First International Conference on Credit Analysis and Risk Management

First International Conference on Credit Analysis and Risk Management

Edited by

Joseph Callaghan, Austin Murphy,
and Hong Qian

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Edited by Joseph Callaghan, Austin Murphy, and Hong Qian

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PREFACE

The First International Conference on Credit Analysis and Risk Management brought together over 50 experts in the field of credit analysis and risk management to discuss ways to improve the evaluation and functioning of the credit markets. Such a conference focused on this special issue in finance has never previously taken place, and so its occurrence was very badly needed. With the credit crisis of 2008 only a few years in the past, it was also extremely timely. There has been a paucity of research and teaching of credit analysis in academic and published sources, and it is hoped that this conference has paved the way for changes in that arena, including by opening up the possibilities of repeat conferences of this type that are planned.

In the subsequent chapters, conference participants were permitted to write on their own particular contribution(s) to the dissemination of knowledge in the area of credit analysis and risk management. The presented research papers and panel discussions covered a wide gamut of issues that included the importance of qualitative analysis in credit analysis, the relative usefulness of statistics in credit analysis, the problems associated with excessive reliance on agency ratings to make investment decisions in credit products, evaluation of the markets for credit derivatives and their impact on lending decisions, managing credit portfolio risk, teaching credit analysis in universities, and cases in credit analysis. Many papers were focused on ways to improve estimates of the probability of default and the loss given default. The conference participants all agreed it was a very positive experience that enabled everyone to benefit from the knowledge and research of the others. This book provides a summary of the most important findings that provide others with the opportunity to similarly benefit.

A second conference is being planned for January 3-5, 2013 in Basel, Switzerland, where even more insights into debt markets may be obtained. For updated information on that second conference, please visit the website at http://www.oakland.edu/internationalcreditconference

—Joseph Callaghan, Austin Murphy, and Hong Qian
August 31, 2011, Oakland University

INTRODUCTION[1]

A SUMMARY OF THE FIRST INTERNATIONAL CONFERENCE ON CREDIT ANALYSIS AND RISK MANAGEMENT

AUSTIN MURPHY[2]

Abstract

On July 21-23, 2011, the first International Conference on Credit Analysis and Risk Management was held at Oakland University. The conference, which included experts from both academia and industry, provided a forum for expanding the knowledge of credit. Some of the most important themes of pressing credit research were discussed there, as summarized here.

Summary of Key Conference Discussions

As stated by Austin Murphy in the introductory comments to the conference participants, credit analysis originally relied solely on the subjective judgment of the lender. By the 1960s, however, statistical models of credit were being developed. Altman's Z-score (1968) was the most significant model for quantitative analysis of corporate debt, but credit scores were also under development for individuals as well. By the turn of the millennium, the mathematical and statistical evaluation of credit had expanded to the point where some felt that subjective judgment was no longer required. That view is still held by some, although others believe that a qualitative analysis of credit is essential to avoid another credit crisis like the one that occurred in 2008. For instance, at the July 22 luncheon keynote speech, Uday Rajan provided an analysis from his University of Michigan working paper that showed the importance of qualitative analysis of credit. On the other hand, at the dinner keynote speech that same day, Lawrence Mielnicki summarized some evidence at his bank (PNC) that subjective rankings of loans add only slightly to the power of statistical models of credit that rely on documented data.

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[1] This Introduction was also published in the Winter 2011 issue of the Journal of Credit Risk that was devoted to the conference.

[2] The author is from Oakland University. Email: jamurphy@oakland.edu

Several panel sessions were devoted to methods of evaluating individual loans. For example, one lending officer provided some insights into the way the lending decision was made at her bank. She indicated the importance of evaluating the financial statements of potential commercial borrowers, but qualitative information is paramount in the lending decision. Asking the right questions of loan applicants and evaluating their responses are crucial in this process. Ratios, such as for debt service coverage and collateral, provide useful inputs into the subjective judgment on a loan applicant's ability to repay debts.

Austin Murphy utilized examples from his own text and supplement (2000, 2010) to explain how qualitative and quantitative data can be integrated in an integrated fundamental framework. Subjective evaluations of the future outlook for cash and coverage ratios are necessary in order to determine the risk of a debtor default. He asserted that the human mind has an incredible ability to analyze far more information than pure statistical models, which leave out many obscure factors that sometimes are only important in some circumstances. While recognizing the usefulness of mathematical models of credit, especially in terms of reducing the costs associated with human judgment, he recommended that human judgment should at least be applied to a sample of any loans that are made based strictly on mechanical credit scores or statistical relationships. Failure to do so can cause vital factors to be ignored that human common sense can easily pick up, such as with respect to statistical models resulting in continuing to issue approvals for NINJA (No Income and No Job or Assets) mortgages and no-doc loans (often called "liars loans" because there was no requirement to document the information on the loan application). He further proposed that asset-backed securities should gather and disclose lender qualitative ratings of the borrowers' 5 C's of credit (character, capacity, capital, collateral, and conditions) that may provide useful information to the final investors. He hypothesized that it would be optimal if lenders were given significant monetary motivation for the ex-post accuracy of such ratings in predicting defaults (and less incentives for just loan volume).

Patrick Sperti supplied an example of the way a commercial loan application is analyzed at his bank (Fifth Third Bank). Pro forma statements of cash flows are estimated based on an assumption of the loan being granted that provide an estimate of the cushion that exists to make debt service payments. Minimum guidelines for the debt coverage ratios are set for granting a loan request that vary by industry. Minimum collateral requirements also exist that depend on the type of asset being secured by a loan. Despite the minimums, there is also some flexibility in the actual lending decision. For instance, if a loan-to-collateral ratio is too low, a loan might still be granted if the coverage ratio is sufficiently in excess of a minimum and other factors are very positive.

Senthil Ramanth (Head of Credit Risk Analytics at Ace Cash Express) explained a model of how consumer credit is optimally evaluated. Using statistical associations between loan characteristics and subsequent defaults, a cutoff score can be computed that ensures the return on the loan covers the expected value of default losses. The credit losses must take into consideration both the probability of default (as estimated statistically) and the present value of any recovery in default net of collection costs. He also provided very interesting information on his own area of credit that is payday lending. Payday loans are extended to borrowers using their next payday as collateral. Despite the collateral, there are double-digit default rates because many borrowers don’t come back to sign pay back the loan with their their paycheck. While these loans have a high double digit default rate, recoveries in default are also fairly high because failure to pay back dries up one of the borrowers’ few sources of credit. While most of the borrowers have poor credit, over 90% of all borrowing applications are granted, as is justified given the very high effective interest rate on the loans (such as 15% over the pay period that might be just a week or two). That rate has to cover both expected default losses and the processing costs of making these typically very small loans. Credit approval is generally based on no prior default with the lender and some evidence of employment such as a pay stub, but there is generally no investigation of the borrower’s general credit history.

Many conference sessions were devoted to estimating the probability of default, the payoff in default, or both. Most of the research papers presented relied on statistical or mathematical models, but there was extensive discussion of incorporating qualitative factors into the evaluation of credit. Besides the aforementioned research findings of Lawrence Mielnicki on this subject, a working paper by Lehman (2003) was cited that showed qualitative scores by loan officers were more important than hard data in estimating default losses at a commercial bank in Germany. A more extensive list of articles on the topic of the costs and benefits of qualitative credit analysis was provided in a paper presented by Dror

Parnes, who provided his own theoretical model's simulated results of such judgments.

Joseph Breeden and others provided examples of some of the existing hard data that has in the past been ignored by some lenders. For instance, the seasoning of loans is an important factor in determining default rates, with defaults tending to be lowest in the initial years after origination of a loan or bond. Higher returns are therefore earned early in the life of loans that may promote investment in risky new credits that actually have poor long-term risk-reward tradeoffs.[3]

Several sessions were also devoted to examining the effect of business cycles on defaults that showed credit portfolio risk and correlations vary at different points in those cycles. A few of the sessions also examined the riskiness of pooled debt securities like collateralized debt obligations (CDOs) that included an analysis of CDO-squareds, which are CDOs backed by CDOs by Erick Heitfield. In addition, one panel discussion was devoted to sovereign risk analysis that incorporated an explanation of an article by Altman and Rijken (2011), who empirically showed how aggregated Z scores for the corporate sector of a country can be used to anticipate the risk of default by the country itself on its own debts. Several of the articles presented at the conference that generated interesting discussions have either been published or accepted for publication.

For instance, one paper presented by Austin Murphy (2011) showed that the deregulation of credit default swaps (CDSs) was a major factor in causing the credit boom that led up to the 2008 crisis. In particular, without a requirement to disclose CDS positions and the risks associated with them, financial institutions were motivated to insure as many credits as possible in a process that effectively enabled them to leverage their shareholders’ capital without limit, since neither investors nor regulators were fully aware of the risks. As these institutions competed for more short-term income through increasing sales of the CDSs, they began to accept ever lower premiums that then spilled over into dropping credit spreads. To enhance their competiveness in this market, they had an incentive to reduce the costs of evaluating the credits they guaranteed through the CDS sales by computerizing the entire process without costly qualitative analysis or even documentation of the information on loan applications that was input into the mechanical programs. Although there might be large future default losses on those guarantees, they would be largely incurred by uninformed liability-holders and government insurers of the undercapitalized institutions, and the institutions were able to earn high premium income for their shareholders in any event, until the guaranteed debts defaulted. This sort of enormous pyramid scheme was concentrated in the residential mortgage market because it enabled refinancing any debts that couldn’t be paid back with rising home equity collateral, which itself continued as long as the flow of credit into real estate continued to increase. To prevent such bubbles and the subsequent inevitable bursting of them with all its associated direct costs to taxpayers,[4] it was suggested that full disclosure of all CDS trading and positions be made available at all times for any institution participating in that market. Requiring capital and reserves to back CDS guarantees were also recommended.

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[3] An accounting change to increase the reserve for bad debts in the early life of new debt instruments might reduce incentives for overly zealous credit granting.

Concluding Remarks

The First International Conference on Credit Analysis and Risk Management was an outstanding learning experience for all.[3] Some of the excellent research papers presented there are published in the Winter 2011 issue of the *Journal of Credit Risk* that was devoted to the conference.

A listing of all the sessions at the conference along with the panelists, presenters, and discussants is provided in Figure 1. While the conference supplied many important insights on credit analysis and risk management, more research into this vital field of finance is certainly merited.

A second conference is being planned for January 3-5, 2013 in Basel, Switzerland, where even more insights into debt markets may be obtained. For updated information on that second conference, please visit the website at http://www.oakland.edu/internationalcreditconference

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[4] The costs to taxpayers of preventing the 2008 credit crisis from leading to a full financial collapse was explained to be trillions of dollars alone due to the U.S. federal government granting guarantees on enormous amounts of bad debts in order to rescue the financial system. The excess profits on investments that financial institutions were able to earn as a result of U.S. Federal Reserve subsidies to them in the form of cheap or zero-cost bailout financing consisting of trillions of dollars of loans also represents an additional cost, as it effectively transferred money available for open-market purchases in regulating the money supply directly to them, thereby benefitting their creditors and shareholders at the expense of the markets in general, just as did the Federal Reserve paying interest on the reserve balances of depository institutions starting in 2008. All that money might have much more optimally been used to help finance converting defaulting residential loans into shared-appreciation mortgages (SAMs) that would have allowed homeowners to continue to reside in their houses with substantially reduced payments (thereby minimizing the housing collapse and its negative effects on the economy that represent further enormous costs of the bubble).

Figure 1: Topics at the First International Conference on Credit Analysis and Risk Management

Opening Remarks on the History of Credit Analysis by Austin Murphy (Oakland University)
Teleconferenced presentation: CDS Pricing, Spreads, and Risk (Johanna Pleus, Swiss Institute for Banking and Finance)
Panel Discussion on *Credit Analysis of Individual Loans* (Lawrence Mielnicki, PNC and Austin Murphy, Oakland University)
Loan Pricing and Risk Management (Terry Benzschawel, Citibank) Swati Virmani
New Risk Analysis Tools in Accounting—a Modification of the Z-Score (Seong Cho, Oakland University) Fu Liang
Credit Risk in Shipping Finance (Thomas Schumacher, University of Hannover & Deloitte Consulting) Herbert Rijken
Analysis of New Corporate Bond Issues (Igor Kozhanov, University at Buffalo) Hong Qian
Institutional Investor Benefits from Securitization (Anit Deb, TU Darmstadt) Ranadeb Chaudhuri
Credit Rating Changes (Qin Wang, University of Michigan-Dearborn) Igor Kozhanov
The Effect of Allowing Unregulated Credit Default Swaps (Austin Murphy, Oakland University) Dror Parnes
Rating Outlook Review (Herbert Rijken, VU University) Julia Sawicki
Securitization Risk Measurement (Daniel Roesch, University of Hannover) Ranadeb Chaudhurii
Panel Discussion on Teaching Credit Analysis (Austin Murphy, O.U., Kimberly Plunkett, Comerica, Elena Popova, Kresge)
Panel discussion on *Commercial Credit Analysis* (Patrick Sperti, Fifth Third Bank and Lawrence Mielnicki, PNC)
Operating Lease and Credit Assessments (Rick Johnston, Purdue) Mohinder Parkash
Credit to Low Income Mortgagors (Michel Dietsch, University of Strasbourg) Andres Sagner
Practical Consumer Credit Risk Analytics (Senthil Ramanath, Ace Cash Express) Andres Sagner
Modeling Credit Risk (Indranarain Ramlall, University of Mauritius) Rajeev Singhal
Credit Analysis of Financial Statements (Yin Yu and Austin Murphy, Oakland University, Julia Sawicki, Dalhousie University)
Debt Liquidity Premiums (Steven Shin, Ping Chen, Morgan Stanley) Anit Deb

Sovereign Debt Analysis (Kevin Lucey, O’Keefe & Associates, Joe Callaghan, Oakland U., Herbert Rijken, VU University)

Does Modeling Framework Matter? (Yalin Gunduz, Deutsche Bundesbank) Dale Rosenthal

Lunch Keynote Speech: *Importance of Soft Analysis in Credit Evaluation* (Uday Rajan, University of Michigan)

Probability of Default Implied by the Market (Terry Benzschawel, Citibank) Swati Virmani

Implications of CDO Ratings for Originating Banks (Anit Deb, TU Darmstadt) Frank Lehrbass

Estimating Consumer Defaults (Andres Sagner, Central Bank of Chile) Yin Yu

Default Estimates on Low Risk Portfolios (Rung Roengpitya, Pratabjai Nilla-Or, Bank of Thailand) Seong Cho

Estimating Default with Soft Information (Dror Parnes, University of South Florida) Ellen Zhu

Estimating Systematic Risk (Liang Fu, Oakland University) Hong Qian

Analysis of Loss Given Default (Abdolreza Nazemi, University of Karlsruhe) Ellen Zhu

Credit Concentration (Chinmay Naralkar, Aditya Bisen, Goutam Sanyal, ICICI Bank) Rajeev Singhal

Relation between Defaults and Losses (Jon Frye, Federal Reserve Bank of Chicago) Terry Benzschawel

Estimating Mortgage Delinquincies (Qingqing Chen, Office of the Comptroller) Michel Deutsch

Dinner Keynote Speech: *Using Statistics to Analyze Credit* (Lawrence Mielnicki, PNC)

Examples of Statistical Analysis of the Credit Markets (Eric Heitfield, Federal Reserve, and Joseph Breeden, Strategic Analytics).

A Hedge Fund’s Perspective on Debt Cycles (Jose Gonzalez-Heres, Morgan Stanley) Hong Qian

Risk Decomposition (Philipp Rindler, European Business School) Fatih Yegenoglu

Insurance Risk (Huong Dang, University of Canterbury) Swati Vermani

Debt Governance and Cost of Debt (Jason Wei, Federal Reserve Bank of New York) Swati Virmani

The Design and Validation of Economic Models (Michael Jacobs, U.S. Treasury) Donna Free

Measuring Credit Risk and Financial Reporting (Julia Sawicki, Dalhousie University)Mohinder Parkash

Earnings Smoothness and Cost of Debt (Ed Owens, University of Rochester) Jason Wei

Measuring Risk (Fatih Yegenoglu, Okan University) Philipp Rindler

Correlated Defaults (Dale Rosenthal, University of Chicago) Chen Qinqing

Credit Risk Management of a Commodity Sales Portfolio (Frank Lehrbass, GMX) Srdjan Stojanovic

Bankruptcy Risks and Costs (Ellen Zhu and Rajeev Singhal, Oakland University) Ed Owens

Portfolio Pricing and Risk Management (Srdjan Stojanovic, University of Cincinnati) Swati Virmani

Hedge Fund Risk Management (Joseph J. Gerakos, University of Chicago) Liang Fu

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CHAPTER ONE

HISTORY OF CREDIT ANALYSIS

AUSTIN MURPHY

The First International Conference on Credit Analysis and Risk Management opened with remarks from me on the History of Credit Analysis. In this brief overview, I explained that once upon a time credit analysis involved the 5 C's of Credit: Character, Capacity, Capital, Collateral, and Conditions. Different lenders put varying degrees of emphasis on the each, with American bankers tending to focus more on Capacity than Capital than continental European lenders for instance. However, it was generally agreed by all that Character was all important.

Although this basic method of credit analysis functioned effectively to channel funds to those most likely to repay the debts, it wasn't extraordinarily efficient as it relied heavily on the subjective judgment of expensive loan officers and credit analysts. As a result, the costs of borrowing that had to pass on these expenses to borrowers were high. Bank training programs in credit analysis, cash budgets indicating how and under what circumstances debts could be repaid, and the use of accounting ratios facilitated the process, but it remained labor intensive.

As computers began to spread across industry, automation of the credit evaluation process began, with Edward Altman's Z-Score published in the *Journal of Finance* in the 1960s being the most famous example. This ratio utilized statistical analysis of a few ratios to predict the risk of default with a particular score. Credit scoring had begun, and it advanced over the next few decades into very sophisticated models. Competition among lenders then allowed the costs of borrowing to fall to levels much closer to those of government paper.

Some lenders even started to utilize pure statistical models to make credit-granting decisions for smaller loans such as for credit cards, automobile loans, and mortgage credit. However, most lenders tended to realize that some qualitative analysis of the loans was still required, at least in audited samples. Most importantly, lenders holding portfolios of loans based strictly on computerized statistical programs could be manipulated into granting credit to riskier borrowers than the models implied from their limited number of parameters.

Securitizations of debts began shortly after the process of simplifying the analysis of credit with a few statistical parameters. The mortgage markets were first, but they themselves relied on documentation of character, capacity, capital, and collateral, including a bona-fide but somewhat subjective appraised value of the underlying real estate. Except in exceptional cases that required qualitative analysis, the loan-to-value ratio had to be below 80%, as lenders had found that in such cases the incentives of the borrowers had to find a way to pay back their loans were extremely high, given their equity investment in the house would be lost along with their home itself if they failed in their contractual amortized repayments of principal and interest.

The markets for securitized debts rose rapidly in subsequent decades, as most mortgages as well as many auto loans and credit cards were put into such pools for public investors to purchase in various packages. Both the enhanced liquidity of the pooled debts and the expedited evaluation procedures for analyzing them enabled the costs of borrowing to be significantly reduced even while lenders and investors enjoyed expanding profits with limited risks.

In 2000, however, the U.S. government was pressured by lobbyists in the banking industry to allow a form of credit insurance without any regulation, capital requirements, disclosure, or oversight. These guarantees of debts were called credit default swaps. There was no limit on how many such guarantees could be sold.

Many financial institutions took advantage of this deregulated environment to issue massive numbers of these credit default swaps in order to maximize their short-term profits from the income that could be received from them in the initial year(s) of loans when the probability of default tends to be much lower than in subsequent years. They employed highly sophisticated mathematical and statistical analysis of the credits to be guaranteed but there was little or no qualitative evaluation of the debts underlying the credit default swaps.

With many of these guarantors of debts being banks and insurance companies with the best credit ratings, and with no one knowing the extent of the risks that existed from the credit default swaps because of the complete lack of disclosure, lenders were motivated to make loans that satisfied the statistical programs of the final loan guarantors without any concern for the risks involved. In particular, the loans would be packaged in pools to be sold to other investors who were willing to buy the securitized products because of the guarantees of the credit default swaps and their Aaa ratings. Over $60 trillion of these credit default swaps were in existence by the year 2008, although no one knew the exact size because there was no disclosure.

In 2007-2008, however, defaults began to rise significantly on many of the debts, many of which were already being called “liar’s loans” due to the lack of documentation needed to satisfy the sophisticated computer programs of the guarantors of the debts from the credit default swap issuers. Many “no-doc” loans were indeed made without a requirement to provide tax returns or other documented evidence of income or capital, nor without a requirement for a bona-fide appraisal of the underlying collateral of the loan. Loans were even made with the loan value being less than the collateral value to borrowers without documented income as the guarantors’ statistical programs assumed they could be refinanced with rising values in the collateral that was typically residential real estate. Thus, NINJA loans, i.e., loans to borrowers with No Income and No Job or Assets were justified according to the sophisticated statistical analysis and therefore made because the computer programs enabled a guarantee to be provided on them.

As default rates on the NINJA and similar loans rose, the market prices of these debts began to fall, as investors started to lose confidence in the ability of the credit grantors to make payments to cover losses on the debts. Under the terms of the credit default swap contracts, more collateral had to be posted by the credit guarantors to cover the expected rise in payoffs that were implied by the falling market prices. A liquidity crisis ensued that caused market prices of debts to fall dramatically, thereby leading to further doubts about the ability of financial institutions to survive and cover their obligations, whose full extent was unknown. Only a massive bailout in excess of $20 trillion in lending, capital infusions, purchase of bad debts, and guarantees of credits by the U.S. government prevented a complete financial market collapse.

The moral of the story of course is to re-regulate the market for credit default swaps. Such regulation requires at the very minimum full disclosure of the extent of the exposure of any issuer on any day, so that markets can determine if any particular institution has taken on too much risk and therefore penalize it in a timely fashion via market prices themselves. Capital and reserves to cover losses should also be required for all such positions.

It would also seem to be useful if business schools across the world began to teach credit analysis to all their finance majors. The mistakes that led to the 2008 crisis would likely have been avoided if the leaders of the world’s major financial institutions had a better understanding of the intricacies of credit analysis.

CHAPTER TWO

LUNCHEON KEYNOTE SPEAKER

The luncheon keynote speaker provided an enlightening and entertaining talk on the usefulness of qualitative judgments in the evaluation of credit. The slides attached to the Appendix of this chapter summarize the remarks well and need no further elaboration.

After the speech, the problem of incorporating qualitative judgments into the process of credit analysis was briefly discussed. One suggestion advanced by Austin Murphy was to have a significant portion of the variable income of lending officers be based on qualitative ratings they give to borrowing applicants. These ratings could be normalized statistically for any racial or gender bias on the part of the individual officer to ensure no discrimination. Such ratings would then be provided in the documentation that is available to investors in securitized products into which the loans might be sold. These kickbacks to lending officers would be shared with their lending institutions in order to provide incentives to the employers to hire and train good credit analysts.

Deductions from servicing income on securitized loans would also be taken from lending institutions with ratings by their officers that have proven to be poor indicators of default losses. Such deductions would provide further motivation to the lending institutions to replace lending officers who are poor evaluators of credit, as well as motivate them to have higher standards for hiring lending officers and training them in the art of credit analysis.

The various additional payments and deductions would be incorporated into the contractual cash flows involved in any securitization. To some extent, the variable payments and deductions would provide an offset to default losses on the pooled loans. In addition, since such payments would optimally replace a large portion of the commission income to lending officers and their employers, it should result in an increase in both information and loan quality without any net increase in costs.

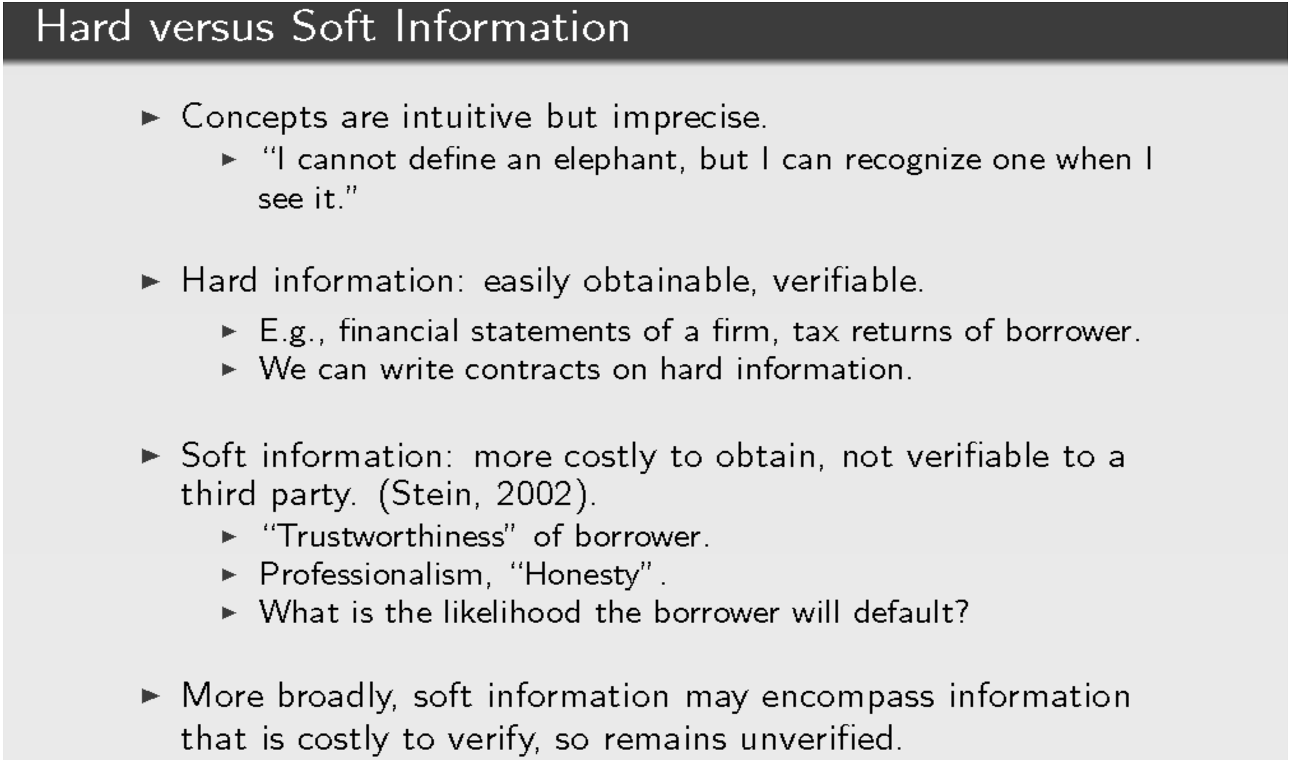
Importance of Soft Analysis in Credit Evaluation

Uday Rajan
Ross School of Business
University of Michigan

First International Conference on
Credit Analysis and Risk Management
Oakland University
July 2011

Outline

1. Introduction: What is soft information?
2. Benefits and costs of using soft information.
3. Implications for organizational design.
4. Effect of technology.
5. Impact on hard information variables.



Hard versus Soft Information

- Concepts are intuitive but imprecise.
  - “I cannot define an elephant, but I can recognize one when I see it.”

- Hard information: easily obtainable, verifiable.
  - E.g., financial statements of a firm, tax returns of borrower.
  - We can write contracts on hard information.

- Soft information: more costly to obtain, not verifiable to a third party. (Stein, 2002).
  - “Trustworthiness” of borrower.
  - Professionalism, “Honesty”.
  - What is the likelihood the borrower will default?

- More broadly, soft information may encompass information that is costly to verify, so remains unverified.

Benefits of Soft Information

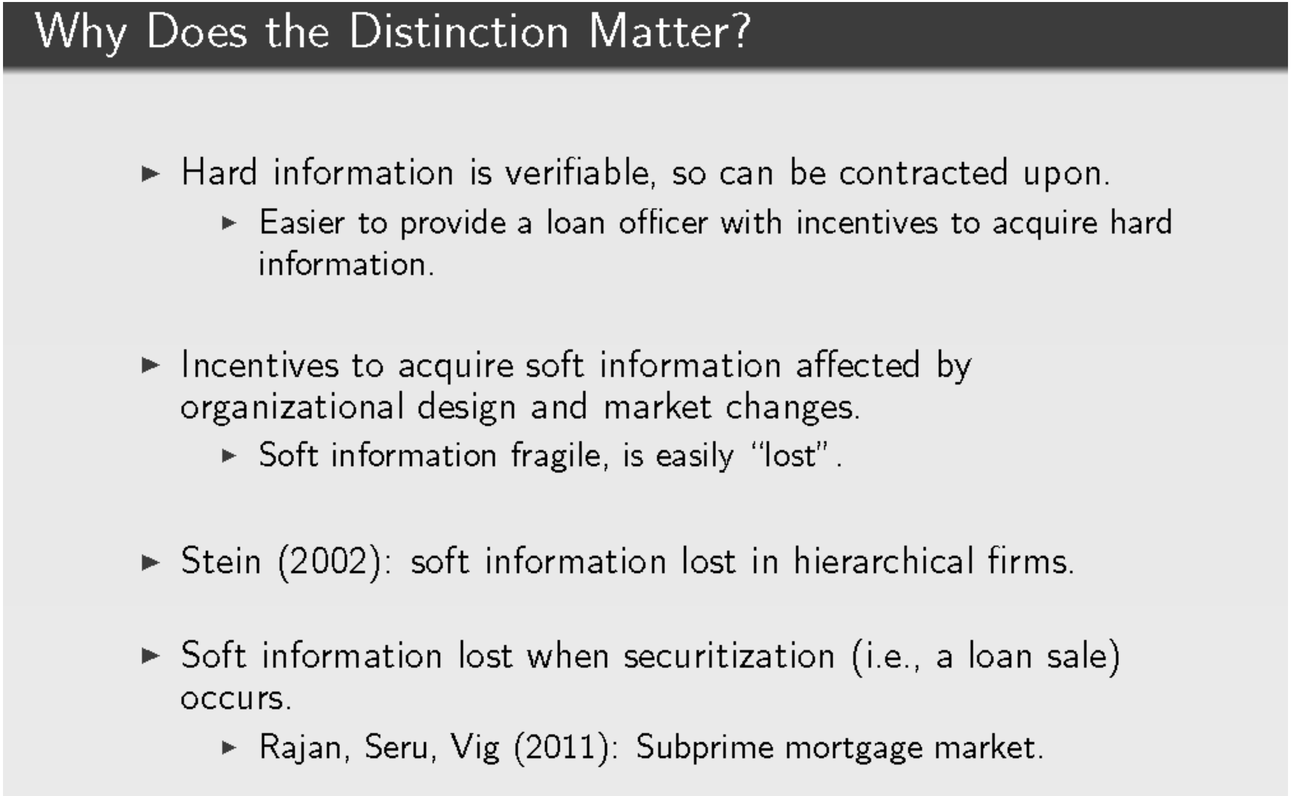
- Is soft information valuable in credit evaluation? Of course.
- The world is populated by good and bad types of borrowers.
  - Hard information is sometimes not enough to distinguish between them.
- The role of capital markets is to allocate capital toward positive NPV projects.
- Unless all available information is used, capital may be misallocated.
  - Lower profits for lenders.
  - Overall loss of social welfare.

What Borrowers/Loans Are Most Affected?

- In what credit situations is soft information most important?
- Young and small firms.
  - High failure rate, no credit history, no reputation to maintain.
- Individuals with low wealth or assets.
  - No collateral to back debt.
- Large loans.
- That is, it is most important for the riskiest loans.

Why Does the Distinction Matter?

- Hard information is verifiable, so can be contracted upon.
  - Easier to provide a loan officer with incentives to acquire hard information.
- Incentives to acquire soft information affected by organizational design and market changes.
  - Soft information fragile, is easily “lost”.
- Stein (2002): soft information lost in hierarchical/large firms.



Why Does the Distinction Matter?

- Hard information is verifiable, so can be contracted upon.
  - Easier to provide a loan officer with incentives to acquire hard information.
- Incentives to acquire soft information affected by organizational design and market changes.
  - Soft information fragile, is easily "lost".
- Stein (2002): soft information lost in hierarchical firms.
- Soft information lost when securitization (i.e., a loan sale) occurs.
  - Rajan, Seru, Vig (2011): Subprime mortgage market.