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Editorial:

Do Risk-Adjusted Pricing and the New Basel Capital Accord Reinforce the Credit Cycle?

The Basel Committee for Banking Supervision recently drew a great deal of attention when they published their proposal for a New Basel Capital Accord (2001). Among the criticism, praise, and numerous responses it generated, one aspect was given very little attention: the credit cycle. Traditionally, credit had been granted at the same or very similar conditions to all the credit applicants who qualified. As a consequence, lending volume was pro-cyclical. During times when the economy was strong, many candidates were able to meet the qualification criteria and credit volume increased, its rate of increase often exceeding economic growth by a good margin. On the other hand, during recessions, fewer candidates qualified, and therefore credit volume shrank. In extreme cases, a credit crunch resulted. Increasing lending during growth times tends to stimulate further growth, decreasing lending to exacerbate a recession. Pro-cyclical bank lending is therefore considered harmful to economic stability. Another consequence of the traditional lending ways was the subsidizing of higher-risk debtors by lower-risk debtors.

Risk-adjusted credit pricing

Because a system based on subsidization is unsustainable in the long term, the traditional lending methodology collapsed as high-quality borrowers moved to other sources of financing, such as capital markets, and gave way to a new system based on risk-adjusted credit pricing. At first sight, risk-adjusted pricing seemed to offer benefits also with respect to the credit-cycle problem. Ideally, anybody could obtain credit even in recessions if they were willing to accept the risk-

adjusted rate. Of course, the calculation of the risk-adjusted rate is a crucial component in this equation.

To compute individual, risk-adjusted credit spreads, the risk needs to be quantified. Usually, the debtor or the loan under consideration is assigned a credit rating based on an analysis of predicting factors. Each credit rating is associated with a default probability, thus quantifying the individual risk for pricing purposes. As is known from Moody's and other rating agencies, default probabilities of a set of firms with the same rating vary dramatically over the business cycle. During economic booms, most firms survive even if they have a very low credit rating. During recessions, however, default rates tend to increase substantially. In other words, the default risk is not constant over time even for firms that do not change their rating. Most banks addressed this problem by using long-run average default rates for their rating classes. As only very few banks had their rating system in place for more than a few years and therefore were unable to compute long-run averages from their own data, they mapped their proprietary rating systems to rating systems that have been in existence much longer, such as Moody's, and used that historical default data to associate their proprietary rating classes with long-run default probabilities. Although such a mapping process introduces additional uncertainty to the prediction of default rates, it allows banks to obtain estimations for the actual long-run default rates even if they do not have data of their own over an entire business cycle.

Basing the pricing calculation on the long-run default rate of a given rating class mitigates the credit cycle problem. Whereas ratings still tend to migrate downward in recessions, at least the default probability associated with a particular rating does not increase. However, this implies that the risk premia banks charge to their customers are too large in times of economic growth, and too little in times of recession, when many more firms than the long-run average go bankrupt. Consequently, the debtors during good times subsidize the debtors during bad times. So, the transition from traditional lending (more or less constant credit spreads over time and for all clients) to the new paradigm of individual credit-spreads that remain constant over time (given that the client stays in the same rating class) did not do away with all the subsidies. Therefore, it cannot be a solution sustainable in the long run, as seen with the traditional way of lending. With the new methodology, firms will choose loan alternatives during good times when their default probabilities are low. And, most importantly, competition among banks will sooner or later entice

a bank to offer loans for smaller spreads because, during times of economic strength, even the smaller spreads are profitable.

This scenario became reality in Switzerland in the year 2000. Generally, banks were unable to impose credit spreads calculated on the basis of long-run default averages onto borrowers because there were competitors offering credit spreads based on current default rate estimates, which were lower than the long-term averages. To remain competitive, a bank had to follow. Thus the long-term average paradigm was buried almost before it was born.

The implications of the failure of long-term average pricing are far-reaching. Because default rates seem to be predictable to some extent in the short term, market pressure forces banks to use time-varying default rates for their calculations of credit spreads. Consequences are low credit spreads in times of economic growth and high credit spreads in times of recession. As rating migration also moves in line with spreads (in recessions, spreads tend to rise for a given rating class and firms tend to get downgraded to lower credit classes, thus intensifying the spread effect), pro-cyclical pricing and lending ensues. Perhaps the cyclical effect is now even more pronounced than before as not only the credit volume is subject to time-variation, but also the credit spreads. In fact, the more advanced banks' credit risk methodology and data, the more pronounced might become the cycle, as banks can much more reliably predict default rates¹. Overall, with all its advantages over the previous methodology, there is no reason to believe that risk-adjusted pricing will improve the credit cycle problem.

There are other important questions that arise in this context. For example, during a recession, will banks be able to charge credit spreads based on the high default rates predicted then? Consider the example of a bank extending a three-year fixed-rate loan to a small corporate borrower during a time when the bank predicts very low default rates. What will happen three years later, when the borrower wants to renew the loan and the economy has, in the meantime, started to recede and predicted default rates have increased? Possibly the borrower is not doing well either and may depend on the loan for survival. Can the bank charge a substantially higher spread at this time or even refuse another loan, thus making a default of this particular customer more likely or, in the worst case, drive the debtor into default? Or will the bank be stuck with this credit for an inadequate credit spread only slightly higher than the one originally calculated on the basis of low default predictions? Will some banks be able to decrease their exposures more

easily than others in such a recession situation? The next economic downturn will give answers to these questions.

The New Basel Capital Accord

The proposed New Basel Capital Accord aims to make regulatory capital allocation more adequate with respect to the actual risk taken by the bank. In the new framework, banks will have the choice between a “standard” approach and an “internal ratings based” (IRB) approachⁱⁱ. The standard approach is effectively very similar to the capital accord currently in effect, for banks that hold mostly unrated loans. The IRB-approach, however, lets banks determine their regulatory minimum capital on the basis of their own rating system if the bank can show that its organizations, rating system, and lending process satisfies certain requirements.

The IRB-approach allows a bank with a highly-rated loan portfolio to have less capital than a bank with a lower-rated portfolio. Because the capital requirement depends on the credit ratings of the individual positions and because the proposal for the New Basel Capital Accord requires all positions to be reviewed and re-rated at least annuallyⁱⁱⁱ, rating migrations directly affect the amount of capital required for an outstanding loan position. Unlike rating migrations, changes in default rates do not immediately affect the regulatory capital because the proposal for the New Basel Capital Accord postulates the use of long-term averages of one-year default rates. Somewhat contradictorily, however, it also postulates that default probabilities be “forward-looking” and “incorporate relative adjustments”. Regarding the cyclical effect of regulatory capital, this is a compromise. Whereas following rating migrations may have a pro-cyclical effect, the use of long-run average default probabilities prevents regulatory capital to mirror the actual, time-varying risk precisely and has therefore a smoothing effect on the cycle.

To obtain an idea of the sensitivity of regulatory capital to rating migrations, I simulated the effects of rating migrations for two sample credit portfolios. The two sample portfolios have a nominal value of 10 billion Swiss Francs each. The composition of the two portfolios regarding unsecured loans and loans secured with residential and commercial real estate is assumed to be the same. The rating distribution was mapped to Moody’s rating system and chosen to match the loan portfolios of two Swiss banks^{iv}. Portfolio A has an average one-year default probability based on long-run Moody’s default rates of 1.7%, Portfolio B of 3.7%. The regulatory capital for Portfolios A and B according to the IRB-approach is approximately 500 million and 850 million,

respectively. According to the standard approach, both portfolios require 600 million of regulatory capital, i.e., only the bank with Portfolio A can reduce the required regulatory capital by using the IRB-approach. To investigate the sensitivity of the IRB-regulatory capital with respect to rating migrations, I consider the following rating migration: The portfolio weights in the three rating classes of Baa and better^v decrease by one percent each (for example, from 20% to 19% for class A) while the portfolio weights in the three rating classes below Baa increase by one percent. The rating migration increases the regulatory minimum capital by 8.6% for Portfolio A and 5.3% for Portfolio B. Of course, this example of a rating migration was chosen completely arbitrarily and may not be representative for actual rating migrations. In fact, taking Moody's (2001) long-term average transition matrices for U.S. corporates (1980-2000), approximately between 10% and 15% of all firms change ratings within one year, depending on the original rating category, although, usually, not all ratings change in the same direction. Nevertheless, the rating migration example above illustrates that regulatory capital according to the proposed IRB-approach is rather sensitive to changes in the credit-quality of a loan portfolio even though the time-variation of default probabilities for the same rating class is not taken into account.

During recessions, when default rates are high and banks may be short of capital because of credit losses, capital requirements will be higher, possibly forcing banks to reduce their exposures. During strong growth periods, when default rates are low and capital is ample, requirements will be lower, giving banks room to expand and increase their exposures. The closer minimum capital requirements come to be a binding constraint on banks' business activities, the more pronounced will be their pro-cyclical effect. Of course, banks with so much capital reserves that minimum capital requirements are easily met even during recessions will not be forced to reduce exposures. They might nonetheless choose to do so for other reasons, for example to show that their capital still exceeds the Basel requirements by a similar margin as before.

Pro-cyclical lending causes economic instability and is therefore undesirable. What is the solution? When imposing capital requirements on banks, there is an inherent dilemma: if the requirements are set to reflect banks' credit risks accurately, they are subject to great variation over the business cycle and may therefore have a pro-cyclical effect. On the other hand, if capital requirements are constant or smoothed because their calculation is based on long-run averages, they may fail to achieve the original goal: controlling systemic risk and protecting the depositor. In other words, solving one problem creates the other. Setting capital requirements based on

long-run worst-case scenarios is highly inefficient and therefore not satisfactory either. Clearly, there is no easy way out of this dilemma. The current proposal for a New Basel Capital Accord is a compromise solution, achieving the regulatory goal of solvent banks more efficiently than the old Basel Capital Accord, but possibly paying the price of a more pronounced and thus more economically destabilizing credit cycle.

References

Basel Committee on Banking Supervision: “The New Basel Capital Accord”, Consultative Document, January 2001.

Moody’s Investors Services: “Default and Recovery Rates of Corporate Bond Issuers: 2000”, Special Comment, February 2001.

ⁱ The use of econometric models for the forecasting of default probabilities based on macroeconomic variables is currently still in its infancy. However, banks’ predictions regarding future default rates may become even more accurate with the more widespread use of such models.

ⁱⁱ The IRB-approach is further split up into an „IRB-Foundation“ approach and an „IRB-Advanced“ approach. The arguments in this article regarding the credit cycle apply to both IRB-approaches.

ⁱⁱⁱ It requires more frequent reviewing of high-risk positions. Moreover, in the presence of new and relevant information, the position has to be re-rated.

^{iv} Baseline risk-adjusted capital has to be adjusted for „granularity“ because a few large positions are considered riskier than many small positions. The two portfolios were chosen such that the granularity-adjustment was the same for both portfolios.

^v The ratings were mapped to six performing credit classes: Aaa-Aa, A, Baa, Ba, B, Caa-C.