Discussion

Comments on "Credit ratings and the BIS capital adequacy reform agenda"

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1. Introduction

The New Basel Capital Accord (Basel Committee on Banking Supervision, 1999) has the objective of making capital requirements "appropriately sensitive to the degree of risk in bank activities". This is important because the original Capital Accord (1998) has been widely criticized for the lack of risk sensitivity of the capital charges assessed against various types of loans. Many observers believe this has resulted in regulatory arbitrage on the part of banks, to the detriment of the quality of the assets banks hold on their books. The Basel Committee has proposed a standardized approach for determining risk-based capital using external ratings and two other approaches based on internal models for dealing with credit risk. [1] Altman et al. (2002) examines in detail whether the goal of "appropriate risk sensitivity" is met by the proposed risk weights of the standardized approach.

The main conclusion of the Altman et al. paper and the underlying issues can be seen in Fig. 1, which plots the proposed risk weights and the historical (corporate bond) losses by rating. As the authors note, ratings Aaa through A have experienced virtually no defaults but are assigned weights of 20 (Aaa and Aa) and 50 (A) percent. More problematic, the proposed risk weights for Baa and Ba rated loans are both 100%, even though the loss experience for Ba is 10 times higher than for Baa. Finally, the B and below rated loans have risk weights only half-again as large as Baa rated loans, while the historical loss experience has been 55 times greater! Thus, the Basel proposal fails to capture the relative risks of the various ratings. Altman et al.

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[1] The Basel proposal also addresses market discipline (transparency) and supervisory oversight and introduces a new capital charge for operational risks.
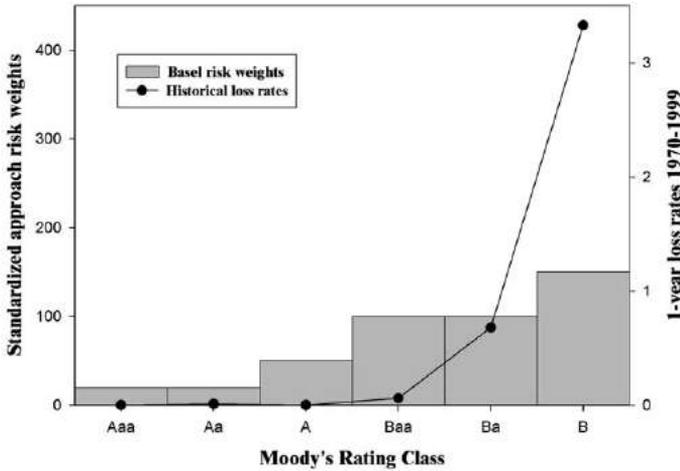
Fig. 1. A comparison of the proposed Basel risk weights and historical loss rates for corporate bonds.

conclude that the proposed risk weights appear to be adequate for the lowest rated risks, but are likely to be too onerous for high-rated loans, resulting in continued regulatory arbitrage. [2]

2. Critique

The Altman et al. paper presents a strong, if diplomatically worded, criticism of the proposed standards. For this reason it is important to examine the authors' methodology carefully to see if their results are robust. The methodology they use is similar to that in Altman and Saunders (2001) and is based on Carey (1998). The essence of their methodology is to use historical bond default data and recovery information in Monte Carlo exercises to examine the expected and unexpected losses (tail percentiles) for random portfolios constructed using this data. This methodology invites four potential criticisms:

1. Can corporate bonds proxy for bank loans?
2. Banks do not hold random portfolios.
3. The distribution of losses varies through time.
4. The methodology focuses only on realized losses.

Each of these will be examined in turn to assess if these points are likely to mitigate the results in their paper.

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[2] Altman and Saunders (2001) and others made similar points in response to the first round proposal for the new capital standards. Their comments produced a minor modification of the proposal that did little to address the fundamental problem that the variation in risk weights did not begin to approximate the variation in loss experience across rating categories.

2.1. Can corporate bonds proxy for bank loans?

Corporate bond default data is widely available and losses following default can be estimated from the quoted prices of bonds around the time of default. In contrast, bank loan loss data is extremely scarce or non-existent, even within individual banks. The use of corporate bonds to proxy for bank loans therefore has the virtue of feasibility, and has been adopted in several other papers.

While the proxy is convenient, it is worth asking whether it is appropriate. Bank loans and corporate bonds differ in a number of important respects. Bank loans are (theoretically) based on a close relation between lender and borrower, while bonds are sold in an open market to anonymous buyers; this suggests differences in transparency and information asymmetry between the borrower and lender. Bank loans are closely monitored and the monitors can influence the behavior of borrowers in the course of their ongoing relation and through restrictions tied to the loans (and the frequent need for borrowers to roll over or extend borrowing). Holders of traded bonds may also monitor, but their ability to influence is much weaker; covenants are becoming rare and bondholders are diffuse. Bank loans also differ from corporate bonds in that they are on average made to lower-rated credits than corporate bonds (as the authors note and adjust for).

More subtly, the borrower mix is different between bonds and loans. Consumer credit, auto loans, and home mortgages are obvious examples of credit market segments that do not directly access the bond market. More important perhaps is commercial real estate lending, which crops up repeatedly in distressed banks. Very little commercial real estate credit is in the form of traded corporate bonds. Corporate real estate is also notoriously cyclical. Thus, use of corporate bonds as proxies for bank loans may miss important characteristics of the pattern of bank loan defaults and recoveries, unless through chance similar patterns exist in corporate debt and are represented in the appropriate proportions.

That said, it is difficult to assess the directional effect that use of corporate bonds to proxy for bank loans might have on the empirical estimates in this and similar papers or to offer an alternative. Until it is possible to benchmark portfolios of corporate bonds against ratings-matched portfolios of bank loans, we can only recommend caution in the interpretation of results based on the use of untested proxies. [3]

2.2. Banks do not hold random portfolios

The Monte Carlo methodology used in the Altman et al. paper involves creating a large number of random portfolios drawn from the actual universe of bond losses. However, even if corporate bonds are good proxies for bank loans, banks do not

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[3] The authors present a sample of institutional loan default rate data (their Figure 3). These default rates appear to be higher than the comparably rated corporate bond default rates reported in Keenan et al. (2000). However, the institutional loan sample is too small for reliable inference.

hold random portfolios of loans. Therefore, portfolios randomly selected from the universe of bonds will not be similar to the portfolios of credits that banks hold.

Most banks are geographically specialized. Banks also frequently specialize in types of loans or industries. Even the largest multi-national banks may be less diversified than they appear because their corporate structure divides them into geographically specialized legally distinct entities. Thus, the methodology used in this paper overstates the degree of diversification that most banks are able (or desire) to achieve in their loan portfolios.

Finance theory, and experience, allows us to infer the effect of this problem. Geographic and industry concentrations lead to higher correlation in defaults and losses than will be estimated using randomly selected bonds drawn from the universe of bonds. The tails of the portfolio loss distributions, and hence the severity of losses in "bad years", will be greater than the Monte Carlo exercises in this paper suggest. Thus, while the unrealistic diversification produced by the empirical methodology casts doubts on the quantitative results, the implications of overdiversification suggests that the quantitative results presented in Altman et al.'s paper probably understate the issues they seek to highlight.

2.3. The distribution of losses varies through time

Not only does the methodology pool default data across industries in a way that is likely to be unrepresentative of actual bank portfolios, it also pools data across time. The basic simulations use default and loss data from 1981 through 1999. Calibrations are thus based on average default frequencies and recovery rates across the business cycle. In actuality, default rates vary considerably over the business cycle. Fig. 2 shows that speculative grade default rates were over 12% in 1991 and remained
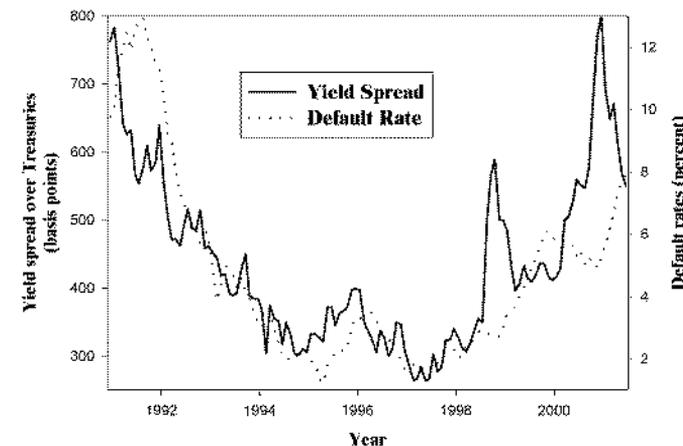
Source: Moody's Investors Service

Fig. 2. Speculative bond default rates and yield spreads.

below 4% from 1994 through 1999. Since 1999 speculative bond default rates have been climbing once more and may exceed 9% in 2002 (Hamilton, 2001).

Pooling data from across different parts of the business cycle produces a degree of time diversification that bank loan portfolios could not achieve even with the best of intentions. As a result loan losses will tend to be more correlated across actual bank credit exposures than are losses randomly drawn from a time-series aggregated sample. Again theory and experience allows us to infer the effects of this problem: Once again, while the full-period results in the paper are suspect because of the time aggregation, it is likely that these results again understate the degree of the actual mismatch between the proposed Basel risk weights and historical loss experience.

The 1989–91 sub-period results presented in Altman et al.'s paper, an unusually bad period for bond defaults, substantiates this hypothesis. Forecasts for unexpected losses based on the 1981–88 data would have proved to be too optimistic, particularly for low quality credits, which exhibit the greatest variability in default frequency (Keenan et al., 2000).

2.4. The methodology focuses only on realized losses

Altman et al. focus on and model default frequency and losses given default. However, such realized losses are not the only way that banks can become economically insolvent. Unrealized losses can also jeopardize the solvency of financial institutions. For instance, in the first savings and loan crisis around 1979 and 1980, an inversion in the yield curve together with a severe duration mismatch between assets and liabilities made many S&Ls insolvent (value of assets less than value of liabilities) even though there was no appreciable increase in mortgage defaults. In this example the losses resulted from market risk rather than credit risk.

Unrealized credit-related losses could occur for two reasons: Credit risk for existing assets can increase (ratings downgrades), and the value of an asset of a given credit risk can decline (yield spreads increase).[4] Fig. 2 indicates that a strong correlation exists between default frequency and yield spreads. Evidence suggests that actual rating changes tend to lag the business cycle, but this may simply be due to the backward looking nature of ratings assessment, as Altman et al. point out.

Increasing yield spreads (and possibly declining credit quality) that are coincident with cyclical increases default frequency (and possibly lower recoveries) will lead to greater volatility in the economic value of bank capital than is suggested by a study that examines only realized losses, even if adjustment is made for time variation in realized losses. Thus, while ignoring unrealized losses may lead us to question the quantitative results, we may, once again, infer that the quantitative results presented in the paper understate the full extent of the problems with the proposed Basel risk weights that are being highlighted.

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[4] Kiesel et al. (2001) have analyzed the relative importance of yield spread changes on portfolio values.

3. Conclusion

The Altman et al. paper has presented a strong and detailed criticism of the calibration of risk weights under the proposed Basel standardized approach for setting minimum credit risk capital for banks. The methodology used is subject to several conceptual criticisms. These derive from the fundamental problems of data availability, both as to bank loan default experience in general and the nature of individual bank portfolio composition. These deficiencies in our knowledge hamper our ability to model bank loan portfolio risk. The randomization that underlies the Monte Carlo exercises exacerbates these two issues. However, it is difficult to recommend currently feasible solutions to these problems. [5]

Nonetheless, we can conclude from our analysis that Altman et al.'s qualitative criticisms of the proposed Basel risk weights – that they are not sufficiently risk sensitive and in particular that they are far too high for low risk credits – are robust. [6] One hopes that the Basel Committee will read this paper very carefully. It is difficult to be optimistic that the Basel standardized approach, as the proposal is currently calibrated, will achieve the desired goals.

Disclaimer

The views expressed herein are those of the author and do not reflect those of the Federal Reserve Bank of Chicago or the Federal Reserve System.

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[5] It may be possible to solve the time aggregation problem by focusing on data from specific years. This raises the interesting problem of whether capital risk weights should be calibrated to the worst case (assuming we cannot reliably predict when that will be) or should vary with the business cycle (assuming we can). Calibrating to the average only results in too much capital in good times and not enough in bad.

[6] Unless bonds behave completely differently than loans which does not seem plausible.