

Special Report

Basel II: Bottom-Line Impact on Securitization Markets

Analysts

Research

Credit Policy

Martin Hansen
+1 212 908-0603
martin.hansen@fitchratings.com

Algorithmics

Kim Olson
+1 212 612-7811
kim.olson@algorithmics.com

Nikolay Hovhannisyan
+1 203 618-5122
nikolay.hovhannisyan@fitchrisk.com

Ratings

Structured Finance

Stuart Jennings
+44 20 7417 6271
stuart.jennings@fitchratings.com

Andy Brewer
+44 20 7417 3481
andy.brewer@fitchratings.com

Heather Dyke
+44 20 7417 6299
heather.dyke@fitchratings.com

Gregg Kohansky
+44 20 7417 4091
gregg.kohansky@fitchratings.com

Matthias Neugebauer
+44 20 7417 4355
matthias.neugebauer@fitchratings.com

Financial Institutions

Krishnan Ramadurai
+44 20 7417 3480
krishnan.ramadurai@fitchratings.com

■ Summary

The overhaul of the international regulatory capital system (“International Convergence of Capital Measurement and Capital Standards, a Revised Framework,” or Basel II, published in June 2004) creates new incentives for how banks measure risk and allocate capital. These new incentives will influence bank investment and portfolio management strategies and, thus, have an important impact on financial and asset markets where banks and financial institutions are significant players.

Securitization is one of the critical markets where the advent of Basel II has been generating intense industry discussion and debate. Despite this keen interest in the “bottom-line” impact of the new Basel II securitization framework, there has been surprisingly little quantitative research and systematic analysis in the securitization area.

This report provides quantitative analysis of how Basel II will affect the securitization markets. More specifically, the amount of capital Basel II will require a bank to hold for an unsecuritized pool of assets is compared to the capital charge on a securitization of these same assets. These deals include residential mortgage-backed securities (RMBS), credit card asset-backed securities (ABS), commercial mortgage-backed securities (CMBS), and collateralized debt obligations of corporate assets (CDOs). For each of these product categories, Fitch has evaluated securitized portfolios of higher, medium, and lower risk assets that are broadly representative of the types of transactions commonly seen as part of the rating process.

■ Key Findings

Fitch’s research has yielded a number of interesting findings about the potential impact of Basel II on banks and the securitization markets:

- Under Basel II, banks generally would be required to hold less capital against rated securitization positions than against unrated positions, particularly on tranches falling in the middle of a structure (i.e. mezzanine positions). Thus, the Basel II securitization charges could potentially give banks a regulatory capital incentive to target the rated portion of the securitization market.
- It appears that the optimal capital strategy for banks using the internal ratings-based (IRB) approach to regulatory capital (which will likely include the larger, more complex financial institutions) is to invest in rated securitized notes rather than holding or investing in a comparable pool of unsecuritized assets directly on balance sheet. An exception is the case of CDOs, where the IRB capital charges on the rated securitized structure appear to be closely aligned with the charges on the unsecuritized pool of assets.
- For unrated securitization structures, Basel II appears to give IRB banks a slight capital incentive to hold the underlying pool of assets instead of the securitized notes.

September 12, 2005

- From a regulatory capital perspective, Basel II appears to have little if any impact on an IRB bank's decision to securitize corporate debt and residential mortgage assets (i.e. through CDO and RMBS transactions).
- However, Basel II seems to establish fairly strong capital incentives for banks to securitize commercial mortgages and credit card receivables (i.e. through CMBS and credit card ABS structures).
- Basel II could influence how securitization deals are structured, with banks facing strong regulatory capital incentives to minimize their exposure to subinvestment-grade tranches.
- Under Basel II, banks using the standardized approach to regulatory capital (which is generally geared to smaller, less complex institutions) will face regulatory capital incentives to invest in lower rated securitization positions, potentially leading to erosion in the credit quality of their holdings of structured notes.

■ Background on Basel II Securitization Framework

The new Basel II capital framework is designed to align the charges on banks' assets, including securitization positions, more closely to the underlying economic risk of the exposure.

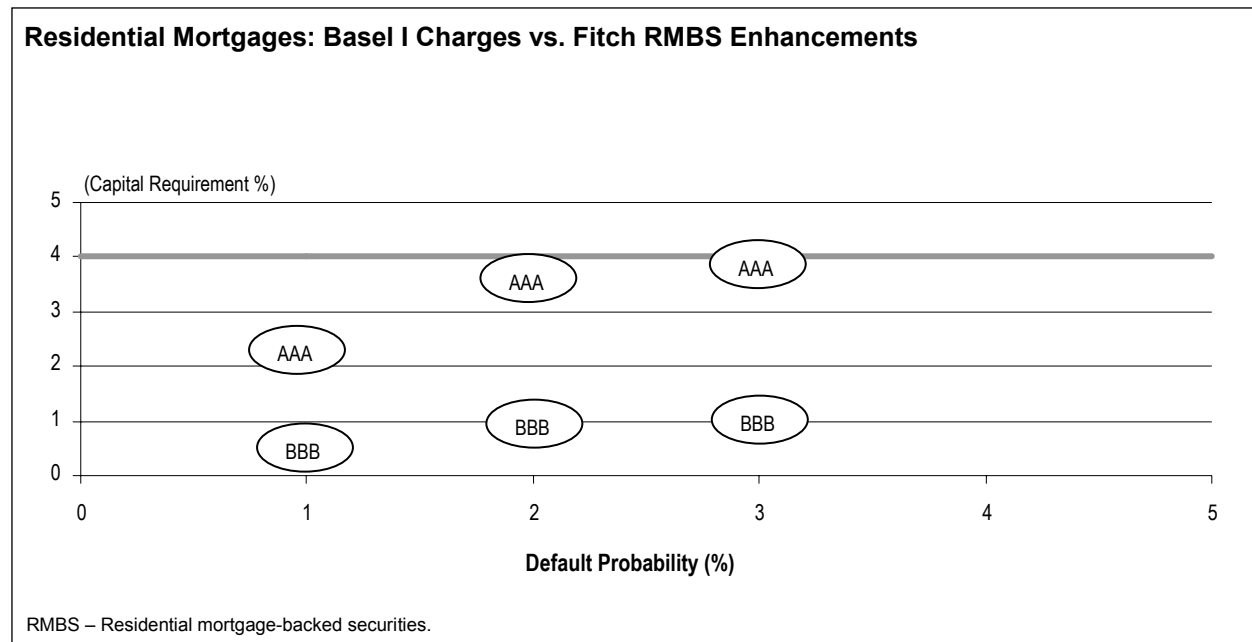
Basel I: Arbitraging the Rules

An important objective of this closer alignment of regulatory capital to risk is to address the capital arbitrage strategies that flourished under the 1988

Basel Capital Accord (Basel I). Basel I applies a flat 8% capital charge on all corporate assets and 4% charge on all residential mortgage lending, irrespective of the underlying credit quality of the borrower. Thus, on very high-quality assets, the amount of capital that banks have been required to hold under the Basel I regulation exceeds the level of capital needed to cover the economic risk of the asset.

One way of illustrating that the Basel I capital charges are excessive on higher quality assets is to compare the 4% regulatory capital charge on mortgage lending with the amount of Fitch enhancements typically supporting the various rating levels across prime RMBS structures. As demonstrated in the chart below, the 4% Basel I charge on residential mortgages exceeds the amount of enhancement Fitch generally would require at the 'AAA' rating level for prime RMBS deals (assuming that the probability of default in a base case is roughly 3% or less on the underlying mortgage portfolio). This comparison shows that the 4% Basel I charge overstates the capital needed to cover the economic risk on high-quality mortgages and provides clear incentives for banks to securitize these assets rather than hold them on balance sheet.

Therefore, Basel I has presented banks with an incentive to reduce their regulatory capital requirements by shedding these higher quality assets from their books. One popular method has been to securitize them, with originating banks often holding on to the riskiest first loss positions to help support the deal. In this manner, banks have been able to



decrease their Basel I capital requirements without necessarily reducing their economic risk exposure.

Since the 1988 accord does not explicitly address securitization, many countries have individually tried to establish regulatory capital rules to help curb these arbitrage plays, such as the U.S. recourse rules. While this patchwork of national rules has been a useful stopgap, the need for a consistent regulatory capital framework for securitization became clear to regulators and, therefore, has been an important catalyst for Basel II efforts.

Basel II: Better Measure of Economic Risk

Basel II is intended to curb the incentives for banks to engage in regulatory arbitrage in two ways.

First, Basel II aligns regulatory capital on unsecuritized assets much more closely to underlying economic risk than Basel I, providing potential capital incentives for banks to hold credits to higher quality borrowers on balance sheet rather than securitizing them. One of the critical Basel II innovations for aligning regulatory capital to economic risk is the IRB approach, which measures a bank's regulatory capital based on the default risk (probability of default [PD]) and loss severity (or loss given default [LGD]) of its credit exposures.

IRB banks will need to generate internal estimates of the PD of each asset. To determine the loss severity on corporate and commercial real estate assets, the more sophisticated IRB banks (the so-called advanced IRB banks) will be able to estimate LGD based on internal estimates, while other IRB banks (the foundation IRB banks) must use a fixed 45% LGD assumption. For retail assets (e.g. residential mortgages and credit cards, among other assets), Basel II does not distinguish between foundation and advanced banks; rather, all IRB institutions will provide their own estimates of both PD and LGD on these exposures.

IRB banks then must translate the PD and LGD estimates into a capital charge using mathematical formulas provided in the Basel II regulation. The IRB approach for unsecuritized assets is basically a credit risk model, though one that has been designed by regulators to meet their prudential objectives.

The second element of Basel II's stemming of regulatory arbitrage is its treatment of securitized positions held by banks. Basel II applies relatively stringent regulatory capital charges on junior

securitization tranches, meaning that originating banks will face higher costs if retaining these positions as credit enhancement for structured transactions.

Basel II provides a range of methods for banks to determine the regulatory capital charges on their securitization holdings, depending on whether the bank will implement the IRB approach or, for banks with less sophisticated risk measurement systems, the standardized approach to credit risk.

The securitization charges for IRB banks depend on whether the position held has a credit rating from a recognized credit rating agency:

- For all securitization tranches with a credit rating, IRB banks must use what is known as the ratings-based approach (RBA). The RBA links the capital charge to the external credit rating of the position, meaning that better rated positions benefit from lower Basel II capital charges.

Basel II Global Implementation

Most of the larger, internationally active financial institutions will likely adopt the internal ratings-based (IRB) approach. For example, in the U.S., approximately seven or eight of the largest banking organizations will likely be required to adopt the advanced IRB (so-called mandatory IRB banks), with another 10 or so U.S. institutions expected to implement the advanced IRB on a voluntary basis (opt-in banks). However, U.S. regulators have decided not to implement the foundation IRB and standardized approaches.

In Europe, all financial institutions (encompassing both banks and securities firms) in European Union (EU) member countries will be required to adopt Basel II. A number of European financial institutions are expected to adopt the foundation IRB, with a few of the largest entities likely to adopt the advanced IRB. All remaining European banks and securities firms will be required to use the standardized approach.

Banks in Canada and Japan, which also are members of the Basel Committee, will be implementing both the IRB and standardized approaches. In other regions, including in parts of Asia and Latin America, as well as South Africa and Australia, regulators have expressed plans to adopt Basel II. A few banks in these regions have indicated an intention to adopt the IRB approach, although most banks, particularly in emerging or developing markets, will likely be targeting the standardized approach.

- For unrated securitization exposures, IRB banks must use a formula specified in the Basel II regulation that generates a capital charge based on various attributes of the structure and the riskiness of the underlying assets (the supervisory formula). These attributes include, most importantly, the IRB charges on the underlying pool of assets (which, under the Basel II securitization rules, is known as KIRB), as well as the level of enhancement supporting the tranche, the thickness or relative size of the tranche, and the granularity or number of exposures in the pool.
- Thus, a bank holding both rated and unrated positions within the same securitization structure would apply the RBA to the rated tranches and the supervisory formula to the unrated exposures.

In comparison, banks using Basel II's standardized approach to credit risk are given only one method for determining their securitization charges, which like the RBA, links the capital charge to the credit rating of the securitization position held.

However, unlike the RBA, the standardized charges are generally set higher than the RBA charges; for example, an 'AA' rated tranche will require more capital if held by a standardized bank than by an IRB bank. Another point of departure is that the standardized charges are generally less differentiated than the RBA charges. For instance, the standardized approach applies the same 8% charge on all tranches rated 'BBB+' through 'BBB-', while the RBA distinguishes between the differing risk profiles of these positions. With standardized and IRB banks facing different capital charges on the same exact securitization exposures, Basel II could potentially

introduce new forms of regulatory capital arbitrage.

For unrated securitization positions, standardized banks must hold \$1 of capital for every \$1 of exposure (known as a "dollar-for-dollar" capital charge), a strong capital disincentive against holding unrated tranches.

Fitch Research and Methodology

The goal of Fitch's research on this topic is to determine how the new Basel II capital framework will affect the securitization markets. More specifically, the Basel II charges for sample portfolios of unsecuritized assets are calculated as if they were held on balance sheet, and then the Basel II charges on a securitization of each of these portfolios are calculated.

The primary focus of this report is on IRB banks, as these tend to be the more sophisticated institutions that are most active in the securitization markets (*for the capital charges facing standardized banks on the sample securitization portfolios, see Appendix I, page 15*).

Portfolios: Representative Sample of Deals in the Market

To develop a broader picture of how Basel II could affect the securitization markets, Fitch's analysis covers a range of portfolios representing different underlying assets and risk levels. More specifically, RMBS, credit card ABS, CMBS, and CDOs of corporate debt are evaluated. For each of these product categories, Fitch assesses the portfolios of higher, medium, and lower risk assets underlying them. The portfolios are representative of but not necessarily identical to actual portfolios and have

Basel II Securitization Charges: IRB vs. Standardized

(%)

External Rating	Standardized Securitization Charges*	Basel II IRB Securitized**	IRB vs. Standardized Securitization Charges
'AAA'	1.60	0.56	(65)
'AA'	1.60	0.64	(60)
'A'	4	0.96	(76)
'BBB+'	8	2.80	(65)
'BBB'	8	4.80	(40)
'BBB-'	8	8	0
'BB+'	28	20	(29)
'BB'	28	34	21
'BB-'	28	52	86
'B'	Full Deduction	Full Deduction	N.A.
'CCC+'	Full Deduction	Full Deduction	N.A.

*Applies to investing standardized banks only; originating standardized banks are required to deduct non-investment-grade tranches rated 'BB+' and below out of capital. **For positions rated 'BBB' and above, the most favorable ratings-based approach (RBA) charges available for granular and senior positions are used in this comparison given the severe stress scenarios and conservative enhancement levels needed to achieve an investment-grade rating. IRB – Internal ratings based. N.A. – Not applicable.

been made anonymous for the purposes of modeling the Basel II charges.

To better reflect the diversity of securitization deals found in the marketplace today, a range of structures are evaluated. These include market conventions and features that are often seen in the various securitization products covered in Fitch’s study. For instance, some securitizations have equity tranches (e.g. CDOs and higher risk CMBS), while in other structures, the most junior tranche is rated ‘BBB’ (e.g. credit cards). Some of the structures in Fitch’s research include only the securitized notes (e.g. CDOs), while others incorporate additional enhancement features, such as reserve funds (e.g. RMBS) or excess spread (e.g. credit cards). Additionally, to simplify the analysis, the RMBS transactions are assumed to be pass-through structures rather than the more commonly used and more heavily structured master trust programs.

For a description of Fitch’s methodology in calculating the Basel II charges, see the box on page 14. For a more detailed description of the securitization structures evaluated in the study, the key assumptions made in calculating the Basel II charges, and the results for each portfolio, see Appendix I, page 15.

Results: Basel II’s Impact on Securitization Markets

Fitch’s research reveals a number of interesting and, in some cases, rather stark findings about how the securitization markets might potentially be affected by the advent of Basel II.

Lower Capital Charges on Rated vs. Unrated Securitization

Generally, IRB banks will have to hold less capital on rated securitization tranches than on tranches that do not have an external rating from a recognized credit rating agency (in Basel II parlance, an external credit assessment institution [ECAI]). That is, in certain cases, the RBA generates much lower capital requirements than the supervisory formula on the same securitization position, which might provide incentives for IRB banks to target the rated portion of the securitization market.

Incentives to Invest in Rated Structures Differ Across Product Types

The differences in capital charges between the RBA and supervisory formula are most pronounced for the credit card ABS and CMBS transactions. As illustrated in the chart at right, the supervisory

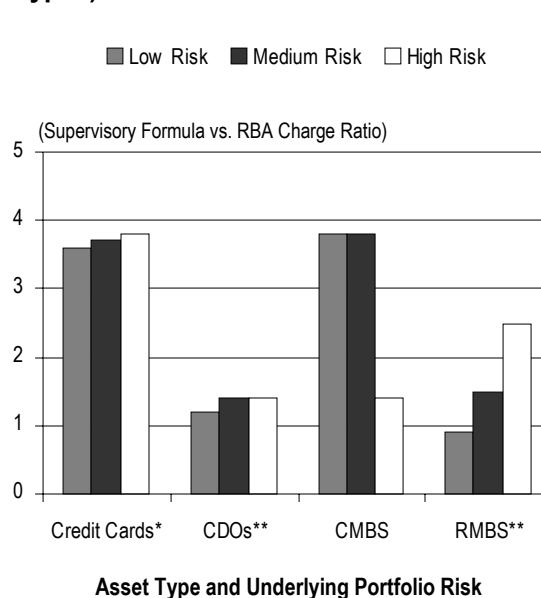
formula generates approximately three to four times as much capital as the RBA across the same securitization structure on all but one of the credit card ABS and CMBS deals evaluated in this study. For example, for both the lower risk and medium risk CMBS portfolios, the total supervisory formula charges across the entire securitization structure (i.e. summing the charges on each tranche) are 3.8 times higher than the corresponding RBA charges on the same structure.

By comparison, for the CDO and RMBS deals, the supervisory formula and RBA capital charges appear to be aligned much more closely. In all CDO and RMBS deals except one, the supervisory formula results in no more than 1.5 times as much capital as the RBA and, in fact, less capital than the RBA on the lower risk RMBS transaction evaluated in this study.

Incentives to Obtain a Rating Vary Across Securitization Capital Structure

Another interesting facet of this comparison is that the degree of difference between the RBA and supervisory

Multiple of Supervisory Formula Capital Charges to RBA Charges (Across Asset Types)



*For credit cards, supervisory formula charges across the entire portfolio are about four times higher than ratings-based approach (RBA) charges (for high, medium, and low risk portfolios).
 **For collateralized debt obligations (CDOs) and residential mortgage-backed securities (RMBS), capital generated under the supervisory formula and RBA are more closely aligned.
 CMBS – Commercial mortgage-backed securities.
 Note: For ratios above 1.0, supervisory formula charges are higher than RBA charges.

formula charges seems to vary based on where the tranche falls within the securitization structure.

The RBA and supervisory formula charges on the most senior, high-quality tranches appear to be closely aligned. Likewise, at the lowest end of the credit spectrum, highly subordinated positions (like equity tranches) face comparably stringent charges under both the RBA and supervisory formula.

This alignment between the RBA and supervisory formula at the high and low ends of the credit quality spectrum largely reflects the caps and floors that Basel II applies to the supervisory formula, which bounds the resulting capital charges.

As illustrated in the top right chart, which uses the higher risk CDO transaction as an example, the supervisory formula and RBA result in essentially the same capital charges on the four 'AAA' rated tranches and, at the opposite end of the structure, on the equity tranche. By comparison, for this same CDO transaction, the supervisory formula charges are about three to four times higher than the RBA for the 'BB' and 'AA' rated tranches and almost 12 times higher for the 'A-' tranche.

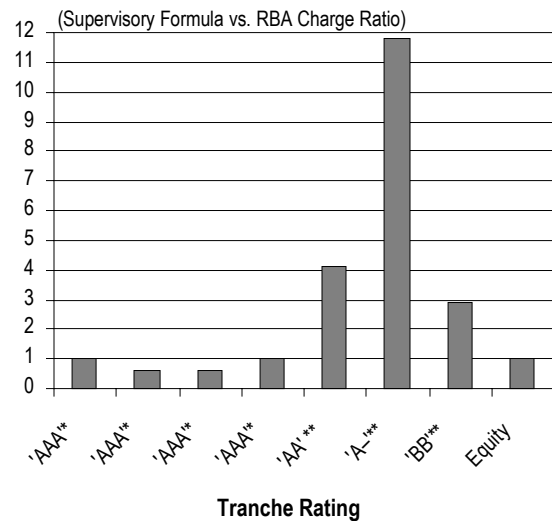
Indeed, for tranches that fall in the middle of the credit quality spectrum, the RBA generates significantly less regulatory capital than the supervisory formula. This difference in capital for the middle tranches is further highlighted in the chart at right, which shows that the supervisory formula generates about 10–15 times more capital than the RBA on tranches rated 'BBB'. This disparity between the RBA and supervisory formula at the 'BBB' rating level is evident across each of the product categories (credit card ABS, CDO, CMBS, and RMBS).

Largest Incentives for Obtaining Credit Ratings in Middle of Quality Spectrum

Thus, whether by design or not, IRB banks generally will have to allocate less capital against rated securitization tranches than against unrated tranches, which, in turn, seems to create a regulatory capital incentive for banks to target rated (as opposed to unrated) securitization products. The apparent Basel II capital incentives for obtaining a credit rating on securitized positions seem strongest for the middle layers of a securitization structure.

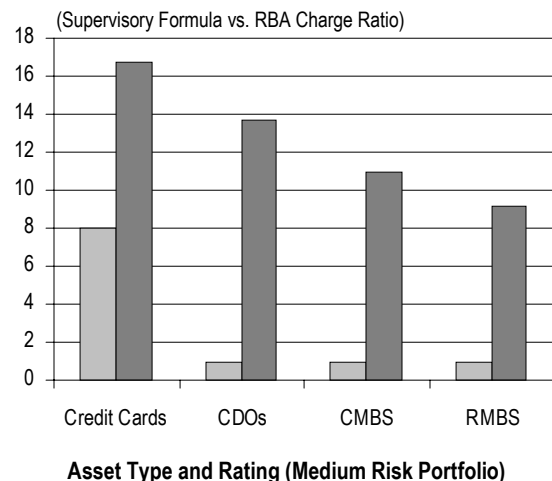
IRB banks holding rated, as opposed to unrated, tranches will generally benefit from lower capital charges on their

Multiple of Supervisory Formula Capital Charges to RBA Charges (Across Capital Structure)



*Supervisory formula and ratings-based approach (RBA) are closely aligned for higher rated, more senior tranches. **Supervisory formula is far higher than RBA for the 'AA', 'A-', and 'BB' tranches. Note: Example based on collateralized debt obligation (CDO) high risk portfolio.

Multiple of Supervisory Formula Capital Charges to RBA Charges ('BBB' vs. 'AAA' Tranches)*



*For 'BBB' rated tranches, Basel II securitization charges are much higher if unrated. **At 'BBB' tranche level, the supervisory formula requires much more capital than the ratings-based approach (RBA). CDOs – Collateralized debt obligations. CMBS – Commercial mortgage-backed securities. RMBS – Residential mortgage-backed securities.

securitization holdings under Basel II. Credit ratings provide market participants with transparent, objective, and timely measures of credit risk. The structured ratings process is grounded in explicit and well-defined methodologies, sophisticated risk models and robust analytics, and ongoing monitoring and surveillance of the performance of the transaction — important factors for supervisors and market participants that rely on credit ratings to help better understand and monitor a bank’s securitization exposure.

IRB Charges Generally Lower on Rated Securitized Notes than Unsecuritized Pool

By fundamentally changing the allocation of regulatory capital, the IRB framework creates new incentives for how banks manage their investment and portfolio strategy.

One critical area explored by Fitch is how Basel II might affect a bank’s decision to invest in securitized notes. More specifically, a bank that seeks exposure to a certain asset market, e.g. corporate debt, can either purchase a portfolio of corporate bonds or, alternatively, invest in a securitization of these bonds. A question Fitch seeks to answer is how Basel II might influence this investment decision in terms of the regulatory capital charges that the bank would have to hold under each alternative.

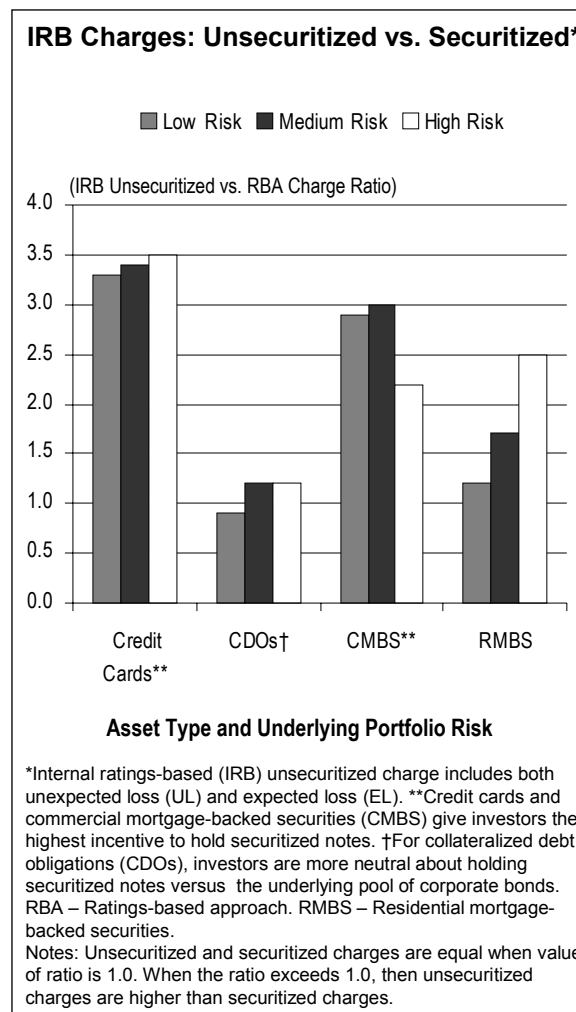
In performing this analysis, the Basel II charges on an IRB bank’s investment in a portfolio of unsecuritized assets are compared to an investment in the securitized notes on the same pool. In this analysis, Fitch assumes that the bank purchases all notes and positions created through the securitization process. While one bank purchasing all positions in a securitization is certainly not typical of market practice, this construct helps contrast the capital charges on securitized versus unsecuritized investments of equivalent economic risk.

What Fitch has discovered is that, in many instances, IRB banks will face lower Basel II capital charges by investing in a rated securitization structure of a pool of assets rather than directly holding the underlying pool of these same assets. This finding is somewhat surprising given much-voiced industry concerns that Basel II will inflict excessive capital charges on securitizations and potentially hamper the market. In short, the results for the portfolios Fitch analyzes in this study suggest that this concern might not be so grave.

Certain Securitization Products More Attractive for IRB Banks

For IRB banks, certain securitization products become more attractive than others from a capital standpoint.

Under Basel II, credit card ABS and CMBS become particularly attractive investments for IRB banks. As illustrated in the chart below, the unsecuritized charges are several multiples higher than the securitized charges (using the RBA) on both the credit card ABS and CMBS structures evaluated in this study. In other words, an IRB bank seeking exposure to the credit card and commercial mortgage markets will be better off from a regulatory capital perspective if it chooses to invest in a rated securitization structure rather than holding or purchasing an equivalent pool of unsecuritized assets. For RMBS, there is also a moderate Basel II benefit to holding the securitized notes of a rated structure rather than the underlying pool of unsecuritized assets,



although the disparity between the unsecuritized and securitized IRB charges is not nearly as pronounced as in the case of credit card ABS and CMBS.

In contrast to the other asset classes, for CDOs, there appears to be little, if any, difference between the securitized and unsecuritized capital charges. Hence, an IRB bank has the potential to be indifferent about investing in rated CDO structures versus holding the underlying pool of corporate debt instruments. Therefore, in the CDO world, the Basel II framework appears to achieve a very close alignment between the IRB formula for corporate assets and the RBA charges on the securitized notes of these assets.

Under Basel II, IRB banks appear to be indifferent about investing in corporate debt versus rated CDO products. Thus, the demand by IRB banks for CDO products relative to corporate debt appears to be unaffected by Basel II, meaning that market dynamics, not regulatory requirements, are likely to continue to drive banks investing in these markets.

Mild Incentive for IRB Banks to Hold Unsecuritized Assets Rather than Unrated Securitization Structure

Fitch's finding that banks are generally better off holding the securitized notes rather than the underlying pool of assets is premised on the notes having an external credit rating and, hence, being subject to the RBA securitization charges; this is an appropriate assumption given that the structures evaluated in this study are comparable to those in Fitch rated deals.

However, if these same structures were unrated, IRB banks would instead have to use the supervisory formula, which, for most securitization positions, appears to generate higher regulatory capital charges than the RBA. When evaluating these deals using the supervisory formula instead of the RBA, it was discovered that IRB banks no longer face a Basel II capital incentive to hold the securitized notes over the unsecuritized assets.

Fitch's analysis for the unrated positions is very similar to that of the rated positions. Looking at the same sample of deals, the Basel II charges on a bank's investment in a portfolio of unsecuritized assets are compared to an investment in the securitized positions on the same pool, with the difference in this case being that none of the securitized positions are assumed to be externally rated. To help make the unsecuritized versus securitized investments economically equivalent in

Fitch's analysis, it is again assumed that one bank purchases all notes and positions created through the securitization process.

Interestingly, for all products (except RMBS), IRB banks using the supervisory formula on unrated securitization positions generally would face slightly lower charges if holding the pool of unsecuritized assets instead of the securitized notes. Therefore, it appears that the supervisory formula will provide IRB banks with a different set of incentives than the RBA, namely for banks to hold the unsecuritized assets on balance sheet rather than investing in the unrated securitized structure.

The capital incentives for holding unsecuritized assets versus holding the securitized notes (for both rated and unrated structures) are illustrated for each product type in the chart on the top of page 9.

This chart extracts the two main findings of Fitch's research, comparing the Basel II charges for unsecuritized versus securitized assets; namely that, in general:

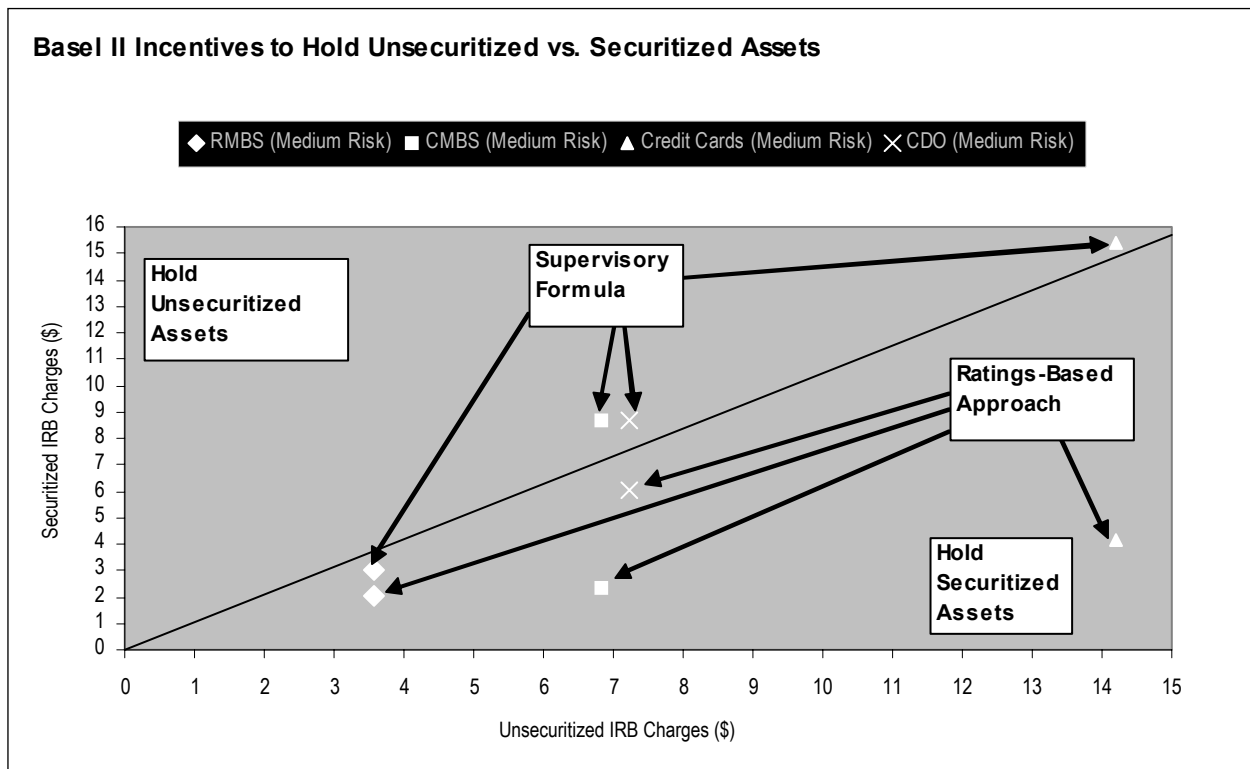
- Basel II appears to provide IRB banks with regulatory capital incentives to invest in rated securitization structures rather than holding the underlying portfolio of unsecuritized assets.
- Conversely, for unrated structures, IRB banks generally will have to hold slightly less Basel II capital against the underlying pool of on balance sheet assets than on an investment in a securitization of these assets.

Credit Card ABS and Role of Excess Spread

The Basel II incentives — namely for banks generally to want to invest in rated, but not unrated, securitization structures — are especially pronounced in the case of credit card ABS.

Part of the marked differences between the securitization charges on rated versus unrated credit card ABS positions can be explained by the role that excess spread plays in providing enhancement on the most junior tranche in these transactions. Excess spread is essentially the income remaining from a pool of receivables after paying out investor coupon and servicing fees, as well as any chargeoffs.

Basel II does not explicitly recognize excess spread as a form of enhancement under the supervisory formula, meaning that the enhancement levels used as an input to the supervisory formula charges on unrated positions



only reflect securitization positions or reserve accounts that are junior to the tranche in question. Thus, the capital charges generated by the supervisory formula would presumably be somewhat lower if excess spread was actually treated as a form of credit enhancement under Basel II.

There also is no explicit recognition of excess spread as a form of enhancement for securitization positions under the RBA. However, since the RBA charges are linked to credit ratings and to the extent that the credit ratings process accords some benefit to excess spread, in practice, the RBA provides some limited, indirect recognition of excess spread.

In other words, the RBA capital charges reflect the benefits of excess spread to the extent that excess spread is incorporated into the enhancement level and, in turn, the credit rating of a particular tranche. For example, when rating structured transactions, Fitch gives no credit for excess spread for tranches rated 'A' or higher but provides limited recognition for tranches below this level, as long as the asset pool is of sufficient diversification and asset quality (see *Fitch Research on "Credit Card C-Piece Secrets,"* dated April 5, 2001, and *"ABCs of Credit Card ABS,"* dated April 4, 2001, available on Fitch's web site at www.fitchratings.com). In the credit card ABS deals evaluated in this study, excess spread trapping

is assumed to provide some enhancement to the most junior tranche, helping meet the expectations for a 'BBB' rating.

Basel II: Unique Aspects of Credit Cards

Credit card lending and credit card asset-backed securities (ABS) structures present some unique risk measurement challenges under Basel II:

- Undrawn lines are an important source of risk on credit cards, as future drawdowns can increase a bank's exposure at default (EAD).
- Credit card ABS deals are typically structured to include a seller's interest, with the originating bank essentially retaining credit exposure to a portion of the trust receivables.
- Credit card ABS transactions often include early amortization provisions, which can result in the transaction unwinding under certain financial conditions, usually tied to a decrease in the level of excess spread generated by the transaction.

For a detailed explanation of how these measurement issues are addressed within Fitch's analysis, see Appendix II, page 21. For further detail on the assumptions and inputs to the early amortization charge, see the tables within the Appendix I, pages 15–20.

The design of the RBA charges means that a securitization deal whose most junior tranche is rated 'BBB' would require relatively low levels of regulatory capital, since no part of the structure would face the high Basel II charges on tranches rated below investment grade. Thus, for credit card ABS, even the limited recognition of excess spread within the credit ratings process can contribute to rather important differences in capital between the RBA and supervisory formula and serve as a particularly strong incentive for banks using the RBA to hold securitized notes rather than the underlying pool of receivables.

Minimal Impact of Basel II on Bank Decision to Securitize Corporate Debt and Residential Mortgage Assets

A critical issue under Basel II is how the new capital framework might affect a bank's decision to securitize assets.

Ideally, Basel II should have little if any impact on a bank's decision to securitize a pool of on balance sheet exposures. That is, the Basel II capital charges on a pool of assets should closely mirror the total charges on a securitization of these same assets, as the structuring process does not alter the overall economic risk profile of the pool.

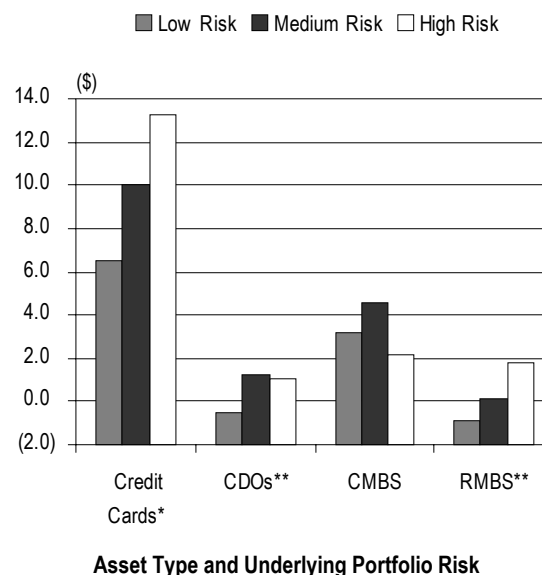
To the extent that securitization results in a net increase in a bank's Basel II charges, there could potentially be new regulatory capital disincentives for banks to securitize their assets (though any potential disincentives would, in practice, be limited by the Basel II cap that limits a bank's securitization charges to the KIRB amount on the underlying pool). However, if securitization leads to lower capital charges on a given pool of assets, Basel II would create incentives for banks to securitize these assets.

To illustrate the capital impact of Basel II and its potential influence on securitization market activity, the IRB charges on \$100 of unsecuritized assets are compared to the total capital requirements that both originators and investors must hold across all exposures arising from a securitization of these assets (including capital against reserve funds and, in the case of credit card ABS, the Basel II capital charges that address potential early amortization of a structure). In other words, the amount of capital an originator would have to hold on an unsecuritized pool is compared to the capital it would have to hold if it were to securitize that same pool and buy back all the securitized tranches. Within

this analysis, Fitch assumes that the securitization notes are rated and, hence, subject to the RBA.

For CDOs, Fitch's analysis suggests that the securitization process will not result in either a net increase or a decrease in Basel II capital charges on these products. This finding is consistent with expectations, as it is generally understood that Basel regulators looked extensively at CDOs when designing the securitization framework and calibrating the charges. Notably, the results for the RMBS portfolios also suggest that securitizing residential mortgages will not lead to much change in capital under Basel II. Based on Fitch's analysis of these portfolios, it appears that the advent of Basel II may have little, if any, impact on a bank's decision to securitize corporate debt (through CDO structures) and residential mortgage assets (through RMBS structures).

Capital Released (Generated) under Basel II for Every \$100 Securitized



*Credit cards will result in largest release of capital, meaning that there will be stronger incentives to securitize these assets. **For residential mortgage-backed securities (RMBS) and collateralized debt obligations (CDOs), there generally will not be a regulatory capital incentive to securitize these assets. CMBS – Commercial mortgage-backed securities.
 Note: Below zero, securitization results in a net increase in a bank's regulatory capital requirements; above zero, securitization results in a net decrease in a bank's regulatory capital requirements.

Basel II Offers Capital Incentives for IRB Banks to Securitize Commercial Mortgages and Credit Card Receivables

However, for credit cards and CMBS, Fitch found that the securitization process generates a net reduction in regulatory capital charges for IRB banks. These results suggest that the new Basel II framework may provide banks with capital incentives for securitizing credit card and commercial mortgage assets. While a number of factors influence a bank's decision to securitize assets, the capital benefits under Basel II on these structured products could essentially spur future growth of the credit card ABS and CMBS markets.

Basel II May Influence Deal Structuring

Basel II may influence deal structuring, notably to minimize the size of subinvestment-grade tranches where possible.

Regulatory capital is one of many factors that influences an originator's decision when structuring a securitization, including pricing, market demand for different tranches, and rating agency expectations. At the same time, one unique structure, in most cases, will minimize the overall Basel II charges on the transaction and, hence, be optimal from a regulatory capital perspective.

Fitch's research illustrates that this optimal Basel II capital strategy is for originating banks to maximize the size of tranches rated 'BBB-' and above and minimize the size of subinvestment-grade tranches, particularly equity positions. Additionally, the high Basel II capital charges on subinvestment-grade securitization tranches may pressure banks to sell these positions to market participants not bound by the Basel II rules, such as hedge funds.

Basel II Introduces "Cliff" in Capital Charges

Basel II introduces a steep "cliff" in capital charges between investment- and subinvestment-grade securitization positions. Thus, Basel II generates significantly higher capital charges on securitized structures with larger proportions falling below investment grade. This finding is broadly consistent with expectations given the higher risk of subinvestment-grade tranches. However, the difference between investment- and subinvestment-grade tranches is quite large under Basel II and may, in some cases, lead to potential inconsistencies in the capital charges across different securitization deals.

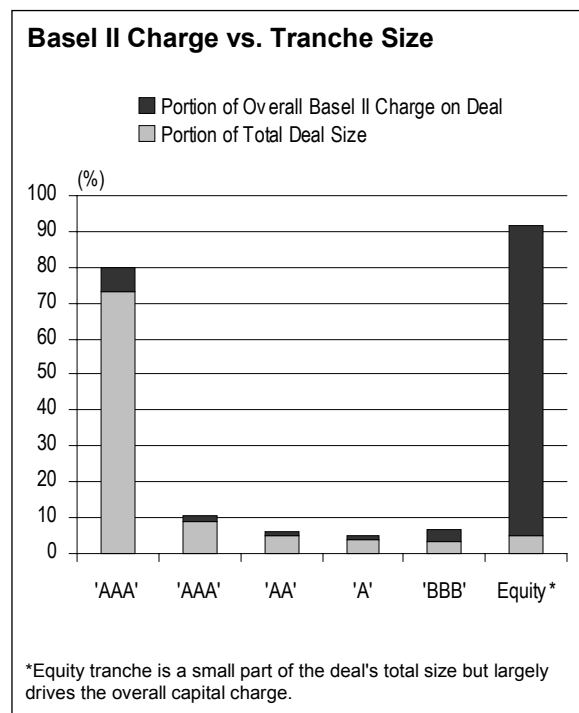
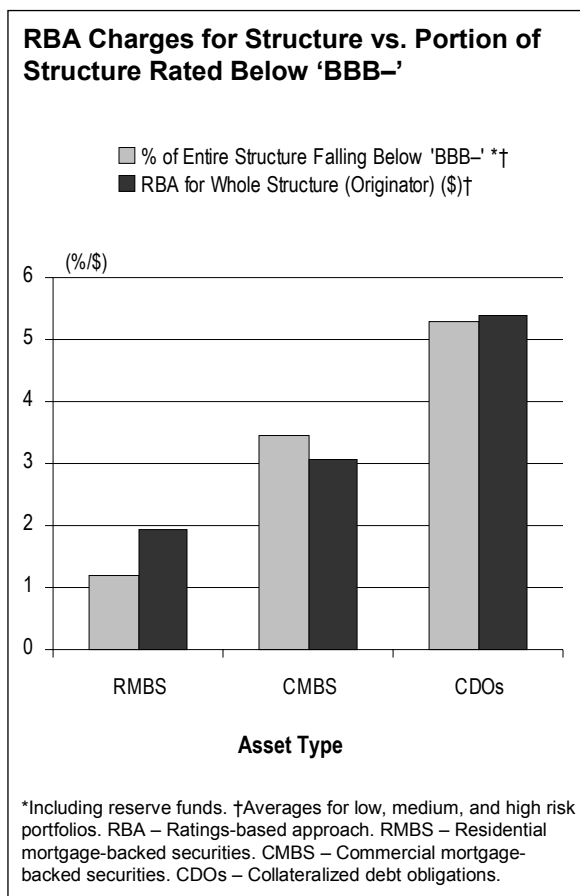
An important driver of the capital charges on a given securitization structure is the steep cliff that Basel II will introduce between investment- and subinvestment-grade securitization positions. For example, the RBA will require 2.5 times more capital for a 'BB+' tranche (20% capital charge) than a 'BBB-' tranche (8%). Thus, deals with larger portions of the securitization rated below 'BBB-' generally face considerably higher Basel II capital charges, as shown in the chart on top left of page 12.

The impact of this cliff effect is particularly evident in the case of CDOs, which is not surprising given that the pool of corporate debt instruments underlying CDOs tends to be riskier than, for example, the retail credits that typically underlie RMBS deals. The higher risk of the assets underlying CDOs means that larger enhancements are generally needed to support risk on the more senior tranches in the structure.

Indeed, the higher risk, medium risk, and lower risk CDO deals evaluated have, on average, the largest proportion of the structure rated below investment grade (i.e. over 5% of the deal). Not surprisingly, CDOs, on average, face the highest Basel II charges compared to other types of structured products examined in this study. For CDOs, the sizable equity piece needed to provide enhancement to the rest of the structure is a dominant driver of the overall Basel II securitization charge on these products.

For example, compare the contribution of each tranche in the medium risk CDO deal to both the overall notional exposure and the total Basel II securitization charges on the structure. As shown in the chart on the top right of page 12, most of the transaction's total exposure (over 90%) consists of tranches rated 'A' or above. However, in terms of capital requirements, the equity tranche contributes over 85% of the total Basel II charges on the deal. Clearly, from a capital perspective, the dollar-for-dollar Basel II charge on the equity tranche drives the overall capital requirements on the deal.

By creating a cliff in capital charges between the investment- and subinvestment-grade tranches (particularly equity tranches), Basel II gives banks a regulatory capital incentive to try to minimize the size of the equity tranche or reserve funds used to absorb first losses on the pool. Of course, a number of market factors constrain the ability of banks to minimize the equity piece or reserve fund, particularly the expectations of rating agencies that the mezzanine and senior tranches in a structure need to be supported by



sufficient credit enhancement to cover the risks associated with each tranche's rating level.

Given the high Basel II charges applied to subinvestment-grade and equity tranches, banks may seek to sell these positions to nonbank investors not subject to regulatory capital rules, such as hedge funds. Another possible strategy is for originating banks to try to use credit derivatives to mitigate their exposure on positions that consume large amounts of capital, such as reserve funds. Indeed, given the dollar-for-dollar Basel II charge against reserve funds, banks will have a capital incentive to try to lay off this risk exposure synthetically.

Potential Inconsistencies in Basel II Charges Across Some Deals

The wide gap in Basel II charges between investment-grade and equity tranches means that some structures may potentially face higher overall charges than a securitization of riskier assets.

In this study, Fitch discovered that the higher Basel II charges on subinvestment-grade tranches — particularly

on equity or first loss pieces (such as reserve funds) — in some cases, can result in inconsistencies in capital charges across different securitization deals. Under Basel II, a given securitization structure could possibly face lower capital charges than a comparable securitization of a higher quality or less risky pool of assets.

Given the calibration of the RBA charges, IRB banks must hold about 175 times more capital on an equity tranche or reserve fund (dollar-for-dollar charge) than on an 'AAA' rated tranche (0.56% charge). The disparity in charges reflects the much higher risk of a first loss exposure compared with an 'AAA' rated exposure. However, this disparity also means that, when comparing two broadly comparable securitizations, relatively subtle differences in the sizing of the more junior tranches could potentially result in riskier structures facing lower relative charges.

A hypothetical example of where a structure backed by a riskier portfolio faces relatively lower Basel II charges is the near prime versus subprime RMBS deals evaluated in this study. The pool underlying the near prime deal comprises relatively stronger credits and, hence, less risky assets than the subprime deal. However, the overall RBA charges on the near prime structure are slightly higher than on the subprime deal, an unexpected finding given that the near prime transaction is backed by a stronger pool of mortgage assets and, for example, has a larger 'AAA' tranche than the subprime deal.

Less Capital for Greater Risk: Near Prime vs. Subprime Example

(\$)

Asset Type	For Every \$100 of Securitization Exposure		
	Size of 'AAA' Tranche	Size of Reserve Fund (\$)	RBA Capital Charges for Entire Structure
Near Prime	90.77	1.33	2.06
Subprime	87.13	0.99	1.80

This counterintuitive outcome is a direct result of how the Basel II securitization charges are calibrated. The hypothetical near prime structure has a slightly larger reserve fund, in part because it is backed by relatively less excess spread than the subprime structure. The reserve fund is in a first loss position and, hence, subject to the stringent dollar-for-dollar Basel II charge. Thus, even though the near prime portfolio is less risky than the subprime and has a larger 'AAA' tranche, the size of the reserve fund is the primary driver of the overall charges on the respective deals and explains a potential inconsistency in the securitization charges generated by Basel II.

Thus, given the manner in which Basel II has calibrated the securitization framework, the structuring decision of the originator has an important impact on the overall capital charges on the structure.

Basel II May Affect Competition Between Standardized and IRB Banks

Basel II could affect competition between standardized and IRB banks within securitization markets.

Under Basel II, IRB banks generally will face different charges on the same position or asset than a bank that uses the standardized approach. Of note, banks not adopting the IRB in the U.S. will be subject to the U.S. recourse rules for determining capital requirements on securitized positions, which are generally comparable to the Basel II standardized securitization charges.

More specifically, for investments in securitized exposures, it generally appears that:

- IRB banks will face lower charges for higher quality tranches and, hence, have a relative capital advantage over standardized banks in this segment of the securitization markets.
- Standardized banks will face lower Basel II charges on investments in lower quality or

weaker tranches and, thus, have a capital advantage over IRB banks on these exposures.

More specifically, as illustrated in the table on page 4 comparing the RBA and standardized securitization charges, standardized banks will be required to hold more capital than IRB banks on all tranches rated 'BBB-' or above. However, standardized banks generally will face lower charges than IRB banks on investments in subinvestment-grade tranches, namely those rated 'BB' or 'BB-'.

Thus, Basel II appears to give standardized banks a capital incentive to purchase lower quality tranches, since they will generally benefit from lower charges on subinvestment-grade positions than IRB banks. At the same time, standardized banks will avoid investing in higher quality securitized notes given the higher charges they will face relative to IRB banks on investment-grade positions.

To the extent that standardized banks make investment decisions based on these new capital incentives, Basel II could inadvertently result in "double-sided erosion" in the asset quality of standardized banks. That is, standardized banks would have incentives to target the riskiest securitization positions and not diversify their holdings by investing in higher quality exposures.

One of Fitch's primary concerns about this potential double-sided erosion in asset quality is that standardized banks tend to be those institutions with more rudimentary risk management systems. Thus, standardized banks will have capital incentives to build portfolios of riskier positions without necessarily having the appropriate tools and modeling sophistication to understand and manage the risk of these portfolios. Clearly, it is undesirable from a systemic perspective if the less sophisticated standardized banks were to become warehouses for lower quality tranches as a result of Basel II.

More generally, it is uncertain how standardized banks will both identify and respond to these new regulatory capital incentives under Basel II. While banks under Basel II will inevitably make some decisions based largely on regulatory capital considerations, it is important for standardized banks, in particular, to continue developing their capacity for evaluating and managing the underlying economic risk they face.

Calculating Basel II Capital Charges

Calculating Basel II Unsecuritized Charges

Fitch calculates both the internal ratings-based (IRB) charges and standardized charges for the unsecuritized assets within each portfolio or pool of assets.

In determining the IRB charges for each unsecuritized pool, Fitch has developed average annual estimates of the default probability and loss severity for each asset category and portfolio risk level. The probability of default (PD) and loss given default (LGD) estimates used in this study are based on a combination of historical industry and Fitch loss data, published surveys of average bank risk estimates for different products, and parameters and inputs underlying Fitch's various structured rating models. The PD and LGD estimates for each portfolio are then run through the appropriate IRB formula. For example, the IRB charges on both corporate debt (underlying the collateralized debt obligation [CDOs]) and commercial real estate lending (underlying commercial mortgage-backed securities [CMBS]) are generated from the corporate IRB formula.

- One important technical note is that, while the IRB formula is designed to cover an asset's unexpected loss (UL), IRB calculations within this study are based on both UL and expected loss (EL). By way of background, the EL represents the amount of economic loss equal to the mean of a statistical distribution of potential credit losses, while the UL can be thought of as the difference between this mean loss and the potential loss represented by some confidence interval (which, in the case of Basel II, is measured at the 99.9% confidence level).
- Basing Fitch's IRB calculations on an EL plus UL measure is more consistent with the overall spirit of the Basel II framework, which require banks to estimate EL and allocate sufficient loan loss reserves to cover this exposure or face a deduction to regulatory capital. Indeed, while EL is not captured within the IRB formula, it remains an important part of the Basel II capital framework, as banks must cover the entire EL exposure before being able to measure risk-based capital on a UL-only basis.

In contrast to the formula-based IRB approach, the unsecuritized capital charges for standardized banks are fixed charges based on asset type (e.g. corporate and residential mortgage, among other assets) and, for corporate assets, on the borrower's credit rating as well.

- For corporate assets, the unsecuritized standardized charges are based on the credit rating of each bond within the pool. For example, a corporate bond rated 'A' is subject to a Basel II charge of 4% (or a 50% risk weight).
- For residential mortgages, commercial real estate, and credit cards, the standardized charge is based on asset type but not the risk profile of the borrower. For example, all residential mortgages are assigned a 2.8% charge (or 35% risk weight), commercial mortgages receive an 8% charge (100%), and credit cards require 6% capital (75%), irrespective of the borrower's credit quality.

Calculating Basel II Securitized Charges

Fitch then calculates the Basel II capital charges on each of the securitized portfolios under the IRB (which encompasses both the ratings-based approach (RBA) for rated positions and the supervisory formula for unrated positions) and standardized approaches to securitization.

Fitch derives securitization capital charges under the RBA by applying the Basel II capital charge applicable to each rating level or category. For example, an IRB bank would face a 1.6% charge on an 'A' rated securitization tranche under the RBA.

- The RBA provides three possible charges for securitization positions rated 'BBB' or above — senior, base case, and those backed by nongranular pools. For the purposes of this research, the base case charges were generally used, except for the most senior position in each structure, in which case the lower RBA charges applicable to senior positions were used.

As implied by its name, the supervisory formula for unrated securitization positions generates a capital charge for each tranche through a mathematical formula provided in the Basel II regulation.

- A critical input into this formula is KIRB (IRB capital charge had the underlying exposure not been securitized), which represents the amount of capital the IRB bank would have to hold against the underlying assets had they remained on balance sheet and not been securitized. The other important inputs to the supervisory formula include the tranche's enhancement level, the thickness or size of the tranche relative to the structure as a whole, and the diversification of single-borrower exposures within the pool.
- An important technical point is that KIRB measures both the UL and the EL on the underlying assets backing the securitization structure. For example, the KIRB for an RMBS transaction is calculated by estimating the PD and LGD values for the underlying mortgage assets, using these values in the IRB formula for residential mortgages to obtain the UL-based capital requirement and then adding back the EL amount (which is essentially the product of PD and LGD). Basel II's decision to base the IRB securitization charges on both UL and EL also enables Fitch to make more of an "apples-to-apples" comparison to the unsecuritized IRB charges, which, as noted, are measured on both an UL and EL basis for the purpose of this study.

For standardized banks, the securitization charge is based on the credit rating of the position. For example, an 'A' rated securitization exposure is assigned a 4% charge under the standardized approach. Unrated equity tranches and reserve accounts that absorb first losses on the pool are subject to a dollar-for-dollar capital charge, reflecting the concentrated risk inherent in these positions.

■ Appendix I: Basel II Charges on Sample Portfolios

RMBS: Prime (i.e. Lower Risk Portfolio)*

Unsecuritized

PD (%)	LGD	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized (%)
1.03	10.00	1.13	1.02	2.80

Securitized

Tranche Rating	Enhance- ment (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	6.80	93.28	1.60	0.56	0.56	1.49	0.52	0.52
'A'	2.80	3.95	4.00	1.60	0.56	0.16	0.06	0.02
'BBB'	1.30	1.48	8.00	6.00	5.07	0.12	0.09	0.08
Reserve Account**	0.00	1.28	100.00	100.00	94.51	1.28	1.28	1.21
Total		100.00				3.05	1.96	1.83

*Transactions are broadly representative of transaction types that Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **For comparisons between the unsecuritized internal ratings-based (IRB) versus securitized IRB charges for investing banks in this report, Fitch viewed the reserve account as an equity exposure for computing the unsecuritized IRB charge. For example, if the reserve account constitutes 1% of the securitization, the unsecuritized IRB charge would equal: (100% capital charge) x \$1 + (K_{IRB}) x \$99. The rationale is that the reserve account is funded by cash from the originator, which in the unsecuritized context would be analogous to investing in a risky equity-like instrument. RMBS – Residential mortgage-backed securities. PD – Probability of default. LGD – Loss given default. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula.

RMBS: Near Prime (i.e. Medium Risk Portfolio)*

Unsecuritized (%)

PD	LGD	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
1.58	15.00	2.26	2.02	2.80

Securitized

Tranche Rating	Enhance- ment (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	9.35	90.77	1.60	0.56	0.56	1.45	0.51	0.51
'A'	3.60	5.67	4.00	1.60	0.56	0.23	0.09	0.03
'BBB'	1.35	2.22	8.00	6.00	52.89	0.18	0.13	1.17
Reserve Account**	0.00	1.33	100.00	100.00	100.00	1.33	1.33	1.33
Total		100.00				3.19	2.06	3.05

*Transactions are broadly representative of transaction types that Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **For comparisons between the unsecuritized internal ratings-based (IRB) versus securitized IRB charges for investing banks in this report, Fitch viewed the reserve account as an equity exposure for computing the unsecuritized IRB charge. For example, if the reserve account constitutes 1% of the securitization, the unsecuritized IRB charge would equal: (100% capital charge) x \$1 + (K_{IRB}) x \$99. The rationale is that the reserve account is funded by cash from the originator, which, in the unsecuritized context, would be analogous to investing in a risky equity-like instrument. RMBS – Residential mortgage-backed securities. Probability of default. LGD – Loss given default. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula.

RMBS: Subprime (i.e. Higher Risk Portfolio)*

Unsecuritized (%)

PD	LGD	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
2.06	20.00	3.60	3.18	2.80

Securitized

Tranche Rating	Enhance- ment (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	13.00	87.13	1.60	0.56	0.56	1.39	0.49	0.49
'A'	4.00	8.91	4.00	1.60	1.28	0.36	0.14	0.11
'BBB'	1.00	2.97	8.00	6.00	94.92	0.24	0.18	2.82
Reserve Account**	0.00	0.99	100.00	100.00	100.00	0.99	0.99	0.99
Total		100.00				2.98	1.80	4.41

*Transactions are broadly representative of transaction types that Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **For comparisons between the unsecuritized internal ratings-based (IRB) versus securitized IRB charges for investing banks in this report, Fitch viewed the reserve account as an equity exposure for computing the unsecuritized IRB charge. For example, if the reserve account constitutes 1% of the securitization, the unsecuritized IRB charge would equal: (100% capital charge) x \$1 + (K_{IRB}) x \$99. The rationale is that the reserve account is funded by cash from the originator, which, in the unsecuritized context, would be analogous to investing in a risky equity-like instrument. RMBS – Residential mortgage-backed securities. Probability of default. LGD – Loss given default. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula.

CMBS (i.e. Lower Risk Portfolio)*

Unsecuritized (%)

PD**	LGD**	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized (LTV > 60%)
0.71	34.60	4.82	4.57	8.00

Securitized

Tranche Rating	Enhance- ment (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	19.84	80.16	1.60	0.56	0.56	1.28	0.45	0.45
'AA'	12.99	6.85	1.60	1.20	0.56	0.11	0.08	0.04
'A'	6.16	6.83	4.00	1.60	8.88	0.27	0.11	0.61
'BBB'	2.40	3.76	8.00	6.00	77.51	0.30	0.23	2.91
'BB'	0.00	2.40	100.00	34.00	100.00	2.40	0.82	2.40
Total		100.00				4.37	1.68	6.41

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **Probability of default (PD) and loss given default (LGD) data for the portfolio as a whole represent averages of the estimated PDs and LGDs of the individual assets underlying the securitized pool. Therefore, the internal ratings-based (IRB) charges calculated for the portfolio will not necessarily equal the charge that would be obtained if the average PD and LGD figures were used as inputs to the IRB formula (e.g. using a PD of 0.71% and LGD of 34.6% does not generate a UL-only IRB charge of 4.57%). CMBS – Commercial mortgage-backed securities. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. LTV – Loan-to-value ratio. RBA – Ratings-based approach. SF – Supervisory formula.

CMBS (i.e. Medium Risk Portfolio)*

Unsecured (%)

Avg. PD**	Avg. LGD**	IRB Unsecured (EL + UL) = K_{IRB}	IRB Unsecured (UL Only)	Standardized Unsecured (LTV > 60%)
1.00	39.28	6.84	6.45	8.00

Securitized

Tranche Rating	Enhancement (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	23.45	76.55	1.60	0.56	0.56	1.22	0.43	0.43
'AA'	16.64	6.81	1.60	1.20	0.56	0.11	0.08	0.04
'A'	10.59	6.05	4.00	1.60	0.56	0.24	0.10	0.03
'BBB'	3.79	6.80	8.00	6.00	64.90	0.54	0.41	4.41
'BB'	0.00	3.79	100.00	34.00	100.00	3.79	1.29	3.79
Total		100.00				5.91	2.31	8.70

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **Probability of default (PD) and loss given default (LGD) data for the portfolio as a whole represent averages of the estimated PDs and LGDs of the individual assets underlying the securitized pool. Therefore, the internal ratings-based (IRB) charges calculated for the portfolio will not necessarily equal the charge that would be obtained if the average PD and LGD figures were used as inputs to the IRB formula (e.g. using a PD of 1.00% and LGD of 39.28% does not generate a UL-only IRB charge of 6.45%). CMBS – Commercial mortgage-backed securities. EL – Expected loss. UL – Unexpected loss. K_{IRB} – IRB capital charge had the underlying exposure not been securitized. LTV – Loan-to-value ratio. RBA – Ratings-based approach. SF – Supervisory formula.

CMBS (i.e. Higher Risk Portfolio)*

Unsecured (%)

Avg. PD**	Avg. LGD**	IRB Unsecured (EL + UL) = K_{IRB}	IRB Unsecured (UL Only)	Standardized Unsecured (LTV > 60%)
1.11	43.17	7.63	7.17	8.00

Securitized

Tranche Rating	Enhancement (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	29.53	70.36	1.60	0.56	0.56	1.13	0.39	0.39
'A'	11.07	18.43	4.00	1.60	0.56	0.74	0.29	0.10
'BBB'	4.00	7.06	8.00	6.00	41.30	0.56	0.42	2.91
Reserve Account†	0.00	4.16	100.00	100.00	100.00	4.16	4.16	4.16
Total		100.00				6.59	5.27	7.57

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **Probability of default (PD) and loss given default (LGD) data for the portfolio as a whole represent averages of the estimated PDs and LGDs of the individual assets underlying the securitized pool. Therefore, the internal ratings-based (IRB) charges calculated for the portfolio will not necessarily equal the charge that would be obtained if the average PD and LGD figures were used as inputs to the IRB formula (e.g. using a PD of 1.11% and LGD of 43.17% does not generate a UL-only IRB charge of 7.17%). †For comparisons between the unsecured internal ratings-based (IRB) versus securitized IRB charges for investing banks in this report, Fitch viewed the reserve account as an equity exposure for computing the unsecured IRB charge. For example, if the reserve account constitutes 1% of the securitization, the unsecured IRB charge would equal: (100% capital charge) x \$1 + (K_{IRB}) x \$99. The rationale is that the reserve account is funded by cash from the originator, which, in the unsecured context, would be analogous to investing in a risky equity-like instrument. CMBS – Commercial mortgage-backed securities. EL – Expected loss. UL – Unexpected loss. K_{IRB} – IRB capital charge had the underlying exposure not been securitized. LTV – Loan-to-value ratio. RBA – Ratings-based approach. SF – Supervisory formula.

CDOs (i.e. Lower Risk Portfolio)*

Unsecuritized (%)

PD**	LGD**	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
0.10	65.12	3.24	3.18	5.51

Securitized

Tranche Rating	Enhance- ment (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	12.00	88.00	1.60	0.56	0.56	1.41	0.49	0.49
'AAA'	9.00	3.00	1.60	0.96	0.56	0.05	0.03	0.02
'AAA'	6.00	3.00	1.60	0.96	0.56	0.05	0.03	0.02
'BBB'	3.00	3.00	8.00	6.00	26.03	0.24	0.18	0.78
Equity	0.00	3.00	100.00	100.00	100.00	3.00	3.00	3.00
Total		100.00				4.74	3.73	4.31

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **Probability of default (PD) and loss given default (LGD) data for the portfolio as a whole represent averages of the estimated PDs and LGDs of the individual assets underlying the securitized pool. Therefore, the internal ratings-based (IRB) charges calculated for the portfolio will not necessarily equal the charge that would be obtained if the average PD and LGD figures were used as inputs to the IRB formula (e.g. using a PD of 0.10% and LGD of 65.12% does not generate a UL-only IRB charge of 3.18%). CDOs – Collateralized debt obligations. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula.

CDOs (i.e. Medium Risk Portfolio)*

Unsecuritized (%)

PD**	LGD**	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
0.58	58.07	7.23	6.90	7.52

Securitized

Tranche Rating	Enhance- ment (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	26.80	73.20	1.60	0.56	0.56	1.17	0.41	0.41
'AAA'	17.60	9.20	1.60	0.96	0.56	0.15	0.09	0.05
'AA'	12.60	5.00	1.60	1.20	0.56	0.08	0.06	0.03
'A'	8.50	4.10	4.00	1.60	5.41	0.16	0.07	0.22
'BBB'	5.20	3.30	8.00	6.00	83.00	0.26	0.20	2.74
Equity	0.00	5.20	100.00	100.00	100.00	5.20	5.20	5.20
Total		100.00				7.03	6.02	8.65

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **Probability of default (PD) and loss given default (LGD) data for the portfolio as a whole represent averages of the estimated PDs and LGDs of the individual assets underlying the securitized pool. Therefore, the internal ratings-based (IRB) charges calculated for the portfolio will not necessarily equal the charge that would be obtained if the average PD and LGD figures were used as inputs to the IRB formula (e.g. using a PD of 0.58% and LGD of 58.07% does not generate a UL-only IRB charge of 6.90%). CDOs – Collateralized debt obligations. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula.

CDOs (i.e. Higher Risk Portfolio)*

Unsecuritized (%)

PD**	LGD**	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
1.54	49.87	7.52	6.75	8.13

Securitized

Tranche Rating	Enhancement (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	25.00	75.00	1.60	0.56	0.56	1.20	0.42	0.42
'AAA'	15.75	9.25	1.60	0.96	0.56	0.15	0.09	0.05
'AAA'	13.75	2.00	1.60	0.96	0.56	0.03	0.02	0.01
'AAA'	11.25	2.50	1.60	0.96	0.94	0.04	0.02	0.02
'AA'	9.70	1.55	1.60	1.60	6.53	0.02	0.02	0.10
'A-'	7.70	2.00	4.00	2.80	33.14	0.08	0.06	0.66
'BB'	4.84	2.86	100.00	34.00	99.55	2.86	0.97	2.85
Equity	0.00	4.84	100.00	100.00	100.00	4.84	4.84	4.84
Total		100.00				9.22	6.45	8.96

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **Probability of default (PD) and loss given default (LGD) data for the portfolio as a whole represent averages of the estimated PDs and LGDs of the individual assets underlying the securitized pool. Therefore, the internal ratings-based (IRB) charges calculated for the portfolio will not necessarily equal the charge that would be obtained if the average PD and LGD figures were used as inputs to the IRB formula (e.g. using a PD of 1.54% and LGD of 49.87% does not generate a UL-only IRB charge of 6.75%). CDOs – Collateralized debt obligations. EL – Expected loss. UL – Unexpected loss. K_{IRB} – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula.

Credit Card ABS: High Prime (i.e. Lower Risk Portfolio)*

Unsecuritized (%)

PD**	LGD**	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
3.75	80.00	9.42	6.42	6.00

Securitized

Tranche Rating	Enhancement (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	8.00	73.60	1.60	0.56	2.20	1.18	0.41	1.62
'A'	3.00	4.00	4.00	1.60	100.00	0.16	0.06	4.00
'BBB'	0.00	2.40	8.00	6.00	100.00	0.19	0.14	2.40
Seller's Interest	N.A.	20.00	6.00	9.42	9.42	1.20	1.88	1.88
Early Amortization Charge	—	—	—	—	—	0.24	0.38	0.38
		100.0				2.97	2.87	10.28

Charges to Originating Bank: Early Amortization

Investor's Interest (%)	Excess Spread (bps)	Excess Spread Trapping Point (bps)	Spread Level Triggering Early Amortization (bps)	Excess Spread to Trapping Ratio (%)	Applicable CCF (%)**	Early Amortization Charge (IRB) (\$)	Early Amortization (Standardized) (\$)
80	475	450	0	105.56	5	0.38	0.24

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **From paragraph 604 of Basel II document published in June 2004 (see page 1). ABS – Asset-backed securities. PD – Probability of default. LGD – Loss given default. IRB – Internal ratings-based approach. EL – Expected loss. UL – Unexpected loss. K_{IRB} – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula. N.A. – Not applicable. bps – Basis points. CCF – Credit conversion factor.

Credit Card ABS: Prime (i.e. Medium Risk Portfolio)*

Unsecuritized (%)

PD**	LGD**	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
5.88	85.00	14.19	9.19	6.00

Securitized

Tranche Rating	Enhancement (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	11.00	71.20	1.60	0.56	4.48	1.14	0.40	3.19
'A'	5.00	4.80	4.00	1.60	100.00	0.19	0.08	4.80
'BBB'	0.00	4.00	8.00	6.00	100.00	0.32	0.24	4.00
Seller's Interest	N.A.	20.00	6.00	14.19	14.19	1.20	2.84	2.84
Early Amortization Charge	—	—	—	—	—	0.24	0.57	0.57
		100				3.09	4.13	15.4

Charges to Originating Bank: Early Amortization

Investor's Interest (%)	Excess Spread (bps)	Excess Spread Trapping Point (bps)	Spread Level Triggering Early Amortization (bps)	Excess Spread to Trapping Ratio (%)	Applicable CCF (%)**	Early Amortization Charge (IRB) (\$)	Early Amortization (Standardized) (\$)
80	475	450	0	105.56	5.00	0.57	0.24

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **From paragraph 604 of Basel II document published in June 2004 (see page 1). ABS – Asset-backed securities. PD – Probability of default. LGD – Loss given default. IRB – Internal ratings-based approach. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula. N.A. – Not applicable. bps – Basis points. CCF – Credit conversion factor.

Credit Card ABS: Subprime (i.e. Higher Risk Portfolio)*

Unsecuritized (%)

PD**	LGD**	IRB Unsecuritized (EL + UL) = K_{IRB}	IRB Unsecuritized (UL Only)	Standardized Unsecuritized
7.78	90.00	18.59	11.59	6.00

Securitized

Tranche Rating	Enhancement (%)	Exposure Amount (\$)	Standardized Securitization (%)	RBA (%)	SF (%)	Standardized Securitization (\$)	RBA Capital (\$)	SF Capital (\$)
'AAA'	17.00	66.40	1.60	0.56	3.07	1.06	0.37	2.04
'A'	8.00	7.20	4.00	1.60	100.00	0.29	0.12	7.20
'BBB'	0.00	6.40	8.00	6.00	100.00	0.51	0.38	6.40
Seller's Interest	N.A.	20.00	6.00	18.59	18.59	1.20	3.72	3.72
Early Amortization Charge	—	—	—	—	—	0.24	0.74	0.74
		100				3.3	5.33	20.1

Charges to Originating Bank: Early Amortization

Investor's Interest (%)	Excess Spread (bps)	Excess Spread Trapping Point (bps)	Spread Level Triggering Early Amortization (bps)	Excess Spread to Trapping Ratio (%)	Applicable CCF (%)**	Early Amortization Charge (IRB) (\$)	Early Amortization (Standardized) (\$)
80	475	450	0	105.56	5	0.74	0.24

*Transactions are broadly representative of the types of transactions Fitch commonly sees as part of the ratings process and are not intended to represent actual deals. **From paragraph 604 of Basel II document published in June 2004 (see page 1). ABS – Asset-backed securities. PD – Probability of default. LGD – Loss given default. IRB – Internal ratings-based approach. EL – Expected loss. UL – Unexpected loss. KIRB – IRB capital charge had the underlying exposure not been securitized. RBA – Ratings-based approach. SF – Supervisory formula. N.A. – Not applicable. bps – Basis points. CCF – Credit conversion factor.

■ Appendix II: Evaluating Basel II Charges on Credit Card Securitizations

In calculating the Basel II charges on credit cards for unsecuritized and securitized exposures, several important points should be considered:

- A large part of a bank's risk exposure on a pool of credit card receivables consists of undrawn exposures that, long term, may potentially be drawn down by the borrower and, hence, increase the credit risk facing the lending bank. While it is certainly important to take undrawn exposures into account when evaluating the credit risk of a bank's credit card portfolio, for the purposes of this study, Fitch has decided to focus on the Basel II charges applicable to the drawn amounts only:
 - The reason for this is that, since much of the analysis expresses the Basel II charges on a comparative or relative basis (e.g. securitized versus unsecuritized; IRB versus non-IRB) rather than on an absolute basis, factoring in the undrawn amounts would have little if any impact on the results and add unnecessary complexity to the calculations.
 - For example, assume that the IRB unsecuritized charge on \$100 of drawn credit card exposure is \$6 and the securitized IRB charge on \$100 of credit card ABS is \$3 (or \$2 of unsecuritized charges for every \$1 of securitized charges). If the undrawn amount on the credit card portfolio is assumed to create an additional \$100 of exposure, the unsecuritized IRB charge would be \$12 and the securitized charge would be \$6, still maintaining a ratio of \$2 of unsecuritized charges for every \$1 of securitized charges.
- A second important aspect of credit card ABS to consider is that these transactions are typically structured to include a seller's interest, whereby the originator essentially retains its exposure to a certain portion of the receivables in the trust.
 - For the purposes of this study, the seller's interest is conservatively assumed to be 20% across all three credit card portfolios (higher, medium, and lower risk). Essentially, this means that, in calculating the total charges on the ABS structure, the applicable Basel II securitization charge on the investor's interest (equal to 80% of the deal) is added to the Basel II unsecuritized charge on the seller's interest (the remaining 20% of the structure). For example, under the IRB approach, the charge on the seller's interest portion of the ABS transaction is equal to the IRB unsecuritized charge multiplied by 20%.
- Credit card ABS transactions often include early amortization provisions, which can trigger an unwinding of the securitization if the amount of excess spread generated by the transaction falls below a certain predetermined threshold (often 0%). Therefore, Basel II requires banks to hold incrementally more capital if excess spread declines. The intuition behind the Basel II early amortization treatment is that banks need to build up capital in anticipation of the credit card receivables returning to the balance sheet.

Copyright © 2005 by Fitch, Inc., Fitch Ratings Ltd. and its subsidiaries. One State Street Plaza, NY, NY 10004.

Telephone: 1-800-753-4824, (212) 908-0500. Fax: (212) 480-4435. Reproduction or retransmission in whole or in part is prohibited except by permission. All rights reserved. All of the information contained herein is based on information obtained from issuers, other obligors, underwriters, and other sources which Fitch believes to be reliable. Fitch does not audit or verify the truth or accuracy of any such information. As a result, the information in this report is provided "as is" without any representation or warranty of any kind. A Fitch rating is an opinion as to the creditworthiness of a security. The rating does not address the risk of loss due to risks other than credit risk, unless such risk is specifically mentioned. Fitch is not engaged in the offer or sale of any security. A report providing a Fitch rating is neither a prospectus nor a substitute for the information assembled, verified and presented to investors by the issuer and its agents in connection with the sale of the securities. Ratings may be changed, suspended, or withdrawn at anytime for any reason in the sole discretion of Fitch. Fitch does not provide investment advice of any sort. Ratings are not a recommendation to buy, sell, or hold any security. Ratings do not comment on the adequacy of market price, the suitability of any security for a particular investor, or the tax-exempt nature or taxability of payments made in respect to any security. Fitch receives fees from issuers, insurers, guarantors, other obligors, and underwriters for rating securities. Such fees generally vary from USD1,000 to USD750,000 (or the applicable currency equivalent) per issue. In certain cases, Fitch will rate all or a number of issues issued by a particular issuer, or insured or guaranteed by a particular insurer or guarantor, for a single annual fee. Such fees are expected to vary from USD10,000 to USD1,500,000 (or the applicable currency equivalent). The assignment, publication, or dissemination of a rating by Fitch shall not constitute a consent by Fitch to use its name as an expert in connection with any registration statement filed under the United States securities laws, the Financial Services and Markets Act of 2000 of Great Britain, or the securities laws of any particular jurisdiction. Due to the relative efficiency of electronic publishing and distribution, Fitch research may be available to electronic subscribers up to three days earlier than to print subscribers.