One of the engines of corporate and global growth is the efficient functioning and dynamic nature of our world’s credit and debt markets. The NYU Salomon Center has identified these markets as one of our key focus areas for committed and state-of-the-art research and dissemination of information and analytics. Our objective is to invite the University’s scholars, indeed the world’s experts, to come together in a series of research endeavors as well as specialized symposia and larger conferences to explore the many complex dimensions of financings, investment allocations, regulatory considerations and flow of capital involving global fixed income and credit markets. We plan to assemble a large and important set of databases to support our research and to convene relevant and important conferences on a regular basis. The research faculty at the Stern School of Business, and particularly its world class Finance Area, is uniquely qualified to lead these efforts and we invite practitioners as well as academic scholars to join us in our endeavors.

—Edward I. Altman

IN THIS NEWSLETTER

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- Credit Risk Analysis and Security Design
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Profile: ROBERT C. MERTON, Nobel Laureate in Economics, 1997

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- Innovations in Financial Econometric: In Celebration of the 2003 Nobel, September 30-October 1, 2004
- Inaugural Credit Risk Conference: Recent Advances in Credit Risk Research, May 19-20, 2004
- NBER Market Microstructure Meeting, May 7, 2004
- Forum on Corporate Finance, May 6-7, 2004
- Derivatives 2003: Reports from the Frontiers, January 31, 2003
INTRODUCTION

This is the second in a series of newsletters to be issued by the Salomon Center. The idea of each of these newsletters is to present a topic of interest to both the academic and business communities and to highlight important research conducted at NYU as well as the academic community in general. We are pleased to begin this series of newsletters in the area of Credit & Debt Markets. Our first Newsletter on Asset Management is available from the Salomon Center’s website www.stern.nyu.edu/salomon. We plan to publish Newsletters in other fields that our distinguished faculty will be concentrating on, including Financial Econometrics, Derivatives, Financial Institutions, Macro Finance and Corporate Governance. We welcome your comments on these efforts.

MATTHEW RICHARDSON

We are pleased to present our inaugural Newsletter in the Credit & Debt Markets Research Program at the Salomon Center. We have a core group of faculty, PhD students and distinguished practitioners who participate regularly in the program. This Newsletter highlights our Inaugural Credit Risk Conference, described in detail on p. 25. At that event, which we were pleased to co-host with Moody’s Corporation, more than 350 attendees interacted with the world’s most prominent scholars, including two Nobel Prize winners to explore the latest developments in credit risk research and its implications for financial markets. This type of interaction is one of our most important objectives at the Salomon Center.

We hope to continue to partner in such conferences with prominent financial organizations, as well as to host various types of other forums in the future, to advance our field.

EDWARD I. ALTMAN
LINKS BETWEEN DEFAULT AND RECOVERY RATES

Credit risk plays an important role in the pricing of many financial assets and as such has received a great deal of attention in both academia and industry circles. When thinking of credit risk, it is intuitive to break up the risk into two components: 1) the probability of default; and 2) the recovery rate given default. Various approaches have been taken to model the relationship between these critical variables, but the standard intuition is that macroeconomic variables drive both – firms default in bad economic times and it is exactly in these times that the assets of the company are less valuable, leading to lower recovery rates. In The Link Between Default and Recovery Rates, Salomon Center Credit & Debt Markets member Edward Altman, along with Brooks Brady, Andrea Resti and Andrea Sironi (SC-CDM working paper no. 04-07), Journal of Business (forthcoming), takes a closer look at this relationship.

Altman et al. propose and test the simple notion that recovery rates are essentially determined by the supply and demand for the securities, with default rates playing a critical role. Using annual data from 1982 to 2002, they show a significantly negative relationship between recovery rates and defaults rates, even after controlling for macro-factors such as the growth in GDP. Their finding suggest that although the intuitive link between macro-factors and recovery rates is robust, using GDP variables to proxy these macro-factors is very noisy and that a significant amount of precision in modeling recovery rates can be gained by examining securities in the distressed debt market, in particular the amount of defaulted securities.

The findings of the paper have implications for both industry practitioners and policy makers. From a modeling perspective, many financial models used to calculate VaR measures treat recovery rates as some function of past recovery rates or as a stochastic variable independent of default rates. Using simulations, the authors show that assuming independence between default and recovery rates, instead of the significant negative relation found in the paper, leads to a substantial understatement of both expected and unexpected losses. From a policy perspective, the results of the paper suggest that the internal ratings-based (IRB) approach to capital requirements proposed by the Basel Committee may increase procyclicality in the economy, by tightening credit in downturns when default rates increase and recovery rates decrease, and loosening credit constraints in upturns when default rates decrease and recovery rates increase. The magnitude of any added procyclicality is not clear, however.

—Walter Boudry

WHEN DOES STRATEGIC DEBT SERVICE MATTER?

The fundamental question in finance “what is the value of a security” has gathered many answers over the years. However, all are based on models representing a very simplified version of reality. Oftentimes, adding another realistic feature to a model proved to have a major impact on how we value securities. One of the more complex and important aspects of equity and debt valuation is strategic debt service.

The concept of strategic debt service, at its core, is the opportunity of firms (equity holders) to pay debt holders less than agreed without triggering liquidation, since rejecting the offer and imposing a costly liquidation may leave debt holders worse off. This implies that the firm can default not only because it lacks cash but also because of the opportunistic behavior by equity holders.

Based on its definition, strategic debt service should make debt more risky and should result in the widening of the yield spreads. Recent literature confirms this point. However, so far researchers have failed to take into account the optimal management of firm cash flows. Firms are assumed to pay out to equity holders all excess cash each period, yet in reality firms have a cash retention policy. Moreover, when it comes to raise cash through new equity, issuance is assumed either infinitely costly or costless. When analyzing strategic debt service a more comprehensive framework is needed, a framework that takes into account all the issues above.

Now in When Does Strategic Debt Service Matter? (SC-CDM working paper no. 02-03), Salomon Center Credit & Debt Markets members Marti
Subrahmanyam and Rangarajan Sundaram, along with their co-authors Viral Acharya and Jing-zhi Huang, do just that. Firms are given the option to choose their default policy along with a cash management policy in a framework where the cost of new equity issue can be varied as a model parameter.

Even though they deal with a very complex and rich model, the authors are able to derive closed form results for the common zero coupon bond and numerical results for more general debt structures. Findings show that each of the factors above affects debt and equity values. Optimal cash management policy can decrease yields by more than 200 basis points compared to a retain-no-cash policy. Indeed, when the equity issuance cost parameter is varied between the two extremes, yield spreads vary by more than 200 basis points.

The interaction among factors is key to this study’s results. For example, the impact of cash management policy depends on equity-issuance costs: with low equity issuance costs, any cash shortfall can be made up by issuing new equity, hence cash management is unimportant. However, when equity issuance is costly, it may not be optimal to pay out all residual cash and cash management policy has a large impact on debt and equity values.

The answer to the main question of the study “when is strategic debt service important” depends on both the cost of new equity and the optimal cash management. When there are low equity issuance costs, strategic debt service plays a large role in determining the spreads; at high equity issuance costs, its impact is greatly diminished. Moreover, at high equity issuance costs strategic debt service can narrow the spreads, a counterintuitive finding. Therefore, debt is not always more risky in the presence of strategic debt service.

Intuition for the results can be summarized in terms of the interaction of optionalities. Firms have the option to retain cash reserves to protect themselves against costly liquidation. Carrying cash reserves helps the firm to avoid costly liquidation in some states, but on the other hand, in liquidation states, debt holders have the first claim on a firm’s assets including the cash reserves. Strategic debt service creates a second option which mitigates this effect: it ensures that in non-liquidation states, cash reserves above the level needed to stave off liquidation accrue to equity holders rather than debt holders. This shows that the firm may not want to fully exercise its cash reserve option without the strategic debt service option. There may be circumstances in which the firm will want to carry lower cash reserves under non-strategic debt service than under strategic debt service. This translates in higher liquidation values and hence lower spreads under strategic debt service by as much as 40 basis points.

The study analyzes debt and equity valuation in a realistic framework where firms default strategically and choose their cash management policy optimally. It derives numerical results under various levels of new equity issuance costs and shows how factors’ interaction impacts the results.

—Radu Gabudean

**CREDIT RISK ANALYSIS AND SECURITY DESIGN**

Technological progress notwithstanding, a key factor in the credit decision remains the human decision maker. For example, Saunders and Allen (2002) note: “[T]he credit decision is left to the local or branch lending officer or relationship manager. Implicitly, this person’s expertise, subjective judgment, and his weighting of certain key factors are the most important determinants in the decision to grant credit.” Given this observation, how do we model the credit decision when it is subjective and discretionary? Furthermore, what is the optimal security in such a market?

Now in Credit Risk Analysis and Security Design (SC-CDM working paper no. 02-13), Salomon Center Credit and Debt Markets Group member Holger Müller, along with coauthor Roman Inderst, addresses this problem. They provide a theoretical framework in which the lender’s subjective judgment and beliefs are represented by a private, non-contractible signal. The optimal credit decision follows a simple cutoff rule: accept all borrowers above some cutoff signal and reject all borrowers below it. Given the non-contractibility of the signal, the lender’s incentives to accept or reject depend on the value of her claims, and thus on the contract in place. The authors are able to show that the lender is generally too conservative in the sense that she rejects inefficiently too often. Unless she obtains the full NPV from the project, her cutoff signal lies strictly above the first-best cutoff signal at which the NPV is zero. There consequently exists a range of intermediate signals at which the borrower is rejected even though the NPV is positive conditional on the signal.
The optimal security minimizes the cutoff signal, and therefore the underinvestment problem. The authors show that the unique optimal security is standard debt. This is a very simple and powerful conclusion. It has implications for the policy debate surrounding the separation of banking and commerce in the United States, where banks are generally forbidden to hold significant equity stakes in nonfinancial firms (Glass-Steagall Act). The model shows that the current restrictions on bank equity holdings in U.S. may not necessarily curtail banks’ optimal behavior, since it is debt—and not equity—that maximizes efficiency. While lenders are indeed too cautious, this is not because they hold debt, but because they do not capture the full NPV from the project.

The authors prove the optimality of debt by showing that, for any non-debt contract, they can always find a debt contract that yields both the lender and borrower the same expected payoff. However, under the debt contract, the borrower is additionally accepted for lower signals. Hence, the debt contract strictly dominates other non-debt contracts. The economic intuition for debt to be the optimal security is that it maximizes the lender’s payoff in low cash-flow states, thus maximizing her return from financing low-signal projects.

The paper further shows that the fine-tuning of loan terms after interim information may not be optimal. In principle, the lender could offer a menu of contracts from which she picks a contract after obtaining interim information about the project. However, the same feature that makes debt optimal—namely, maximization of the lender’s return in the bad states—makes a menu not optimal. Instead, the solution is to offer a single contract and either reject or accept the borrower based on this contract. These results can help understand why lending relationships are frequently characterized by standardized loan terms in conjunction with rationing rather than adjustment of loan conditions.

—Yuanxing Dong

THE LONG-RUN BEHAVIOR OF DEBT AND EQUITY UNDERWRITING SPREADS

Underwriting spreads or gross fees charged by an underwriting bank represent a direct cost of issuance that unlike underpricing, has not received much attention in the literature despite being an important element in corporate capital structure decisions. In The Long-Run Behavior of Debt and Equity Underwriting Spreads (SC-CDM working paper no. 03-01), Salomon Center Credit & Debt Markets member Anthony Saunders, along with co-authors Dongcheol Kim and Darius Palia, looks at the long-run behavior of underwriting spreads for the three major types of corporate securities: corporate bond issues, SEOs and IPOs. The paper makes an important contribution by providing time trends in underwriting spread behavior, relating it to the comprehensive set of explanatory factors and examining the relative magnitude of direct costs of issuance as compared to the underpricing.

The study is conducted using over 30 years (1970-2000) of underwriting spreads collected from the SDC database. The final sample contains over 10,000 corporate issues, of which 53 per cent correspond to the bond issues and 25 percent correspond to SEOs.

The data indicates a gradual decline in median and average underwriting spreads over the last three decades. Mean IPO spreads are higher than SEO spreads and both spreads are substantially higher than corporate debt spreads. In addition, over time there is an increased tendency of clustering of median and mean IPO spreads around 7% and SEO spreads around 5% of the issue size. The median (mean) spread for the debt issues over the sample is 0.68% (1.15%). The indirect costs of the issuance as measured by the mean initial one-day returns are 31.22% for the IPOs and 2.63% for the SEOs. So while indirect costs outweigh the fees paid to the underwriter in the IPOs, the opposite is true for the SEOs.

The potential determinants of the underwriting spreads in the cross-sectional time-series variation analysis are divided into three groups: (1) macroeconomic (systematic) factors, (2) underwriter and (3) issuer specific characteristics. Firm specific characteristics appear to be largely driving the spreads. The economic impact of macroeconomic and investment banking factors is not significant.

—Victoria Ivashina

INFORMATIONAL EFFICIENCY OF LOANS VERSUS BONDS

The monitoring role of bank lending has been widely documented in previous studies, both theoretically and empirically (e.g., Diamond 1984, Ramakrishnan and Thakor, 1984, Fama, 1985). These studies argue that banks have a comparative advantage in monitoring loan agreements because banks are scale
economies and, therefore, have cost advantages in the information production, as well as access to inside information. This enables banks to undertake superior debt-related monitoring relative to outside (public) debt holders, which must rely on publicly available information only.

Even in the presence of secondary market for loans, banks still act as active and continuous loan monitors for at least two reasons. First, banks act to preserve their banking relationship with the borrower, and, second, the lead bank has a fiduciary responsibility to the rest of the banks and investors to provide timely information on the borrower. Consequently, the monitoring role of loans has important implications for the informational efficiency of the loan market versus the bond market. Banks, as skilled continuous loan monitors, should be able to better collect and reflect any relevant information into secondary loan market prices than investors in the bond market do. Hence, the event surprise, such as default, is likely to be smaller for banks than for bond investors.

The informational efficiency of the bond market relative to the stock market has been increasingly studied whereas the study Informational Efficiency of Loans versus Bonds: Evidence from Secondary Market Prices (SC-CDM working paper no. 04-02) by Salomon Center Credit & Debt Markets members Edward Altman and Anthony Saunders, along with co-author Amar Gande, is the first to document the informational efficiency of secondary market for loans relative to the bonds and stocks of the same corporation. It uses a unique data set of secondary market daily prices of loans covering the period of November 1, 1999 through June 30, 2002, a time of increasing level of corporate defaults and secondary loan market activity. The study is also important since secondary loan market is rapidly growing. This market grew to $100 billion for the first time in 2000.

The authors hypothesize and test the following implication of the monitoring role of loans: since loans are likely to have superior information built into their prices relative to bonds because banks act as continuous monitors as compared to investors on the bond market, the price decline of a default event is likely to be lower for loans than for bonds. Consequently, one would expect the price reaction of loans to be lower than that of bonds around both loan and bond default dates. This is a monitoring hypothesis that Altman, Gande and Saunders empirically test. The study also controls for different attributes, such as maturity, size, seniority, collateral, and covenants of both instruments.

The authors also examine the return correlations of loans and bonds around loan and bond default dates. The empirical findings of the paper are three-fold: first, while a small positive correlation exists between daily bond and loan returns, it is considerably higher around the default date. Second, the price reaction of loans is less adverse than that of bonds around loan and bond default dates. Third, where a loan default date is not preceded by a bond default date of the same company, the differential in the price reaction of loans versus bonds is higher around such a loan default date. Overall, the authors’ findings suggest that the loan market is informationally more efficient than the bond market. Their preliminary results also suggest that the same comparison applies to the informational efficiency of loans versus stocks. These results have important implications for the monitoring of loans versus bonds, impact of defaults on loans and bonds, and the benefits of loan monitoring for other financial markets and institutional portfolio investors.

—Olesya Grishchenko

ARE CORPORATE BOND INVESTORS AFFECTED BY SHAREHOLDER CONTROL, AND HOW?

Should good corporate governance benefit the shareholders or all types of investors of the firm, equity investors and bond investors for example? In the Anglo-Saxon view, corporate governance that benefits shareholders automatically benefits senior claimholders such as bondholders, because of equity’s role as the residual claim. On the other hand, after the recent high profile cases of corporate scandals and the resulted bankruptcies, the impact of issuers’ corporate governance has become a big concern for creditors and major rating agencies facing strong demand for properly incorporating corporate governance into the rating process.

In The Impact of Shareholder Control on Bondholders (SC-CDM working paper no. 04-06), Salomon Center Credit & Debt Markets Group member Chenyang (Jason) Wei, along with co-authors Vinay Nair and Martijn Cremers, conduct a comprehensive empirical analysis related to this timely issue. By looking at yield, rating and long run portfolio return, they find that shareholder control can have contrasting effects on bond yields depending on the takeover vulnerability of a firm. Using the presence of an institutional blockholder as proxy for shareholder control and firm-level anti-takeover provisions as proxy for takeover
vulnerability, they find that shareholder control is associated with lower yields if the firm is protected from takeovers. They also find that shareholder control is associated with higher yields if the firm is exposed to takeovers. The contrasting effects of shareholder control on yields are the strongest for firms that are small and have low leverage. In the presence of shareholder control, the difference in bond yields due to differences in takeover vulnerability can be as high as 93 basis points. Further, the results are insignificant for a sub-sample of firms where the bondholders are protected from takeovers through the poison put covenant.

Bond ratings also appear to incorporate a similar effect of shareholder control on bondholders. Finally, they find that a bond pricing model that does not account for shareholder control generates an annualized abnormal return of 1% to 1.4% for portfolios that long firms with both strong shareholder control and high takeover vulnerability and short firms without either shareholder control or takeover vulnerability.

Combined, these results suggest that the use of different governance mechanisms, such as shareholder monitoring and takeover vulnerability, depends on a firm’s capital structure and that bond-pricing models should account for shareholder control. The results shed new lights on the design of firm-level corporate governance.

—Jason C. Wei
The Department of Finance
Takes Pleasure in Announcing the Recipients of the
Best Working Paper Awards for 2003

**Best Award**
“Asset Pricing with Liquidity Risk,”
By Viral A. Acharya* and Lasse Pedersen**

* London Business School  ** Stern School of Business

**Runner-Up**
“Investor Sentiment and the Cross-Section of Stock Returns”
By Malcolm Baker* and Jeffrey Wurgler**

* Harvard Business School  ** Stern School of Business

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FitchRatings
 PROFILE: ROBERT C. MERTON

Born July 31, 1944, New York, New York

Education
B.S., Columbia University (Engineering Mathematics), 1966
M.S., California Institute of Technology (Applied Mathematics), 1967
Ph.D., Massachusetts Institute of Technology (Economics), 1970

Academic
John and Natty McArthur University Professor
Graduate School of Business Administration, Harvard University, 1988-
Sloan School of Management, MIT, 1973-1988

Professional
Co-Founder, Chief Science Officer, Integrated Finance Limited, 2002-
Managing Director, JP Morgan 1999-2001
Co-Founder, Long-Term Capital Management 1993-1999
Senior Advisor, Salomon Inc., 1988-1992
Research Associate, NBER, 1979-

ROBERT C. MERTON won the Nobel Prize in Economics for his work on a new method to determine the value of derivatives. In addition, he has made major contributions in continuous time stochastic finance models, intertemporal capital asset pricing (ICAPM) and the application of contingent claims models in a number of areas, including the pricing of risky debt. Robert agreed to take part in a short interview for our first volume.

Q: When we look back, we assume your thesis work on optimal consumption and portfolio rules in continuous-time had immediate impact. Was that the case or did it take a while to hit?

A: It appears to have had an immediate impact because it provided a reconciliation of the very tractable and intuitive Markowitz mean-variance theory of choice and expected utility maximization and non-negative stock prices and did so within a more realistic dynamic framework. So, lognormality replaces normally distributed prices and general concave utility replaces quadratic utility. The cost of specificity was that the trading interval had to be “short”, approximately continuous. The new insights of the more general model of multiple dimensions of risk associated with changing investment opportunity sets, relative consumption goods prices, human capital and other state variables of the system took much longer to grab hold.

Q: When did you start thinking about the ideas for the ICAPM paper? Are you surprised that, 30 years later, its popularity is as high as ever?

A: The development of the classic CAPM by Sharpe, Lintner and Mossin flowed directly from imposing equilibrium pricing on the Markowitz-Tobin portfolio model. Thus it was a straightforward step to impose market equilibrium on my intertemporal portfolio selection model and derive the ICAPM. Except for the prototypical but special case of lognormal stock returns, there were other systematic risks for the investor to manage, and therefore in equilibrium there was more than one dimension of risk as in the CAPM. The ICAPM first appeared in a 1970 working paper that was not published until it appeared as chapter 11 in my 1990 book, Continuous-Time Finance. That same working paper also contained the
derivation of the Black-Scholes option pricing model, the presentation of a unified theory for pricing corporate liabilities using the observation that all claims of the firm are on the same assets, and a stochastic term structure model. The working paper was never published but instead split into my rational theory of option pricing paper, my intertemporal CAPM paper and my pricing of corporate debt paper.

Q: When you were working on the option pricing formula under no-arbitrage conditions, did you know that it was a major breakthrough?

A: Yes, because in all of the applications, such as a unified approach to pricing corporate liabilities and its potential for practical application and empirical evaluation, it did not require estimates of expected returns or investor preferences to do pricing. The no-arbitrage derivation seemed to me more robust than the CAPM one although Fischer Black always liked the latter better because he didn’t like the continuous-trading assumption. I introduced the material into the regular second-year capital markets course for Sloan School ms students in the spring of 1971 because I thought that it would be valuable for future practitioners. This said, I did not forecast the extraordinary developments in practice of the scale and scope of option markets and fixed income markets, especially the mortgage market.

Q: How did it come out that Myron Scholes and Fischer Black were also working on the problem, and what type of collaboration was involved with them?

A: This is a long story and it has been told elsewhere. In Peter Bernstein’s Capital Ideas, there is a whole chapter devoted to the story; Myron Scholes discusses it in his Nobel lecture, and we both wrote about it in our tribute to Fischer Black in the Journal of Finance.

Q: It appears that the period in the early- to mid-70s was the “golden age” of finance research. What was it like to be a researcher during those years?

A: It was indeed an extraordinary period; there were more significant research problems to work on in which you could see how to do them than one had time to do. Needless to say, it was a PhD student’s heaven. Recall that the 1970s saw the worst decline in the stock market in real terms in 1973-74 since the 1930s; the collapse of Bretton Woods and fixed exchange rates, double-digit inflation not seen in the U.S. in more than 100 years; and high double digit interest rates…and volatility everywhere…surely an interesting environment to be developing tools for measuring and managing risks.

Q: Your risky debt paper has become a cornerstone of the credit market area. It took some time for it to reach the practitioner arena. Do you have any thoughts on why that is?

A: One word “need”[need also explains why the Black-Scholes model was so rapidly adopted into practice in the early 1970s]. With the exception of some proprietary trading operations and the KMV applications, , the model really had little use until the past five or so years when practitioner interest in it exploded. The simple answer is that it caught the credit collapses for companies like Xerox, Polaroid, etc long before any of the other models and traditional credit models, based on accounting numbers and historical transition probabilities among ratings, got there. The rise of credit derivatives is also material in the acceptance of our work.

Q: What is your view on the explosion in credit derivative offerings, and your role (albeit indirect via your research) in this?

A: Seems like a natural evolution of stripping out or decomposing risks and financial functions into component parts

Q: A similar question on BIS II and the creation of credit sensitive capital requirements?

A: Again, the whole approach of viewing all the liabilities of the firm as contingent claims on the same underlying assets permits a systematic and consistent way to aggregate risks of corporate debt, equity, warrants, preferred, junior debt, squiggles, percs, etc. This approach was, of course, critical to measuring and managing the risks of options when they started trading on exchanges in the 1970s…and is central to handling the nearly uncountable different derivatives issued by institutions today

Q: What influenced you to become a financial economist?

A: My decision to leave applied mathematics for economics was in part tied to the widely-held popular belief in the 1960s that macroeconomics had made fundamental inroads into controlling business cycles and stopping dysfunctional unemployment and inflation. Thus, I felt that working in economics could "really matter" and that potentially one could affect millions of people. I also believed that my mathematics and engineering training might give me
some advantage in analyzing complex situations. Most important in my decision was the sense that I had a much better intuition and "feel" into economic matters than physical ones. Nowhere was that more apparent to me than in the stock market. “When I arrived at MIT in the fall of 1967, I discovered why they had admitted me when no other institution had: Harold Freeman, statistician and member of the economics department from pre-Samuelson days. Harold had recognized some of the mathematicians who had written my letters of recommendation and convinced the department to take a flyer. Now in the role of first-year advisor, he saw my proposed, "traditional" course plan and told me "...you follow that and you'll leave here by the end of the term out of boredom ... go take Paul Samuelson's mathematical economics course." I did. Not only did I get to interact with Paul Samuelson, but I met the then second-year students, Stanley Fischer and Michael Rothschild. I learned economics from Paul's Foundations and wrote a term paper on an optimal growth model with endogenous population changes which was later published in 1969. As a result of our meeting in his course, Paul hired me as his research assistant that spring. Quite a yield from a single course!” [From Autobiography for the Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel 1997]

Q: Who had the most influence on your professional career?

A: My father, Robert K. Merton and Paul A. Samuelson. “In the course of my work for Paul, we discovered shared interests and some common knowledge about the stock market, warrants and convertible securities. I found out that my "after/before-hours" interest in such things could also be a legitimate part of my day-hours devoted to research. In the summer of 1968, we began a joint effort to advance Paul's 1965 theory of warrant pricing, which was subsequently published in 1969. Later in October, I would have my first experience presenting in a formal seminar. My co-author decided that I, the second-year grad student, and not he, the Institute Professor, would give our paper at the inaugural session of the MIT-Harvard Mathematical Economics seminar. With a full audience of Harvard economics faculty including Kenneth Arrow, Wassily Leontief, and Hendrik Houthakker, it was surely a memorable baptism.” [Autobiography, Nobel Prize 1997]

Q: Many of your “protégés” have gone onto successful careers both in academia and Wall Street. Are there some in particular you recall from the outset that were going to be stars?

A: Yes …but there were some that I thought would be stars that did not get there and some who I had lower expectations who did super well…. but by any standard I was blessed with a wonderful (albeit in limited numbers) set of students who were both smart and hard working and, importantly, nice human beings.

Q: How did your life change after you won the Nobel Prize?

A: There is no comparable experience. However people tend to think that you are “Renaissance Man” and know everything, not just in all parts of economics but in politics and even medicine! This even though the prize is given for a specific piece of work. But no complaints!

Q: Given the number of research areas that you have worked on, do you have a particular favorite paper of yours and would it surprise us?

A: I liked my 1971 Journal of Economic Theory paper, “Optimum Consumption and Portfolio Rules in a Continuous-Time Model,” but there were a few others from that time. I’ll let you decide if that is a surprise.

Q: What, in your view, is your most under-appreciated paper?

A: The later sections of my 1971 JET paper… I often wrote papers that were far too long with too many different ideas to be conveyed and extracted by the reader (my rational option pricing paper was another one) and so it was my own fault for not packaging the ideas more effectively.

Q: Outside of your responsibilities at Harvard, are you involved in any other activities and, if so, what in particular do you find interesting about it?

A: As mentioned, I have always been involved in practice as well as academic research and teaching. I have co-founded a company, Integrated Finance Limited, which is a specialized investment bank that we hope will implement the ideas of finance science and modern financial technology in areas such as strategic corporate finance and sovereign finance. It is always exciting to try to bring into practice what you have worked out in theory.
Q: What finance research projects are you currently working on?

A: I am particularly interested in the management of country risk; using modern financial technology to reduce or even eliminate some of the classic economic tradeoffs. Examples include pursuing comparative advantage which requires that one focus on a few typically related activities, and efficient risk diversification, which requires pursuing many relatively unrelated activities; I see the intellectual boundaries in analysis and thinking among governmental, private sector and family economic institutions as artificial and unnecessarily constraining. Institutions are endogenous and simply tools for solving problems. I am interested in further developing a synthesizing approach among neoclassical finance, transactions cost/institutional finance and behavioral finance. My belief is that this synthesis will lead to a neoclassical solution, providing the essential insights on the pricing and allocation of resources. These will give us a rich and important theory of institutions in the broadest sense of its definition, which is dynamic.
SPECIAL TOPIC: NYU SALOMON CENTER PIONEERS DEFaulTED DEBT DATABASES

The Credit and Debt Markets Research Program at the NYU Salomon Center, under the direction of Professor Edward I. Altman, has developed and maintains unique databases of corporate bond defaults and time-series prices comprised of defaulted bonds and defaulted bank loans. These research databases are used by our faculty and doctoral students and are described in more detail in the Center’s website. Each month, the Center publishes, for its subscribers and Associates, monthly total return performance of defaulted bonds and bank loans and a combined Index of the two. These market weighted, total return indexes cover the period December 1986-present (defaulted bonds) and December 1995-present (defaulted bank loan facilities). Subscribers to the monthly newsletter receive periodic Salomon Center reports on (1) “Defaults and Returns in the High Yield Bond Market,” and (2) “The Performance and Size of the Defaulted Bond and Bank Loan Market.” These reports and the various performance indexes have become industry standards. For more information on subscribing to our indexes and reports, call the Center at (212) 998-0701.

SUMMARY OF PERFORMANCE HIGHLIGHTS IN 2003 FOR HIGH YIELD AND DEFAULTED BONDS

In 2003, U.S. corporate bond defaults declined dramatically from the record levels of 2002. Figure 1 below shows the traditional method for measuring default rates based on a dollar-denominated weighted average basis. The 2003 high yield bond default rate dropped to 4.66%, slightly below the historic annual weighted average of 5.35% and substantially below the record 12.80% of 2002. Defaults have continued to decline in the first quarter of 2004 as the default rate registered a mere 0.41%.

Coincident with the drop in default rates was a marked increase of the default recovery rate to 45% of par value from about 25% in 2001-2002. The negative correlation between coincident measures of default and recovery rates is shown graphically in Figure 2. Recovery rates are measured based on the weighted price of corporate bond defaults just after default. This database is also maintained by the Salomon Center. The regressions depicted in Figure 2 are from Altman, Brady, Resti and Sironi (2001, 2004) as described in more detail in one of our Research Paper Highlights in this Newsletter. The study shows an unmistakable significant negative correlation between default and recovery rates for the market as a whole.

The return performance of high yield bonds, defaulted bonds and bank loans was nothing short of remarkable in 2003. Figure 3 shows the total return on high yield bonds annually since 1978 as well as the return on ten-year Treasuries and the spread between the two. Total return performance in 2003 was the third highest annual return ever and the return spread (29.4%) was the highest for any calendar year since we have been recording these returns starting in 1978. Promised yield spreads between High Yield Bonds and Treasuries have averaged almost 5% per year and the difference between this average spread (4.96%) and the average annual default loss from defaults (2.52% per year) results in an expected annual return spread of 2.44%, very close to the actual average annual return spread of 2.22%.

Returns on bonds already in default recorded an impressive 84.9% in 2003, by far the best single year’s performance in this increasingly popular alternative investment asset class. This past year’s performance reversed several poor to mediocre years’ performance and raised the market-to-face value ratio to close to 50% (see Figure 4). Defaulted bank loans also had a good year in 2003 (27.5%) and its market-to-face value ratio returned to a more typical 61%.

The Salomon Center also estimates the size of the Defaulted and Distressed Public and Private debt markets. At the end of 2003, the face value of these markets fell to an estimated $585 billion from the record level in 2002 of $942 billion - - a 38% decline. The main reason was the decrease in the size of the distressed debt market - - defined as bonds selling at 1,000 basis points, or more, above the default-risk-free Treasury market. The market value estimate also fell to about $370 billion. The time series of the size of these markets, both face and market values, can be seen in Figure 5. The size of the defaulted and distressed debt market is still quite large and far greater than the demand from those investors who are dedicated “vulture” investors. Still, the supply/demand dynamic has narrowed considerably and the price levels of US distressed securities, as well as High Yield bonds, is thought to be fairly priced as of early 2004.
**FIGURE 1**

**HISTORICAL DEFAULT RATES - STRAIGHT BONDS ONLY**  
**EXCLUDING DEFAULTED ISSUES FROM PAR VALUE OUTSTANDING**  
**1971 - 2003 ($ MILLIONS)**

<table>
<thead>
<tr>
<th>YEAR</th>
<th>PAR VALUE OUTSTANDING (a)</th>
<th>PAR VALUE Defaults</th>
<th>DEFAULT RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>$825,000</td>
<td>$38,451</td>
<td>4.661%</td>
</tr>
<tr>
<td>2002</td>
<td>$757,000</td>
<td>$96,858</td>
<td>12.795%</td>
</tr>
<tr>
<td>2001</td>
<td>$649,000</td>
<td>$63,609</td>
<td>9.801%</td>
</tr>
<tr>
<td>2000</td>
<td>$597,200</td>
<td>$30,295</td>
<td>5.073%</td>
</tr>
<tr>
<td>1999</td>
<td>$567,400</td>
<td>$23,532</td>
<td>4.147%</td>
</tr>
<tr>
<td>1998</td>
<td>$465,500</td>
<td>$7,464</td>
<td>1.603%</td>
</tr>
<tr>
<td>1997</td>
<td>$335,400</td>
<td>$4,200</td>
<td>1.252%</td>
</tr>
<tr>
<td>1996</td>
<td>$271,000</td>
<td>$3,336</td>
<td>1.231%</td>
</tr>
<tr>
<td>1995</td>
<td>$240,000</td>
<td>$4,551</td>
<td>1.896%</td>
</tr>
<tr>
<td>1994</td>
<td>$235,000</td>
<td>$3,418</td>
<td>1.454%</td>
</tr>
<tr>
<td>1993</td>
<td>$206,907</td>
<td>$2,287</td>
<td>1.105%</td>
</tr>
<tr>
<td>1992</td>
<td>$163,000</td>
<td>$5,545</td>
<td>3.402%</td>
</tr>
<tr>
<td>1991</td>
<td>$183,600</td>
<td>$18,862</td>
<td>10.273%</td>
</tr>
<tr>
<td>1990</td>
<td>$181,000</td>
<td>$18,354</td>
<td>10.140%</td>
</tr>
<tr>
<td>1989</td>
<td>$189,258</td>
<td>$8,110</td>
<td>4.285%</td>
</tr>
<tr>
<td>1988</td>
<td>$148,187</td>
<td>$3,944</td>
<td>2.662%</td>
</tr>
<tr>
<td>1987</td>
<td>$129,557</td>
<td>$7,486</td>
<td>5.778%</td>
</tr>
<tr>
<td>1986</td>
<td>$90,243</td>
<td>$3,156</td>
<td>3.497%</td>
</tr>
<tr>
<td>1985</td>
<td>$58,088</td>
<td>$992</td>
<td>1.708%</td>
</tr>
<tr>
<td>1984</td>
<td>$40,939</td>
<td>$344</td>
<td>0.840%</td>
</tr>
<tr>
<td>1983</td>
<td>$27,492</td>
<td>$301</td>
<td>1.095%</td>
</tr>
<tr>
<td>1982</td>
<td>$18,109</td>
<td>$577</td>
<td>3.186%</td>
</tr>
<tr>
<td>1981</td>
<td>$17,115</td>
<td>$27</td>
<td>0.158%</td>
</tr>
<tr>
<td>1980</td>
<td>$14,935</td>
<td>$224</td>
<td>1.500%</td>
</tr>
<tr>
<td>1979</td>
<td>$10,356</td>
<td>$20</td>
<td>0.193%</td>
</tr>
<tr>
<td>1978</td>
<td>$8,946</td>
<td>$119</td>
<td>1.330%</td>
</tr>
<tr>
<td>1977</td>
<td>$8,157</td>
<td>$381</td>
<td>4.671%</td>
</tr>
<tr>
<td>1976</td>
<td>$7,735</td>
<td>$30</td>
<td>0.388%</td>
</tr>
<tr>
<td>1975</td>
<td>$7,471</td>
<td>$204</td>
<td>2.731%</td>
</tr>
<tr>
<td>1974</td>
<td>$10,894</td>
<td>$123</td>
<td>1.129%</td>
</tr>
<tr>
<td>1973</td>
<td>$7,824</td>
<td>$49</td>
<td>0.626%</td>
</tr>
<tr>
<td>1972</td>
<td>$6,928</td>
<td>$193</td>
<td>2.786%</td>
</tr>
<tr>
<td>1971</td>
<td>$6,602</td>
<td>$82</td>
<td>1.242%</td>
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<table>
<thead>
<tr>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) As of mid-year.</td>
</tr>
<tr>
<td>(b) Weighted by par value of amount outstanding for each year.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ARITHMETIC AVERAGE DEFAULT RATE</th>
<th>1971 TO 2003</th>
<th>3.292%</th>
<th>3.161%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1978 TO 2003</td>
<td>3.656%</td>
<td>3.394%</td>
</tr>
<tr>
<td></td>
<td>1985 TO 2003</td>
<td>4.567%</td>
<td>3.515%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEIGHTED AVERAGE DEFAULT RATE (b)</th>
<th>1971 TO 2003</th>
<th>5.352%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1978 TO 2003</td>
<td>5.382%</td>
</tr>
<tr>
<td></td>
<td>1985 TO 2003</td>
<td>5.474%</td>
</tr>
</tbody>
</table>

| MEDIAN ANNUAL DEFAULT RATE       | 1971 TO 2003 | 1.896% |

Source: Ed. Altman's Compilations and Citigroup Estimates
FIGURE 2
RECOVERY RATE/DEFAULT RATE ASSOCIATION
Dollar Weighted Average Recovery Rates to Dollar Weighted Average Default Rates

For 2002: 20.2% Recovery Rate as per Linear Regression
**FIGURE 3**

ANNUAL RETURNS, YIELDS AND SPREADS
ON TEN-YEAR TREASURY (TREAS)
AND HIGH YIELD (HY) BONDS (a)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>RETURN(%)</th>
<th>PROMISED YIELD(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HY</td>
<td>TREAS</td>
</tr>
<tr>
<td>2003</td>
<td>30.62</td>
<td>1.25</td>
</tr>
<tr>
<td>2002</td>
<td>(1.53)</td>
<td>14.66</td>
</tr>
<tr>
<td>2001</td>
<td>5.44</td>
<td>4.01</td>
</tr>
<tr>
<td>2000</td>
<td>(5.68)</td>
<td>14.45</td>
</tr>
<tr>
<td>1999</td>
<td>1.73</td>
<td>(8.41)</td>
</tr>
<tr>
<td>1998</td>
<td>4.04</td>
<td>12.77</td>
</tr>
<tr>
<td>1997</td>
<td>14.27</td>
<td>11.16</td>
</tr>
<tr>
<td>1996</td>
<td>11.24</td>
<td>0.04</td>
</tr>
<tr>
<td>1995</td>
<td>22.40</td>
<td>23.58</td>
</tr>
<tr>
<td>1994</td>
<td>(2.55)</td>
<td>(8.29)</td>
</tr>
<tr>
<td>1993</td>
<td>18.33</td>
<td>12.08</td>
</tr>
<tr>
<td>1992</td>
<td>18.29</td>
<td>6.50</td>
</tr>
<tr>
<td>1991</td>
<td>43.23</td>
<td>17.18</td>
</tr>
<tr>
<td>1990</td>
<td>(8.46)</td>
<td>6.88</td>
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<tr>
<td>1989</td>
<td>1.98</td>
<td>16.72</td>
</tr>
<tr>
<td>1988</td>
<td>15.25</td>
<td>6.34</td>
</tr>
<tr>
<td>1987</td>
<td>4.57</td>
<td>(2.67)</td>
</tr>
<tr>
<td>1986</td>
<td>16.50</td>
<td>24.08</td>
</tr>
<tr>
<td>1985</td>
<td>26.08</td>
<td>31.54</td>
</tr>
<tr>
<td>1984</td>
<td>8.50</td>
<td>14.82</td>
</tr>
<tr>
<td>1983</td>
<td>21.80</td>
<td>2.23</td>
</tr>
<tr>
<td>1982</td>
<td>32.45</td>
<td>42.08</td>
</tr>
<tr>
<td>1981</td>
<td>7.56</td>
<td>0.48</td>
</tr>
<tr>
<td>1980</td>
<td>(1.00)</td>
<td>(2.96)</td>
</tr>
<tr>
<td>1979</td>
<td>3.69</td>
<td>(0.86)</td>
</tr>
<tr>
<td>1978</td>
<td>7.57</td>
<td>(1.11)</td>
</tr>
</tbody>
</table>

**ARITHMETIC ANNUAL AVERAGE:**


**COMPOUND ANNUAL AVERAGE:**

| 1978-2003 | 10.73 | 8.56 | 2.17 |

(a) End of year yields.

Source: Citigroup's High Yield Composite Index and Ed. Altman's compilation.
Figure 4
Defaulted Debt Indexes:

Source: Altman-NYU Salomon Center Defaulted Debt Indexes

Figure 5
SIZE OF THE DEFAULTED AND DISTRESSED DEBT MARKET ($ Billions)
(1990-2003)

Source: Ed. Altman's Compilation
This paper investigates the effect of shareholder control on bondholder wealth. While stronger shareholder control can benefit bondholders by disciplining managers, it also increases the likelihood of events that can hurt bondholders, e.g., hostile takeovers. We hypothesize that shareholder control can have contrasting effects on bond yields depending on the takeover vulnerability of a firm. Using the presence of an institutional blockholder to proxy for shareholder control and firm-level anti-takeover provisions to proxy for takeover vulnerability, we find that shareholder control is associated with lower yields if the firm is protected from takeovers. We also find that shareholder control is associated with higher yields if the firm is exposed to takeovers. The contrasting effects of shareholder control on yields are the strongest for firms that are small and have low leverage. In the presence of shareholder control, the difference in bond yields due to differences in takeover vulnerability can be as high as 93 basis points. Further, the results are insignificant for a subsample of firms where the bondholders are protected from takeovers through the poison put covenant. Bond ratings also appear to incorporate a similar effect of shareholder control on bondholders. Finally, we find that a bond pricing model that does not account for shareholder control generates an annualized abnormal return of 1% to 1.4% for portfolios that long firms with both strong shareholder control and high takeover vulnerability and short firms without either shareholder control or takeover vulnerability. Combined, these results suggest that the use of different governance mechanisms, such as shareholder monitoring and takeover vulnerability, depends on a firm’s capital structure and that bond-pricing models should account for shareholder control.


We develop a model for pricing derivative and hybrid securities whose value may depend on different sources of risk, namely, equity, interest-rate, and default risks. In addition to valuing such securities the framework is also useful for extracting probabilities of default (PD) functions from market data. Our model is not based on the stochastic process for the value of the firm [which is unobservable], but on the stochastic process for interest rates and the equity price, which are observable. The model comprises a risk-neutral setting in which the joint process of interest rates and equity are modeled together with the default conditions for security payoffs. The model is embedded on a recombining lattice which makes implementation of the pricing scheme feasible with polynomial complexity. We present a simple approach to calibration of the model to market observable data. The framework is shown to nest many familiar models as special cases. The model is extensible to handling correlated default risk and may be used to value distressed convertible bonds, debt-equity swaps, and credit portfolio products such as CDOs. We present several numerical and calibration examples to demonstrate the applicability and implementation of our approach.


We offer a novel explanation for the use of collateral based on the dual function of banks to provide credit and assess the borrower’s credit risk. There is no moral hazard or adverse selection on the part of borrowers—the only inefficiency is that banks cannot contractually commit to providing credit as their credit assessment is subjective. Without collateral, a bank may deny credit even if its credit assessment suggests that the project is marginally profitable. Collateral improves the bank’s payoffs from financing such marginally profitable projects, thus mitigating the inefficiency arising from discretionary credit decisions. Unlike models of borrower adverse selection, our model suggests that high-quality borrowers post less collateral than low-quality borrowers, which is consistent with the empirical evidence.


The defaulted and distressed, public and private debt market in the United States performed exceptionally well in 2003. The NYU Salomon Center Defaulted and Public Bond Index increased by over 45% and the Defaulted Bank Loan Index by 27.5% — the Combined Index surged by 49.3%. Record annual performance was recorded for all three indexes.

The recovery rate on defaulted bonds (price just after default) rebounded impressively from a low of 25 cents on the dollar in 2002 to over 45 cents in 2003; likewise, the weighted average bank loan recovery rate in 2003 increased substantially. New defaulted bonds in 2003 fell to about $38.5 billion in 2003 from the record total in 2002, resulting in a slightly below average, but still substantial default rate of 4.66%.

The face value size of the Combined Defaulted and Distressed, Public and Private debt market decreased by $356 billion from the record high year of $942 billion, one year earlier, to about $585 billion — a reduction of 38%. The market size decrease in 2003 from $513 billion to $369 billion was a more modest 28%. The drop was completely a function of the dramatic reduction in distressed debt (bonds
serving at more than 1,000 basis points over ten-year US Treasuries). Still, a market size of $369 billion is far greater than the estimated demand from dedicated distressed investors of $70-$80 billion.

Expected default rates in 2004 and 2005 are 3.5% and 4.1% respectively. The size of the Defaulted and Distressed debt market is expected to continue its fall by 14% in 2004 to $319 billion (market value) and to rise a bit in 2005 to $328 billion.


This paper examines the informational efficiency of loans relative to bonds surrounding loan default dates and bond default dates. We examine this issue using a unique dataset of daily secondary market prices of loans over the 11/1999-06/2002 period. We find evidence consistent with a monitoring role of loans. Specifically, consistent with a view that the monitoring role of loans should be reflected in more precise expectations embedded in loan prices, we find that the price decline of loans is less adverse than that of bonds of the same borrower around loan and bond default dates. Additionally, we find evidence that the difference in price decline of loans versus bonds is amplified around loan default dates that are not preceded by a bond default date of the same company. Our results are robust to several alternative explanations, and to controlling for security-specific characteristics, such as seniority, collateral, covenants, and for multiple measures of cumulative abnormal returns. Overall, we find that the loan market is informationally more efficient than the bond market around loan default dates and bond default dates.


High yield bond defaults in 2003 declined significantly from record 2002 levels closing the ear at $38.5 billion for a default rate of 4.66%. The fourth quarter’s rate of 0.36% was the lowest quarterly rate since the fourth quarter of 1997. The default loss rate for 2003 also declined to just 2.76% based on a weighted average recovery rate of about 45% -- a major improvement from the 25% levels of the prior several years. Fourteen of the 86 defaulting companies had issues that were investment grade sometime prior to default. These fallen angels accounted for 33% of defaulting issues and 46.3% of the defaulted volume in 2003.

The high-yield bond market returned an impressive 30.62% for the year, the third highest one-year return since 1978 (when we first began tracking returns). The return spread over ten-year US Treasuries was a record high 29.4%, bringing the historic average annual return spread to 2.22% per year. The concurrent yield spread at year-end fell to 3.74%, the lowest year-end figure since 1997 and 4.82% less than one year ago. New issues in 2003 recorded a near record level of $137.4 billion; the vast majority was used for refinancing existing loan and bond issues.

Based on our mortality rate methodology and assuming different measures of credit risk of recent new issuance, we expect default rates to continue their decline in 2004 to between 3.2% - 3.8%, with rates increasing in 2003 to above 4.0%.


This paper studies the optimal policies of borrowers (firms or individuals) who may default subject to default costs, and analyzes the asset pricing implications. Borrowers defaulting under adverse economic conditions may, despite incurring default costs, emerge as wealthier than non-borrowers or those who can default costlessly. Under many economic scenarios, borrowers take on less risk exposure than non-borrowers, and asset substitution is not pronounced. However, a larger risk exposure by borrowers may occur as well, depending on the structure of default costs and on how debt maturity relates to the planning horizon. In the latter case, borrowers’ default policies render binary options to be useful credit derivatives for lenders in hedging the credit-risk component of their assets. In our model, the asset-value dynamics are endogenously determined, and are shown to exhibit stochastic mean return and volatility in contrast to the exogenously assumed constant mean and volatility in many credit risk models. We consider a variety of extensions, including equilibrium, where a lower (higher) risk exposure by borrowers manifests itself in an attenuated (amplified) market volatility and risk premium, but the market value is always higher in economic downturns, and lower in upturns, compared to an economy without the presence of credit risk.

Ingo Walter, “Conflicts of Interest and Market Discipline Among Financial Services Firms,” October 2003. S-CDM-03-19

There has been substantial public and regulatory attention of late to apparent exploitation of conflicts of interest involving financial services firms based on financial market imperfections and asymmetric information. This paper proposes a workable taxonomy of conflicts of interest in financial services firms, and links it to the nature and scope of activities conducted by such firms, including possible compounding of interest-conflicts in multifunctional client relationships. It lays out the conditions that either encourage or constrain exploitation of conflicts of interest, focusing in particular on the role of information asymmetries and market discipline, including the shareholder-impact of litigation and regulatory initiatives. External regulation and market discipline are viewed as both complements and substitutes - market discipline can leverage the impact of external regulatory sanctions, while improving its granularity through detailed management initiatives applied under threat of market discipline. At the same time, market discipline may help obviate the need for some types of external control of conflict of interest exploitation.

This paper develops and empirically implements an arbitrage-free, dynamic term structure model with "priced" factor and regime-shift risks. The risk factors are assumed to follow a discrete-time Gaussian process, and regime shifts are governed by a discrete-time Markov process with state-dependent transition probabilities. This model gives closed-form solutions for zero-coupon bond prices and an analytic representation of the likelihood function for bond yields. Using monthly data on U.S. Treasury zero-coupon bond yields, we document notable differences in the behaviors of the market prices of factor risk across high and low volatility regimes. Additionally, the state-dependence of the regime-switching probabilities is shown to capture an interesting asymmetry in the cyclical behavior of interest rates. The shapes of the term structures of bond yield volatilities are also very different across regimes, with the well-known hump in volatility being largely a low-volatility regime phenomenon.


The paper presents a simple model arguing that the pecking order theory is an extreme when there is only asymmetric information about value. We show how asymmetric information about both, value and risk, transforms the adverse selection logic underlying the pecking order into a general theory of capital structure that accounts for both debt and equity issues. The model predicts that firms issue more equity and less debt if there is more asymmetric information about risk relative to value. We find robust empirical support for the prediction and document a strong link between risk and capital structure in a large unbalanced panel of publicly traded US firms from 1971 to 2001.


The outbreak of World War I shut the New York Stock Exchange for more than four months. The conventional explanation maintains that the closure prevented a collapse in stock prices that threatened a repetition of the Panic of 1907. This paper shows that the Wilson Administration encouraged the suspension of trading to pave the way for launching the Federal Reserve System, which was in the process of being born. Closing the Exchange helped to forestall an outflow of gold. Federal Reserve insiders considered an adequate stock of gold crucial to the success of the new monetary system.


We provide evidence that banks smooth income by managing provisions for loan losses and loan charge-offs in a coordinated fashion that varies across the bust and boom phases of the business cycle and across homogeneous and heterogeneous loan types. In particular, during the 1990s boom, we predict and find that banks accelerated provisioning for loan losses and made this less obvious by accelerating loan charge-offs, especially for homogeneous loans for which charge-offs are determined using number-of-days-past-due rules. We also provide evidence that the valuation implications of banks’ provisions for loan losses and loan charge-offs vary across the phases of the business cycle and loan types reflecting the effect of these factors on banks’ income smoothing. In particular, during the 1990s boom, we predict and find that charge-offs of homogeneous loans have a positive association with current returns and future cash flows, because these charge-offs are recorded primarily by healthy banks with good future prospects reducing over-stated allowances for loan losses. We also predict and find that these charge-offs have a positive association with future returns that is explained by their positive association with future net income and recoveries. Our results are consistent with the market only partially appreciating healthy banks’ overstatement of charge-offs of homogeneous loans based on number-of-days-past-due rules during the 1990s boom, because of the perceived non-discretionary nature of these charge-offs.


This paper develops a model of optimal capital structure with stochastic interest rate which is assumed to follow a mean-reverting process. Closed-form solutions are obtained for both the value of the firm and the value of its risky debt. The paper finds that the current level and the long-run mean of the interest rate process play distinctive roles in our integrated model. The current level of the interest rate is critical in the pricing of risky bonds, while the long-run mean plays a key role in the determination of a firm’s optimal capital structure such as the optimal coupon rate and leverage ratio. Our findings demonstrate that a model of optimal capital structure with a constant interest rate cannot price risky bonds and determine the optimal capital structure simultaneously in a satisfactory manner. Furthermore, our numerical results indicate that the correlation between the stochastic interest rate and the asset return of a firm has little impact on the firm’s optimal capital structure.

We consider the consumption and portfolio choice problem of a long-run investor when the term structure is affine and when the investor has access to nominal bonds and a stock portfolio. In the presence of un hedgeable inflation risk, there exist multiple pricing kernels that produce the same bond prices, but a unique pricing kernel equal to the marginal utility of the investor. We apply our method to a three-factor Gaussian model with a time-varying price of risk that captures the failure of the expectations hypothesis seen in the data. We extend this model to account for time-varying expected inflation, and estimate the model with both inflation and term structure data. The estimates imply that the bond portfolio for the long-run investor looks very different from the portfolio of a mean-variance optimizer. In particular, the desire to hedge changes in term premia generates large hedging demands for long-term bonds.


Surveys on the use of agency credit ratings reveal that most investors believe that rating agencies are relatively slow in adjusting their ratings. A well-accepted explanation for this perception on the timeliness of agency ratings is the “through-the-cycle” methodology, which agencies apply in their rating assessments, while investors have a “point-in-time” perception on the creditworthiness. The “through-the-cycle” methodology aims to suppress the sensitivity of the ratings to short-term fluctuations in credit quality. This article focuses on the migration policy of rating agencies as a second source of rating stability. In a benchmark study with credit scoring models we show that both the “through-the-cycle” methodology and the conservative migration policy are responsible for the investors’ perception of the rigidity of agency ratings.


Evidence from many countries in recent years suggests that collateral values and recovery rates on corporate defaults can be volatile and, moreover, that they tend to go down just when the number of defaults goes up in economic downturns. This link between recovery rates and default rates has traditionally been neglected by credit risk models, as most of them focused on default risk and adopted static loss assumptions, treating the recovery rate either as a constant parameter or as a stochastic variable independent from the probability of default. This traditional focus on default analysis has been partly reversed by the recent significant increase in the number of studies dedicated to the subject of recovery rate estimation and the relationship between default and recovery rates. This paper presents a detailed review of the way credit risk models, developed during the last thirty years, treat the recovery rate and, more specifically, its relationship with the probability of default of an obligor. Recent empirical evidence concerning this issue is also presented and discussed.


The suspension of trading on the New York Stock Exchange for more than four months following the outbreak of World War I fostered a substitute market on New Street as a source of liquidity. The New Street market suffered from a lack of price transparency because its transactions were not disseminated on the NYSE ticker and its quotations were blacklisted at the leading newspapers. This paper shows that despite the impaired information flow and the somewhat wider bid-ask spreads compared with the New York Stock Exchange, New Street offered economically meaningful liquidity services. The absence of price transparency turned an individual stock’s reputation for liquidity into an important variable in explaining the structure of bid-ask spreads on New Street.

Holger M. Mueller and Fausto Panunzi, “Tender Offers and Leverage,” July 2003. SC-CDM-03-09

We examine the role of leverage in tender offers for widely held firms. Leverage allows raiders to appropriate part of the value gains arising from takeovers, hence reducing the takeover premium and mitigating the free-rider problem. Leveraged takeovers may thus be profitable even if target shareholders are dispersed. Bankruptcy costs, incentive problems on the part of the raider, and defensive leveraged recapitalizations and asset sales by the target management all limit the raider’s ability to borrow, thus shifting takeover gains to target shareholders and reducing the takeover likelihood. While bankruptcy costs are a social cost, the takeover premium is merely a wealth transfer to target shareholders. As the raider does not maximize social welfare, he uses too much debt compared to the social optimum.


This paper revisits the question of the determinants of corporate bond credit spreads using some new explanatory variables with both weekly and monthly option-adjusted credit spreads of corporate bond indices from Merrill Lynch. We find that among the new variables, the interest rate historical volatility, the Russell 2000 index historical return volatility and Conference Board leading and coincident economic indices have significant power in explaining credit spread changes, especially for high yield bond indices. Furthermore, these four variables plus the interest rate level, the yield curve slope, the Russell 2000 index return, and the Fama-French [1996] high-minus-low factor return could explain more than 40% of credit spread changes in 5 out of 9 rating/maturity indices. In particular, these variables could explain 67.68% of the variation in B rated index credit spreads and 60.82% of the variation in
BB rated index credit spreads. The overall explanatory power on credit spread changes achieved here is a notable improvement over most previous studies using either option-adjusted index spreads or individual corporate bond spreads. Our analysis confirms that high-yield credit spread changes are more closely related with equity market factors and also provides evidence in favor of incorporating macroeconomic risk factors into credit risk models.

Herman Bierens, Jing-zhi Huang and Weipeng Kong, “An Econometric Model of Credit Spreads with Rebalancing, ARCH and Jump Effects,” April 2003. SC-CDM-03-07

In this paper, we examine the dynamic behavior of credit spreads on corporate bond portfolios. We propose an econometric model of credit spreads that incorporates portfolio rebalancing, the near unit root property of spreads, the autocorrelation in spread changes, the ARCH conditional heteroscedasticity, jumps, and lagged market factors. In particular, our model is the first that takes into account explicitly the impact of rebalancing and yields estimates of the absorbing bounds on credit spreads induced by such rebalancing. We apply our model to nine Merrill Lynch daily series of option-adjusted spreads with ratings from AAA to C for the period January 1997 through August 2002. We find no evidence of mean reversion in these credit-spread series over our sample period. However, we find ample evidence of both the ARCH effect and jumps in the data especially in the investment-grade credit spread indices. Incorporating jumps into the ARCH type conditional variance results in significant improvements in model diagnostic tests. We also find that while log spread variations depend on both the lagged Russell 2000 index return and lagged changes in the slope of the yield curve, the time-varying jump intensity of log credit spreads is correlated with the lagged stock market volatility. Finally, our results indicate the ARCH-jump specification outperforms the ARCH specification in the out-of-sample, one-step-ahead forecast of credit spreads.


The year 2002 was remarkably difficult on many fronts for most financial markets. For the high yield bond market, it was again a year of record amounts of defaults which contributed to low recovery rates and slightly negative absolute returns. The default rate registered a massive 12.8%, based on $757 billion outstanding. Despite these record default totals and rates, the market’s decline was orderly with little panic and actually ended the year with reduced defaults and highly positive returns in the fourth quarter.

Default amounts registered its fourth consecutive record year and almost topped $100 billion ($97.9 billion) for the first time. This total was more than 52% higher than last year’s record. Combined with a near record low recovery rate of 25 cents on the dollar, weighed down by Telecom’s average recovery rate of 16%, loss rates from defaults reached record levels of about 10% – even adjusted for fallen angel default recoveries. The pervasive influence of WorldCom’s massive default had a profound effect on both the default and recovery rates. Without WorldCom, the year’s default rate would have been 9.27% -- a differential of about 3.5%.

This report documents and comments upon the high yield bond market’s risk and return performance over the period 1971-2002. We will present traditional, dollar-denominated default rates as well as our own mortality rate statistics. Default rate analysis will be complemented by discussion on corporate bankruptcies and the immense impact of fallen angels on the high yield market. We conclude with our annual estimate of the size of the distressed debt market and our forecast for defaults in 2003. Our analysis will include an update on our default recovery forecasting model which was extremely accurate in estimating 2002’s recovery rate of about 25%.

Based on the fourth quarter’s reduction in default rate to 1.82% and our aging-mortality conceptual framework, we are predicting a reduction in the dollar denominated default rate to 7.5-8.0%, as much as 5% less than 2002 (but still far above the average rate). This should help provide a more attractive environment for high yield debt new issues and returns in 2003.

In 2002, there was $65.6 billion in new high yield bond issuance, down from 2001’s $88.2 billion. We expect new issuance in 2003 to escalate unless the economic/political scene motivates another flight to quality in our financial markets.


In recent years, credit risk has played a key role in risk management issues. Practitioners, academicians and regulators have been fully involved in the process of developing, studying and analyzing credit risk models in order to find the elements which characterize a sound risk management system. In this paper we present an integrated model, based on a reduced pricing approach, for market and credit risk. Its main features are those of being mark to market and that the spread term structure by rating class is contingent on the seniority of debt within an arbitrage-free framework. We introduce issues such as, the integration of market and credit risk, the use of stochastic recovery rates and recovery by seniority. Moreover, we will characterize default risk by estimating migration risk through a “mortality rate”, actuarial based, approach. The resultant probabilities will be the base for determining multi-period risk-neutral transition probability that allow pricing of risky debt in the trading and banking book.


The defaulted and distressed, public and private debt markets in the United States increased enormously to a record $942 billion (face value) at the end of 2002. The
market value of this increasingly attractive alternative investment segment was approximately $512 billion.

- Defaulted securities performed below average in 2002; absolute returns, as measured by our various defaulted debt indexes, were -6.0% on bonds, +3.0% on bank loans, and -0.5% on the combined defaulted public bonds and private bank loans index. The Altman-NYU Salomon Center Index of Defaulted Bonds grew to a face value of $61.5 billion. The market-to-face value ratio of the Bond Index fell to 0.17 from 0.21 one year ago. The face value of our Defaulted Bank Loan Index was $37.7 billion and the market-to-face value ratio dropped to a record low level of 0.46 by the end of 2002.
- The recovery rate on defaulted bonds (price just after default) was very low at 25 cents on the dollar; likewise, the weighted average bank loan recovery rate in 2002 dropped to 52 cents on the dollar. With new defaulted bonds rising in 2002 to a record $96.9 billion (default rate of 12.8%) and the default outlook for 2003 high, but lower than for 2002, investment opportunities should abound in the distressed debt market.
- Indications are that distressed investors (both old and new entities) are successfully raising funds because investor expectations are buoyant.


Retail loan markets create special challenges for credit risk assessment. Borrowers tend to be informationally opaque and borrow relatively infrequently. Retail loans are illiquid and do not trade in secondary markets. For these reasons, historical credit databases are usually not available for retail loans. Moreover, even when data are available, retail loan values are small in absolute terms and therefore application of sophisticated modeling is usually not cost effective on an individual loan-by-loan basis. These features of retail lending have led to the development of techniques that rely on portfolio aggregation in order to measure retail credit risk exposure.

BIS proposals for the Basel New Capital Accord differentiate portfolios of mortgage loans from revolving credit loan portfolios from other retail loan portfolios in assessing the bank’s minimum capital requirement. We survey the most recent BIS proposals for the credit risk measurement of retail credits in capital regulations. We also describe the recent trend away from relationship lending toward transactional lending, even in the small business loan arena traditionally characterized by small banks extending relationship loans to small businesses. These trends create the opportunity to adopt more analytical, data-based approaches to credit risk measurement. We survey proprietary credit scoring models (such as Fair, Isaac and SMEloan), as well as option-theoretic structural models (such as KMV and Moody’s RiskCalc) and reduced form models (such as Credit Risk Plus).


This paper analyzes the association between aggregate default and recovery rates on credit assets, and seek to empirically explain this critical relationship. We examine recovery rates on corporate bond defaults, over the period 1982-2002. Our econometric univariate and multivariate models explain a significant portion of the variance in bond recovery rates aggregated across all seniority and collateral levels. The central thesis is that aggregate recovery rates are basically a function of supply and demand for the securities, with default rates playing a pivotal role. Such a link would bring about a significant increase in both expected and unexpected losses as measured by some widespread credit risk models, and would affect the procyclicality effects of the New Basel Capital Accord. Our results have also important implications for investors in corporate bonds and bank loans, and for all markets (e.g., securitizations, credit derivatives) that depend on recovery rates as a key variable.


This paper is the first to look at the long-run (30-year) behavior of underwriting spreads in the markets for corporate equity and debt. Specifically, we analyze the determinants of underwriting spreads on corporate bond issuances, secondary equity offerings and initial public offerings over the period 1970-2000. We explain the time-varying cross-sectional behavior of these spreads by analyzing three sets of variables or factors: macro (systematic) factors, investment banking market structure factors and issuer specific characteristics. We also analyze the relationship between the direct costs (underwriting spreads) and indirect costs (underpricing) of new issues. Among our many results we find an apparent decline in spreads over time, an increased clustering in spreads for both IPOs and SEOs, the dominance of issuer-specific characteristics in explaining spreads, and a relatively weak linkage between the direct and indirect costs of issuance.
CONFERENCES

Forthcoming

NYU STERN FIVE-STAR CONFERENCE ON RESEARCH IN FINANCE, December 10, 2004

INNOVATIONS IN FINANCIAL ECONOMETRICS: IN CELEBRATION OF THE 2003 NOBEL, September 30-October 1, 2004

INAUGURAL CREDIT RISK CONFERENCE: RECENT ADVANCES IN CREDIT RISK RESEARCH, May 19-20, 2004

NBER MARKET MICROSTRUCTURE MEETING, May 7, 2004

FORUM ON CORPORATE FINANCE, May 6-7, 2004

Recent

Moody’s Corporation & the Salomon Center, NYU Stern School of Business present

INAUGURAL CREDIT RISK CONFERENCE: RECENT ADVANCES IN CREDIT RISK RESEARCH

NYU STERN SCHOOL OF BUSINESS
MAY 19-20, 2004

May 19

7:30  Registration & Continental Breakfast

8:15  OPENING REMARKS
John Rutherfurd, Jr. - Chairman and CEO of Moody’s Corporation
Edward I. Altman - Director of the Credit and Debt Markets Research Program at the Salomon Center

8:40  THE INFORMATION CONTENT OF DEBT AND EQUITY PRICES moderated by Hayne Leland, UC Berkeley
(i) Structural Models of Credit Risk Are Useful: Evidence from Hedge Ratios on Corporate Bonds, Stephen Schaefer, London Business School
Discussed by Pierre Collin-Dufresne, UC Berkeley
(ii) Credit Ratings and Stock Liquidity, Elizabeth Odders-White, University of Wisconsin
Discussed by Jeremy Stein, Harvard University

10:20 Refreshment Break

10:40  PERSPECTIVES ON KEY RESEARCH CHALLENGES IN CREDIT MARKETS
Ken Singleton, Stanford University
Stephen Kehalofski, cofounder KMV-Moodys

11:50 Lunch
Keynote Address: Robert C. Merton – 1997 NOBEL LAUREATE, Harvard University, A retrospective look at 30 years of the Merton model
Introduction by Stephen Figlewski, Director of the Derivatives Research Project at the Salomon Center

1:20  EXPECTED DEFAULT LOSS moderated by Stuart Turnbull, University of Houston
(i) Multi-Period Corporate Failure Prediction with Stochastic Covariates, Darrell Duffie, Stanford University
Discussed by Bob Geske, UCLA
(ii) Understanding the Recovery Rates on Defaulted Securities, Viral Acharya, London Business School
Discussed by Roger Stein, KMV-Moodys

3:00 Refreshment Break

3:20  CREDIT RISK MODELING
I. Overview by David Lando, Copenhagen Business School
(ii) Correlated Defaults in Reduced-Form Models, Fan Yu, University of California, Irvine
Discussed by Philipp Schonbucher, ETH Zurich
II. PERSPECTIVES
(i) Hedging Bank Loan Portfolios, Oldrich Vasicek, cofounder KMV-Moodys
Dynamic Conditional Corelation Models of Tail Dependence, Robert Engle - 2003 NOBEL LAUREATE, NYU Stern School of Business

5:30 Cocktail Reception

May 20

7:45  Continental Breakfast

8:15  THE IMPLICATIONS OF BASEL II
I. Overview by Michael Gordy, Federal Reserve Board of Governors
II. Loan Pricing under Basel Capital Requirements, Rafael Repullo, CEMFI
Discussed by Jean-Charles Rochet, Toulouse University
III. PERSPECTIVES
Objectives of Basel II and Implications for Credit Markets, Darryl Hendricks, FRB of New York

9:45 Refreshment Break

10:00  CREDIT DEFAULT SWAPS moderated and discussed by John Hull and Alan White, University of Toronto
(i) An empirical analysis of the dynamic relationship between investment grade bonds and credit default swap, Ian Marsh, Bank of England
(ii) The Credit Default Swap Market: Is Credit Protection Priced Correctly? Francis Longstaff, University of California, Los Angeles

11:40 PERSPECTIVES ON THE ROLE OF INTERNAL AND EXTERNAL RATINGS IN THE CREDIT PROCESS
Edward I. Altman, NYU Stern School of Business
Richard Cantor, Moody’s Investor Service

12:50 Conference Close
THURSDAY, MAY 6

7:00 PM  Group Reception and Dinner
W New York - The Court
130 East 39th Street
New York, NY

FRIDAY, MAY 7

8:30 AM  Continental Breakfast

9:00 AM  ANDREW ELLUL, Indiana University
HYUN SONG SHIN, London School of Economics
IAN TONKS, University of Bristol
How to Open and Close the Market: Evidence from the London Stock Exchange

Discussant: TAVY RONEN, Rutgers University

10:00 AM  RICHARD GREEN, BURTON HOLLIFIELD, and NORMAN SCHÜRHOFF, Carnegie Mellon University
Financial Intermediation and the Costs of Trading in an Opaque Market

Discussant: CLIFTON GREEN, Emory University

11:00 AM  Refreshment Break

11:15 AM  PAUL IRVINE, MARC LIPSON, and ANDY PUCKETT, University of Georgia Tipping

Discussant: SORIN SORESCU, Texas A&M University

12:15 PM  Lunch Speaker: To Be Announced

1:30 PM  MARIOS PANAYIDES, Yale University
The Specialist’s Participation in Quoted Prices and the NYSE’s Price Continuity Rule

Discussant: ASHISH TIWARI, University of Iowa

2:30 PM  IOANID ROSU, MIT
A Dynamic Model of the Limit Order Book

Discussant: LAWRENCE GLOSTEN, Columbia University

3:30 PM  Refreshment Break

3:45 PM  SHMUEL BARUCH, University of Utah
GIDEON SAAR, New York University
Asset Returns and the Listing Choice of Firms

Discussant: DANIEL DELI, Arizona State University

4:45 PM  Adjourn
Thursday, May 6
12:00 – 1:00
Registration and Lunch

Afternoon Session: Risk Management
Moderator: Tim Opler, CSFB
1:10 – 2:10
Presentations:
Mitchell Peterson, Northwestern University
   Principles of Risk Management
Marc Zenner, ABN AMRO
   Interest Rate Risk Management
Niso Abuaf, Credit Suisse First Boston
   Currency Risk Management in Practice
2:10 – 2:20
Refreshment Break
2:20 – 3:20
Corporate Presentations:
Coy Baugh, Former Treasurer, Pacificare
   Risk Management at Pacificare
Jim Davlin, Eli Lilly
   Risk Management at Eli Lilly
Laura Langone, Genentech
   Risk Management at Genentech
3:20 – 3:30
Refreshment Break
3:30 – 5:00
Panel Discussion on Risk Management
Tim Opler
Mitchell Peterson
Coy Baugh
Jim Davlin
Laura Langone
Eli Ofek, New York University
5:00 – 6:00 Reception
6:00 – 7:30 Dinner

Friday, May 7
8:00 – 8:30
Breakfast
8:30 – 9:45
Morning Session: Behavioral Finance
Moderator: Sheridan Titman, University of Texas at Austin
8:30 – 9:45
Presentations:
Sheridan Titman
Jeff Wurgler, Professor, New York University
9:45 – 10:00
Refreshment Break
10:00 – 11:30
Panel Discussion on Behavioral Finance
Sheridan Titman
Jeff Wurgler
Dessa Bokides, Pitney Bowes
Ravi Jacob, Intel
James, Moore, PIMCO
Arnie Wood, Martingale Asset Management
11:30 – 1:00
Lunch Speaker: TBD

Afternoon Program: Disclosure Policies
Moderator: Don Chew, Stern Stewart & Company/Journal of Applied Corporate Finance
1:00 – 2:00
Presentations:
John Graham, Duke University
Amy Hutton, Dartmouth College
2:00 – 2:15
Refreshment Break
2:15 – 4:00
Panel Discussion on Disclosure Policies
Don Chew
Amy Hutton
Trevor Harris, Morgan Stanley
Charles Kantor, Neuberger Berman, LLC.
Tom King, Progressive Insurance
Rick Passov, Pfizer
Eric Sirri, Babson College and Former Chief Economist at SEC
4:00 – 4:15
Closing Remarks:
Robert Parrino, University of Texas at Austin
NYU STERN FIVE STAR
CONFERENCE ON RESEARCH IN FINANCE

December 5, 2003

Sponsored by Deutsche Bank and NYU Salomon Center

Organized by Yakov Amihud and Kose John, New York University

Program participants from
Columbia University
New York University
Princeton University
University of Pennsylvania
Yale University.

The conference brought together finance researchers from several northeastern universities. We invited colleagues at all schools in the northeast, and others interested in current finance research, to a day of research presentations in finance. Faculty from each of the program participant schools presented one of the papers on the program.

Chair: Richard Kihlstrom, University of Pennsylvania


Discussant: Arturo Bris, Yale University

Chair: Robert Hodrick, Columbia University

“Investor Sentiment and the Cross-Section of Stock Returns,” Malcolm Baker, Harvard University and Jeffrey Wurgler, New York University

Discussant: Geoffrey Tate, University of Pennsylvania

Chair: Ivo Welch, Yale University

“Equilibrium Asset Prices under Imperfect Corporate Control,” James Dow, Gary Gorton, University of Pennsylvania and Arvind Krishnamurthy, Yale University

Discussant: Thomas Philippon, NYU

Chair: Jose Scheinkman, Princeton University


Discussant: Robert Kimmel, Princeton University

Chair: Peter Garber, Deutsche Bank Research

“Simple Forecasts and Paradigm Shifts” Harrison Hong, Princeton University and Jeremy C. Stein, Harvard University and NBER

Discussant: Lawrence Glosten, Columbia University
DERIVATIVES 2003: REPORTS FROM THE FRONTIERS

January 31, 2003

Organized by Stephen Figlewski, Professor of Finance, NYU Stern School of Business

The knowledge base supporting the world of derivatives and risk management—let us say "rocket science"—keeps expanding rapidly. In the academic world, theoretical advances have made it possible to construct models that are significantly more complex technically than what was attempted just a few years ago. We now have the technology to deal with instruments that are subject to time varying volatility, Poisson jumps, time and state-dependent correlations, and more. At the same time, innovation in the real world is also proceeding at a remarkable pace. New classes of securities, such as Collateralized Debt Obligations, are transforming the derivatives landscape.

This conference brought together an extraordinary group of speakers, all of whom have made important contributions, both theoretical and practical, in this area. The conference title "Reports from the Frontiers" captures the idea that our objective is at least partly to learn about what is happening at the forefront of academic research and real world practice from those who are on the spot.

The speakers in the morning sessions covered a range of important frontier topics from the academic perspective, discussing their own work and also describing the current state of the art in the area. The keynote speaker, Robert Litzenberger, shared his thoughts on several timely topics, gained from his years as Head of Firmwide Risk Management at Goldman Sachs, following an extremely productive academic career as a finance professor at Wharton and Stanford.

In the afternoon, we heard from practitioners in several areas about the latest developments in their respective fields. The final session of the conference brought together some of the most respected people in finance to discuss their views on what new ideas they expect will have the greatest impact on the real world.

THE FRONTIERS IN THEORY I: MODELING THE PRICE PROCESS
Chair: Emanuel Derman, Columbia University

"Modeling Volatility," Robert Engle, NYU Stern School of Business

"Modeling Distributions: Extreme Value Theory and Copulas," Paul Embrechts, Dept. of Mathematics, ETH Zurich

"Option Pricing using Integral Transforms," Peter Carr, NYU Courant Institute of Mathematical Sciences

THE FRONTIERS IN THEORY II: MODELING DERIVATIVE SECURITIES
Chair: Raghu Sundaram, NYU Stern School of Business

"Likelihood Estimation for Continuous Time Models in Finance," Yacine Aït-Sahalia, Princeton University

"Mortgages and Mortgage-Backed Securities," Francis Longstaff, UCLA

"Modeling Interest Rate Risk, Equity Risk, and Default Simultaneously," Sanjiv Das, University of Santa Clara

Luncheon Keynote Address: Robert Litzenberger (Emeritus Professor, Wharton, and retired Partner, Goldman Sachs)
"Issues Related to Incompleteness, Transaction Costs, Counterparty Credit, and Moral Hazard"

THE FRONTIERS OF DERIVATIVES AND RISK MANAGEMENT PRACTICE
Chair: Michel Crouhy, CIBC

Presentations by practitioners on
Regulation—Richard Lindsey, Bear Stearns
Credit Risk—Jeffrey R. Bohn, Moody's KMV
Derivatives Markets—David Krell, International Securities Exchange

PANEL DISCUSSION: CONNECTING THE ACADEMIC FRONTIERS TO THE REAL WORLD
Chair: Mark Kritzman, Windham Capital Management
Sanford Grossman, Quantitative Financial Strategies, Inc.
Robert Litzenberger, Wharton (Emeritus) and retired Partner, Goldman Sachs
Stephen Ross, M.I.T. Sloan School
Myron Scholes, Oak Hill Capital Management
Robert Shiller, Yale University
CALL FOR PAPERS

FINANCIAL MARKETS, INSTITUTIONS AND INSTRUMENTS
Editor: Anthony Saunders
Editorial Office: NYU Salomon Center
Published by: Blackwell Publishers, Malden, MA and Oxford U.K.

Financial Markets, Institutions and Instruments bridges the gap between the academic and professional finance communities. With contributions from leading academics, as well as practitioners from organizations such as the SEC and the Federal Reserve, the journal is equally relevant to both groups. Each issue is devoted to a single topic, which is examined in depth, and a special fifth issue is published annually highlighting the most significant developments in money and banking, derivative securities, corporate finance, and fixed-income securities.

Previous contributors to FMII include:

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Ronald Anderson  Andrew Karolyi  Charles Trzcinka
Marshall Blume  George Kaufman  Stuart Turnbull
Stijn Claessens  Richard Roll  Gregory Turnbull
Stephen Figlewski  Anthony Santomero  Paul Wachtel
Lawrence Harris  Jeremy Siegel  Ingo Walter

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The NYU Salomon Center is an independent academic research institute founded in 1972 as a vehicle for focusing high quality research attention on the global financial services industry and its principal institutions. Among its activities, the Center conducts new research on a variety of financial topics; conducts high profile conferences for academics, practitioners and regulators; and distributes newsletters to the relevant communities highlighting important research developments in specific areas covered by the Center. The Center benefits from an outstanding external academic board, including Myron Scholes (1997 Nobel Laureate in Economics and past AFA president), Sanford Grossman (1987 John Bates Clark Medal in Economics and past AFA president), and Robert Litzenberger (past AFA president).

Currently, the Center, under the direction of Matthew Richardson, is involved in seven research initiatives, each directed by a Stern School of Business professor:

- **Asset Management** directed by Martin J. Gruber (Chairman of CREF Board and past AFA President)--focuses on examining and explaining the existence, management and performance of pools of capital, concentrating on institutions such as pension funds, mutual funds, and hedge funds.
- **Corporate Governance** directed by David Yermack – focuses on interactions between managers, shareholders, debtholders, and other groups such as auditors, bankers, and government regulators.
- **Credit and Debt Markets** directed by Edward I. Altman (past FMA President) – focuses on the efficient functioning and dynamic nature of the world’s credit and debt markets.
- **Derivatives Research Project** directed by Stephen Figlewski (Founding Editor, *Journal of Derivatives*) – focuses on theoretical and applied research on derivative instruments and markets, risk management and financial engineering.
- **Financial Econometrics** directed by Robert F. Engle (2003 Nobel Laureate in Economics) – focuses on the application of econometrics to the field of finance with special attention to the development of techniques for risk management, derivatives pricing, and market performance.
- **Financial Institutions** directed by Alexander Ljungqvist – focuses not only on ‘traditional’ banking questions, such as the regulation of commercial banks and the monetary transmission channels between the banking sector and the real economy, but also on the role and efficiency of investment banks and private equity funds in helping companies raise capital.
- **Macro Finance** directed by Thomas Sargent (Senior Fellow at Hoover Institution) – focuses on the interaction between the macroeconomy and financial markets.

The Center funds its activities through the support of Corporate Associates. (See front cover for a current list.) For a nominal annual fee that is tax deductible, corporate associates receive several benefits beyond philanthropy towards one of the preeminent research centers in finance. Specifically, they are provided (i) free attendance at high profile conferences held by the Center (examples of which are provided on pages 28 to 31), (ii) discounts on our *Frontiers in Finance Executive Workshop Series*; (iii) unique access to Stern faculty via periodic internal conferences in which faculty and associates discuss and present research developed for each initiative, (iv) timely delivery of newsletters and other reports of the Center, (v) advertisement as a sponsor in newsletters and links via the Center’s website, and (vi) free access to certain data outputs from the Center. For example, the Credit and Debt Markets program maintains a monthly time-series of indices on defaulted bond and bank loan prices since the 1980s that is available free of charge to associates. With the recent development of a database facility, this type of offering is an expanding part of the Salomon Center.

If you would like more information, please contact us at Corporate Associates Program, Salomon Center, NYU Stern School of Business, Suite 9-160, 44 West 4th Street, NY, NY 10012; telephone number (212) 998 – 0700; fax: (212) 995-4220; email address salomon@stern.nyu.edu