

Credit Risk Modeling: The Federal Reserve Bank of Philadelphia's Perspective.

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These are interesting times for banking and finance. In today's dynamic financial marketplace, the rules of the game keep changing. Markets are experiencing significant structural change. New markets are emerging. Risk profiles of financial institutions are changing. This evolution – some would define it as a revolution – has been spurred by the confluence of advances in financial theory and the technological progress affecting all aspects of the economy. The changes in financial markets and institutions that have been precipitated by these two factors are well known to this audience. In fact, most of us here tonight either teach, study or live these effect every day.

The agenda of this conference centers on one important and particularly timely aspect of the changing financial landscape. Seated around you are the leaders in their respective fields –from industry, academia and the community – brought together to discuss the issues and practices of credit risk modeling. I hope you have enjoyed the sessions presented thus far, and look forward to our remaining sessions tomorrow.

As you know, this Conference is jointly sponsored by the Wharton Financial Institutions Center and the Federal Reserve Bank of Philadelphia's Payment Cards Center. These two organizations have combined their considerable resources to support this important and growing area of scientific research.

As part of a larger academic research institution, the Wharton side of this effort is here to further its research mission in the areas of financial risk modeling and management. As the former Director of the Wharton Financial Institutions Center, I know this mission well, and can attest to its efforts to advance the knowledge and implementation of risk modeling techniques in the financial sector.

We at the Fed are interested in this mission as well. But, we also pursue this agenda from another angle – one reflecting our role as regulator and supervisor of financial institutions. The financial landscape is never static. We must constantly strive to expand our knowledge of the broad financial industry if we are to assure its integrity and stability. Its constant state of change has dramatic implications for the robustness of the overall financial system, which in turn impacts the real economy.

About the Payment Cards Center

To address the issues surrounding consumer spending behavior and serve as a source of knowledge and expertise on consumer payments in general, we created the Payment Cards Center. The Philadelphia Fed has a vested interest in this area of research. The Third District is home to the credit card industry, with approximately 40 percent of all consumer credit cards emanating from the state of Delaware.

And thus far, the Center has been invaluable in providing meaningful insights into industry issues. Through an aggressive agenda of research and analysis, forums, and conferences such as

this one, the Center encourages collaboration among the perspectives of industry, academia and the public sector. The agenda of the Payment Cards Center includes, among other things, the study of retail credit and the evolving techniques in retail risk management. This adds insight to the Fed's role as both a regulator and participant in the payments system broadly defined.

Early Approaches to Risk Regulation

Since its creation, the Federal Reserve has been interested in the risk imbedded in financial institutions under its jurisdiction. For just as long, it has promulgated and enforced regulations established to assure the safety and soundness of these institutions.

Over the past several decades, however, there has been a sea change in our approach to regulation. The Fed's emphasis has shifted from portfolio restrictions and crude leverage ratios to a much more subtle approach to risk regulation. It was fourteen years ago that the global financial community embraced the idea of risk based regulation through the passage of a landmark international agreement on commercial bank capital standards – the Basel Capital Accord.

Basel recognized the need to identify and quantify bank specific risks in order to regulate them and set appropriate capital requirements. This first plan was decidedly crude, concentrating on credit risk differentials across asset classes, and overlooking a host of other risks facing the bank. Specifically, Basel I ignored interest rate risk, trading risk, and operations risk. It categorized the asset portfolio into a small number of risk categories, and allocated a different amount of capital to each asset class. As all here recognize, this approach left much undone and allowed for too much heterogeneity within asset classes.

Over the next decade, efforts were made to address the shortcomings of Basel I. Additional risk based capital requirements were included for both interest rate and trading risk. However, the problem of accurate credit risk based capital regulation was not addressed until quite recently.

Finally, in 2000, the Basel Committee – under the Chairmanship of my colleague Bill McDonough of the New York Fed – proposed a much more ambitious plan for capital regulation.

The new proposal included the use of up-to-date financial models in the determination of required capital. In doing so, it extended both an olive branch and a challenge to the banking industry. Banks could now satisfy the new capital requirements of so-called Basel II using their own internal assessments of credit risk, if in the judgment of their regulator they had the capacity to estimate credit risk appropriately.

The Internal Risk Based Approach & Market Discipline

This internal risk based, or IRB, approach is another step in the evolutionary path toward full portfolio risk modeling and risk-based regulation. As such, the IRB approach has received much attention, and generated much controversy. For us at the Fed, it meant a substantial increase in our commitment to analyzing and understanding the industry's internal risk-based models.

Importantly, this evolution also introduces greater market discipline to the risk regulation framework – another critical component of a safer and more stable financial system. The dynamics of the industry have changed, creating an environment in which we must increasingly rely on the market to assess risk properly.

Because Basel II defines more precisely the requirements for bank disclosures, ratings agencies, analysts and investors will now be better able to effectively determine risks incurred by an

institution. Going forward, more extensive disclosure requirements and greater dependence on market forces will continue to complement improvements in risk management.

This enhanced role for market discipline is a by-product of the new and innovative approaches evolving in the field of risk management. Financial institutions will have to validate their internal methodologies, ensuring ongoing compliance with sound practices, and providing more information concerning the economic capital allocation process.

Challenges to Credit Risk Modeling

Profit motives have also been driving banks to ramp up their risk modeling efforts, aside from regulatory demands. However, it should not come as a surprise that the focus of efforts has been on the commercial side. In fact, until quite recently, bank resources and supervisory resources have concentrated on credit risk modeling of commercial and industrial portfolios, with relatively fewer resources devoted to risk quantification in the retail credit area. There are a number of reasons for this.

For one, it makes economic sense to devote more resources to evaluating the idiosyncratic risk factors of larger loans. Accordingly, regulatory resources were devoted to evaluating credit quality on loans in the C&I area, while somewhat neglecting retail credit risk.

Another factor contributing to the commercial emphasis is the long history of ratings agency evaluations for publicly traded firms. These evaluations, along with the extensive data available for publicly traded firms, provided an extremely useful benchmark for the development of quantification methods for commercial portfolios. As a corollary to this, the extensive pricing data on publicly traded securities allowed analysts to incorporate innovations in financial economics from the past twenty years into their credit risk analysis.

However, despite this commercial side emphasis, retail credit is a substantial part of the risk borne by the banking industry, and can not be ignored. Recognizing this, over the last decade or so, the industry has devoted significant resources to developing more sophisticated credit-scoring models for measuring this risk. Like their counterparts on the commercial side, these models also rely heavily on quantitative analysis.

Developing Retail Credit Risk Models

In fact, one might think that developing advanced models for retail credit risk would be relatively easy. Retail credit products and terms tend to be more homogeneous, allowing a more quantitative approach. In addition, subjective factors concerning individual loans generally play less of a role than on the commercial side. Therefore, the retail credit business can rely more heavily on statistical approaches for evaluating loans and assigning individual loans to appropriate risk buckets or pools. Once loans have been pooled, the task is to quantify the risk characteristics of the entire portfolio. This is done by looking at the distribution of the various pools in the portfolio.

The revolution in information and communications technology has led to greater sophistication in the quantitative techniques used in consumer credit and the emergence of credit scoring models as a mainstay technique. As a result, we have more efficient means than ever before to slot loans into appropriate risk classes. This, in turn, has led to much greater potential for risk-based pricing and targeted marketing in retail than in C&I lending.

Nonetheless, this work is not simple, and it is not complete. There is much ground still to be covered. While the sophistication of automated credit scoring has increased, only recently have

some institutions put resources into advanced methods of retail portfolio credit risk modeling. And, quantifying the risk in retail portfolios places an even greater premium on a bank's ability to accurately differentiate the credit quality of borrowers. It also requires an acute understanding of the contributions of retail credit, to both risk and return in the modern banking institution. These developments are of critical importance to the banking industry and the overall economy, as problems in sub-portfolios can be detrimental to an institution's overall level of risk.

The Philadelphia Fed's Retail Credit Risk Quantification Team

Given the recent developments in the retail sector, it is vital that regulators gain a greater understanding of current industry practices, as well as areas for potential improvement. To that end, the Federal Reserve Bank of Philadelphia has taken on the System responsibility to expand the Fed's knowledge of advanced approaches to quantifying retail credit risk. Bill Lang, who recently joined us from the OCC, heads our working group on these issues. The group pursues three main goals.

First, the team works to document existing policies and practices for quantifying retail credit risk at advanced institutions. Toward this goal, they will participate in a joint effort of the Federal Reserve System and other U.S. banking regulators to conduct Basel Retail IRB interviews this summer and fall at several large banking organizations. These informational interviews, in which banks participate on a voluntary basis, are intended to help us identify current practices in evaluating retail credit risk. The working group can then use this information to compare current practices to the Basel II proposal for an Internal Ratings Based approach to retail credit. In addition to playing an important role in the Basel II process, these interviews will also improve our knowledge of current industry practices.

The team's second main goal is to analyze the reliability of current practices, and assess their weaknesses or gaps. That way, we can spot problems banks and bank supervisors need to address in assessing internal risk in the retail credit area.

Our third goal is to identify major analytical issues in quantifying retail credit risk, and to generate relevant research on those issues. In addition, the team will designate priority policy issues to be addressed by the Federal Reserve System and other banking regulators, and will make recommendations on how to tackle these issues.

To further this agenda, our Bank's Research Department will sponsor a conference on Retail Credit Risk Management and Measurement in April 2003. The Call for Papers is being distributed tonight, and I would encourage you fellow researchers in the audience to submit your work for this important conference as well. Papers submitted for the conference will be evaluated and selected papers published in a special issue of the *Journal of Banking and Finance*.

Through these and other initiatives, we see our Bank's work as the beginning of a necessary and important long-term effort in the retail credit arena. We hope to promote advanced methods of risk management and to modernize supervisory practices for handling the growing complexity of the banking industry.

Today's conference is an integral part of this process. By contributing to the industry's knowledge base, your work affects both industry practice and the approach taken by regulators. The topics discussed, answers provided, and analysis offered are important inputs into the evolution of the industry and its regulation.

By approaching these issues from different directions, the activities of our Bank's Payment Cards Center, Research Department and retail Risk Quantification Team will be complementary initiatives to improve quality and add value to the industry. Thus, ensuring this important sector of our financial system continues to effectively meet the needs of the people it was designed to serve.

Conclusion

You have probably surmised these changes in the financial sector are an iterative process between financial institutions and their regulators. Such interplay means the standard will progress as the dialogue continues and practices improve. With more experience and better data, risk parameters will change, and models will get stronger. Financial institutions will no longer have the shelter of a static and uniform regulatory standard, but instead will be expected to defend to the market their own assessments and procedures. The success of the sector hinges on changes implemented by the industry experts themselves, who will live with the results on a daily basis.

As experts in our various disciplines, it is the responsibility of everyone here to formulate new ideas that will further our fields. Only by sharing our knowledge and creativity can we develop a new paradigm that will serve our shared purposes.

In closing, let me urge all of you to continue your efforts in the critical area of credit risk modeling. It is important and timely, rigorous and relevant. Thank you for attending the conference.