensive definitions for the data elements used for each credit group or business line (a “data dictionary”).
- RS-46: IRB banks must implement an effective system of controls and oversight.

- RS-53: Banks must have a comprehensive, independent review process that is responsible for ensuring the integrity of the IRB risk segmentation system and quantification process.
- RS-56: Internal and external audit must annually evaluate compliance with the retail IRB capital regulations and supervisory guidance.
- RS-57: The full board or a designated committee of the board must review and approve key elements of the IRB system.
- RS-58: Senior management must ensure that all components of the IRB system, including controls, are functioning as intended and comply with the risk-based capital regulation and supervisory guidance.

GUIDING PRINCIPLES

- RS-2: Defaulted assets must be segmented on the basis of risk characteristics predictive of loss and recovery rates.
- RS-4: Banks must clearly define and document the criteria for assigning an exposure to a particular retail risk segment. The risk factors used for IRB risk segmentation purposes must be consistent with internal methods of assessing credit risk for retail exposures.
- RS-7: Banks that design their risk segmentation systems to realize the benefits of guarantees or other risk mitigants must be able to support their approach.
- RS-9: The ongoing validation process must include the review of developmental evidence, ongoing monitoring, and back-testing.
- RS-10: Banks must establish internal tolerance limits for differences between expected and realized outcomes that require appropriate managerial review.
- RS-13: The sample period for the reference data must be at least five years and must include periods of portfolio stress.
- RS-14: Mapping must be based on a robust comparison of available data elements that are common to the existing portfolio and each reference data set.
- RS-15: Mappings must be reviewed regularly and updated as necessary.
- RS-16: Banks that combine estimates from internal and external data or that use multiple estimation methods must have a clear policy governing the combination process and should examine the sensitivity of the results to alternative combinations.
- RS-17: A bank must have a clear, well-documented policy for addressing the absence of significant data elements in either the reference dataset or the existing portfolio.
- RS-18: For estimating the IRB retail risk parameters, qualifying banks must use the IRB definition of default.
- RS-19: Estimates of PD must be empirically based and must represent the average over time of segment default frequencies on an account basis. The effects of seasoning, prepayments, and attrition must be considered in the PD estimates.
- RS-20: PD estimates for all retail segments cannot be less than 0.03 percent (3 basis points)
- RS-23: IRB banks have a minimum LGD of 10 percent for residential mortgages.

- RS-24: If banks choose to reflect the risk-mitigating effect of private mortgage insurance (PMI) for residential mortgages in their risk estimates, they must do so by incorporating these insurance benefits into the quantification of segment-level LGD.
- RS-26: The estimated LEQ must reflect estimated net additional draws during periods of high credit losses.
- RS-27: Quantification of the IRB risk parameters must be adjusted appropriately to recognize the risk characteristics of exposures that were removed from reference data sets through loan sales or securitizations.
- RS-30: Banks must use a variety of validation approaches or tools; no single validation tool can completely and conclusively assess IRB quantification. A bank's validation processes must include the evaluation of logic, ongoing monitoring, and the comparison of estimated parameter values with actual outcomes.
- RS-31: Banks must evaluate the developmental evidence, or logic, involved with the development of the risk segmentation system and the quantification process.
- RS-32: Banks must conduct ongoing process verification on the developed risk segmentation system and quantification process to ensure proper implementation.
- RS-33: Banks must benchmark their risk quantification estimates against other sources.
- RS-34: Banks must develop statistical tests to back-test their IRB risk quantification processes. Banks must establish tolerance limits for differences between expected and actual outcomes, and banks must have a validation policy that requires and outlines remedial actions to be taken when policy tolerances are exceeded.
- RS-36: Banks must retain all significant data elements used in the IRB retail credit risk system for at least five years and must include a period of portfolio stress. This data requirement applies to all loans and lines that were open at any time during this period.
- RS-37: Banks must retain refreshed data elements related to key credit risk drivers, performance components, and loan disposition consistent with advanced credit risk management standards and commensurate with the risk and size of the program.
- RS-38: Banks must maintain data to allow for a thorough review of asset sale transactions.
- RS-40: Banks must ensure that outsourced activities performed by third-party vendors are supported by sufficient data to meet IRB requirements.
- RS-43: Banks must maintain detailed documentation on changes over time to the risk segmentation system and the quantification process, including data elements, method, and supporting processes.
- RS-44: Banks must store data in a format that allows timely retrieval for analysis and validation of risk segmentation methods and parameter quantification processes. Data systems must be scalable to accommodate the growing needs of the business lines, the centralized data functions, and risk analysis over time.

- RS-45: If data gaps occur, banks must specify interim measures to quantify IRB risk parameters and must establish a plan to meet the data maintenance standards.
- RS-47: Banks must have an independent risk management function that provides oversight of retail lending activities.
- RS-48: Banks must have an effective loan review function for retail credit portfolios.
- RS-49: A quality control function must confirm that all retail lending activities follow established policies.
- RS-50: Management information systems (MIS) must be sufficiently comprehensive to monitor and measure credit quality and performance and to allow proactive and effective risk management.
- RS-51: Adequate controls and monitoring systems must be in place to effectively supervise all third parties involved in the lending process.
- RS-52: Bank policies must identify individuals responsible for all aspects of the retail IRB credit risk system.
- RS-54: IRB banks must have a transparent retail IRB process.
- RS-55: Retail IRB risk parameter estimates must be consistent with risk estimates used to guide day-to-day retail risk management activities.