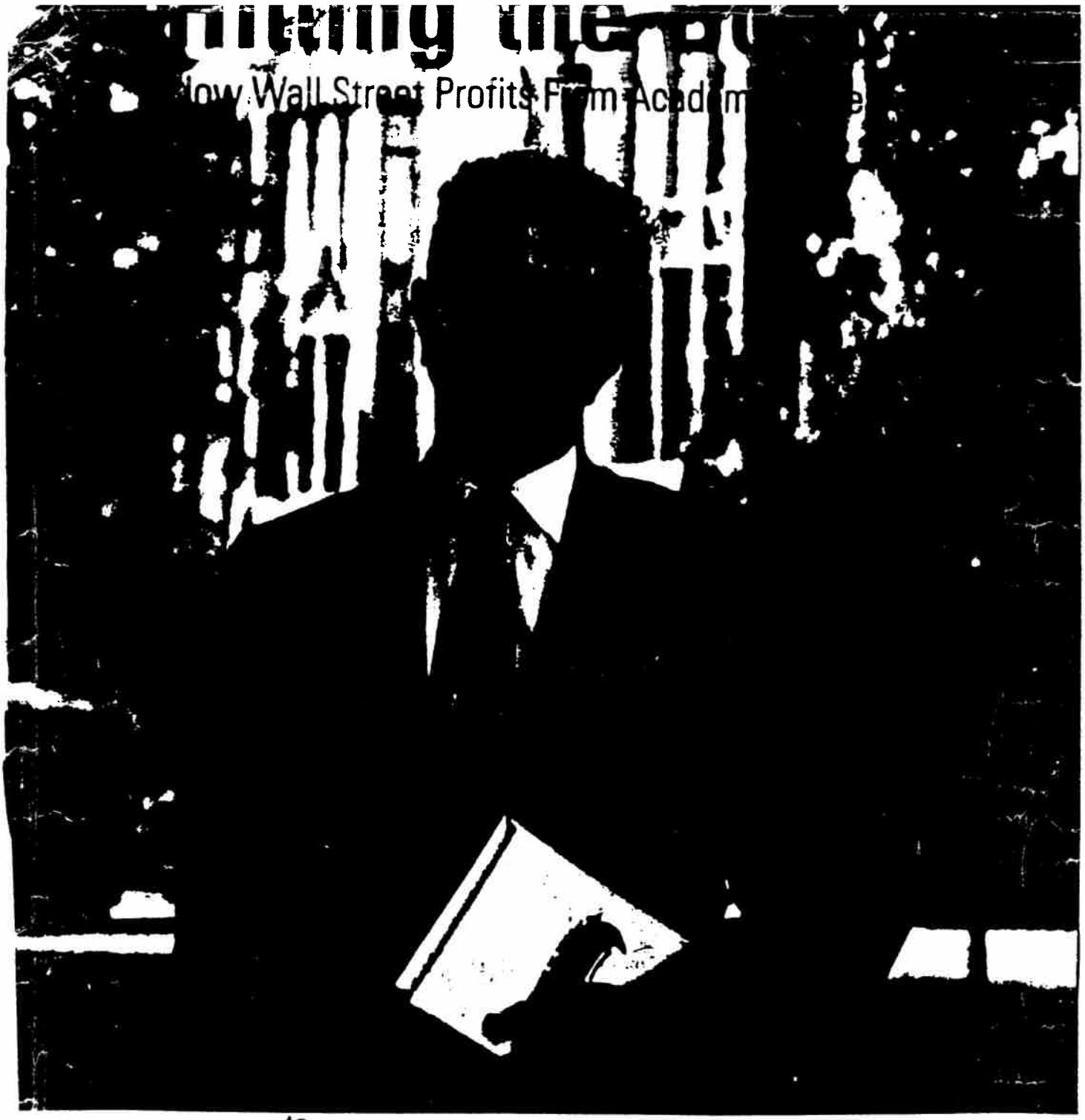

Hitting the Books

How Wall Street Profits From Academic Research

By Hal Lux

"The two smartest groups of people I have met are in academia and on Wall Street," says Clifford W. Smith, Jr., Clary Professor of Finance at the University of Rochester's William E. Simon School of Business. "If Wall Street professionals do not pay attention to a particular idea it's usually not because they don't understand it, but because you didn't convince them you could use it to make money."

But Wall Street has listened to many academic theories—and has made a lot of money on some of these ideas. Bankers and traders say many of the most profitable activities of the past few years have had their roots in academic research. "You had options for 100 years before Fischer Black was born," according to one Wall Street trader. "But the Black-Scholes model made a large sophisticated market possible."

An equally prominent example of academia's influence on Wall Street is

probably the research done by W. Braddock Hickman into the investment history of low-quality bond portfolios. This work is said to have confirmed Michael Milken's suspicions that a well-diversified portfolio of junk bonds could, over time, outperform a portfolio of higher quality bonds.

Other academic theories may have had less high profiles but did have equally far-reaching impact on capital markets and corporate finance. These include discounted cash flow analysis, passive investment strategies, the capital asset pricing model (CAPM), the arbitrage pricing theory (APT), and even such basic concepts as the rate of return.

"Discounted cash flow may now be second nature to bankers," notes Professor Merton Miller from the Graduate School of Business at the University of Chicago. "But it definitely wasn't invented on Wall Street."

A final area in which research has been shown to pay handsome dividends for Wall Street is in Washington. The independent nature of academic research carries a lot of weight in front of Congressional hearings. Securities industry lobbyists are not the slightest bit shy about trotting out academic research that favors Wall Street positions.

Once sold on its value, Street professionals lost little time in getting involved in development of research centers that focus on Wall Street issues. Institutions supported by Wall Street money include the Center for Research in Securities Prices, The Salomon Brothers Center for the Study of Financial Institutions, and The L. Glucksman Institute for Research in Securities Markets.

In addition, many B-school professors have developed consulting relationships with Wall Street firms. "There's a big market for rent-an-academic," according to Smith. Some investment banks have gone as far as electing academics to their boards of directors. Merrill Lynch, for one, has named Prof. James Lorie to its board.

There are now even stronger links between leading business schools and Wall Street, which help ensure that cutting edge research will continue to flow to the Street—and through the channels where it will be most impact. Firms are still recruiting academics and PhDs, and at least part of their job is to monitor and adapt the output of their former colleagues.

Even commercial banks, which have traditionally lagged the Street in this area, are making sure that they are well tapped into academia. For example, Chemical Bank has three or four PhDs who follow academic research very closely, according to Cyrus Ardalen, managing director-product development group.

But the most important agents for carrying the latest campus thinking to the Street are the MBAs who are so actively courted by investment banks. Firms compete fiercely for the top prospects and senior executives say their future success depends in large part on their ability to attract the best business school talent.

'There is an awful lot of value you get from research in the area that I work in.'

Bankers and professors alike say business school graduates help spread academic research through Wall Street. "It's definitely brought in by MBAs," according to one investment banker. "They get hooked on the stuff at school and use it when they get to firms."

Miller backs up this observation. "It can only be carried in this way. The same is true in every field." He goes on to explain, "There aren't that many investment bankers over 50 who really understand options. But for new graduates it's second nature. They're comfortable with an academic approach to finance."

To date, the most visible benefits of academic research have been realized on the capital markets side of the business, where professionals say they now track pure research closely. "I have four or five file cabinets of academic articles that I keep in my office," notes Gary Gastineau, v.p.-futures at Salomon Brothers. "I find it very useful and try to monitor what's going on."

Many traders say academic research helped create many of Wall Street's most profitable trading markets. "The origins of my business are in academic research," according to Robert Gordon—president Twenty-First Securities. "As a result there is an awful lot of value you get from research in the area that I work in."

Traders say the ties between academia and capital markets were cemented by the pioneering options valuations models of Fischer Black and Myron Scholes. Following Black-Scholes, academics quickly began churning out valuation formulas for other securities.

Traders could now value securities in relation to each other. With these gifts from academia, Wall Street began a profitable search for price discrepancies and arbitrage profits.

If you can build a better interest rate forecasting model, Wall Street will beat a path to your campus office. "We absolutely use various valuation models that are done by professors", says Ronald Gallatin, managing director-Shearson Lehman Hutton. "And there will continue to be models that are used as reference guides."

Research into the term structure of interest rates at the University of Texas at Austin is a good example of this ongoing search for valuation models. Professor Ehud Ronn and Chicago doctoral candidate Robert Bliss, Jr. have been working on a model that would value options on interest rate future contracts. The model, according to Ronn, differs from previous ones in two major ways. First, the model is trinomial. Interest rates can go up, down, or have no significant change. Secondly, the model allows for non-stationarity, that is, the magnitude of change can differ through time.

While the terminology may be academic and arcane, the model, if successful, has practical applications with significant bottom-line impact. If the model values do not correlate with the observed values, Ronn says the question becomes, "Can we set up an arbitrage portfolio that takes advantage of this apparent mispricing? Can we earn arbitrage profits by us-

Shearson's Gallatin: important as guide

Capital markets pros and academics say similar valuation research has become a standard part of Wall Street's trading and hedging activities. "It's hard to overstate the interaction of options markets and the academic community," Professor Smith notes. "The more technical the product—the more the academic community has to offer."

The academic revolution in corporate finance has been quieter than the one in capital markets, but sweeping nonetheless. Many basic ideas such as net present value analysis and rate of return have become so ingrained on the Street that bankers have forgotten their academic origins. "A lot of these ideas, such as rate of return and discounted cash flow," notes Miller, "were academic notions from the word go."

These theories have provided important tools for Wall Street's corporate finance work. "Every day in corporate finance you have to put values on projects and corporations," says one banker. "These days you have to tell your clients where you got the numbers. You can't just say you got them." Probably even more to the point, in today's competitive environment, an investment banker has to be one step ahead of the client when it comes to the latest management practices, financial as well as non-financial.

The capital asset pricing model is a prime example of a corporate finance tool that grew out of academic research into portfolio investment. Investors demand a higher rate of return from risky investments. Thus, investors who hold treasury notes will demand no risk premium while investors who hold the market portfolio will demand a risk premium equal to the difference between the treasury rate and the average return on the market. But academics also wanted a way to calculate the risk premium for portfolios in between these two poles.

The CAPM helped provide a solution. According to the CAPM, the expected risk premium on any investment should be proportional with its beta. (Beta is a measure of market risk, i.e., how a move in the market affects an investment's return.) An investment with a beta of .5 should demand half the risk premium of an investment in the market porfolio.

CAPM had important implications for capital budgeting and project finance calculations done on Wall Street. Investment bankers now had a way of quantifying investment decisions. Firms should invest in projects that had rates of return high enough for the risk associated with the firm's beta. Cash flow for a project should be discounted by the project's risk not a company's risk."

CAPM applications are "absolutely used today for project financing decisions," notes one banker. "How closely you use the theory depends on your client."

Client sophistication in the area of risk assessment has pushed bankers to look at other academic models of risk and return such as the arbitrage pricing theory. "You try to find a number of ways for establishing value," according to one banker. "Academic theories are a good way to look at problems from different angles."

'Every day in corporate finance you have to put values on projects and corporations.'

In fact, academics are finding a lot of new angles for traders and bankers. Perhaps the best example of cutting-edge research is in an area called contingent claims analysis (CCA), which takes options theory beyond its traditional focus on securities.

Academics are beginning to look at the left side of the balance sheet and apply options models to the pricing of real assets. Scholars say the work being done on contingent claims analysis could have a major impact on how capital budgeting decisions are made in corporate America.

"The application of options pricing to valuing hard assets is still in its infancy," according to Professor Scott Mason of Harvard Business School. "But its potential impact is substantial."

While Wall Street may not yet have picked up on contingent claims analysis for hard assets, some of its largest clients may be showing some interest in it. A number of large energy companies have reportedly examined the potential of CCA for project financing.

CCA could be the next tool for the Street's corporate finance pros. "You probably would not use CCA if you're thinking about buying a word processor," notes Mason. "But for a large company considering a new plant, it's a more complete technique." A "complete" valuation might also be useful in advising on a major acquisition.

CCA is complex, as well as unfamiliar, and this may be putting off more widespread use. Mason warns that "unlike net present value analysis which is easy to apply, contingent claims analysis can be very difficult."

21st Securities' Gordon: 'the origins of my business are in research'

Goldman's Black: All roads lead to Black-Scholes

Investment bankers—and their corporate clients—have depended on net present value analysis for decades. The belief held by some academics that net present value analysis is flawed has propelled research into CCA. In particular, some academics argue that discounted cash flow techniques systematically undervalue projects. NPV analysis is missing options embedded in the projects, according to these academics.

These arguments are strikingly similar to concerns raised by investors about the pricing of call options embedded in bonds *(IDD 11/21/88)*. Institutional investors became concerned that bonds were being mispriced because securities' options were not being valued correctly.

In response, firms have developed complex models to measure yield and duration that take into account the possibility that bonds will be called if interest rates change. The mortgage-backed securities market, for example, has quickly replaced cash flow methods of pricing with new models that look at options-adjusted spreads.

Mason notes that traditional valuation methods used by investment bankers may fail to value alternatives such as the option to abandon a project, the option to expand a project, or the option to shut down a project temporarily. If investment bankers do not include these options in their valuations, their clients may be getting an incomplete analysis.

In other words, applications for CCA have moved beyond quantifying financial flexibility to measuring

Again the practical applications are at an early stage. But investment bankers may well find their clients asking about CCA. "Real world managers find it intuitively appealing," he explained. "A lot of research is continuing in this area."

Academic research is still breaking ground in the high yield market, nearly 40 years since Hickman's pioneering work. A primary focus continues to be studies on junk bond default rates, some of which have displayed an unwelcome ability to move the market. "If you want to see the impact of academic research on Wall Street," one trader notes ruefully, "look at recent junk bond studies. A Harvard professor puts out a paper and people lose money."

Academics have also become interested in the actual LBOs and mergers that surround these studies. For example, a group of professors at the University of Chicago Graduate School of Business—Abbie Smith, Catherine Schipper, and Laurentius Marais—have been examining management buy-outs from several different perspectives. Some of their research challenges commonly held assumptions about market performance of this subset of the leveraged buy-out.

One study looks at an MBO's effect on operating performance. It finds that there is a strong tendency for real operating profits to increase after a management buyout. Another Chicago study looks at the effects on bondholders of MBO announcements. While the research identified pervasive reductions in Moody ratings of target companies upon announcement of a proposed MBO, it found no reduction in the average value of bonds.

But it is still default rate studies that capture the attention of the junk market. Last week a new study by Data Resources hit the front pages of the financial press. During a severe inflationary recession, when both inflation and interest rates are rising, the existing degree of leverage among U.S. companies could cause the default rate to hit 13%, according to the study. Within hours of its release, the press had already found academics who were poking holes in the Data Resources' study.

Chicago will enter this academic fray with an upcoming study of how MBOs perform in a recession. The research will try to gauge how severe a slowdown some of these companies could take. According to Chicago's Smith, the research focuses on "how bad does it have to be"—what level of interest rates or distress would be required to cause a company to go bankrupt?

RESEARCH AS A MARKETING TOOL

Academic research can do more than help a banker stay one idea ahead of the client. In some cases, it may actually help pinpoint the client. Academics also have some advice about marketing investment banking products.

In particular, Professor Clifford Smith of the Simon School is working on a research project that might help some investment bankers understand the customers they are trying to sell products to. "My attitude has always been to try and understand the private economic incentives," says Smith. "Successful markets did not occur because of happenstance or luck. When people just try to put out something cute it tends to fizzle."

Smith's current research examines the results of a survey of CFOs with respect to the use of forward contracts, futures, swaps, and options.

Smith wants to understand what brings customers into these markets. At first glance it might look like an interesting academic exercise but Smith observes, "If I were in charge of a swaps group and I had a limited number of people to go out and look for business I would want to identify marketing targets."

According to Smith, some conventional wisdom about why corporations choose to hedge risk has been incorrect or incomplete. Smith's research will look at a wide range of variables. His research will test the theory that corporations in certain circumstances have a stronger incentive to enter the forward, futures, options or swaps market. Some of the significant variables, according to Smith, may include the company's size, R&D investment, capital structure, ability of customers to identify product quality before purchase, tax circumstances,

Profits from Academic Research

ankruptcy is a hot topic on Wall Street these days. A number of Street firms have formed sepa- banking groups that will offer re- anization expertise to firms in pter 11. Firms are showing more rest in trading the securities of krupt firms and trading boutiques t focus on these securities are also inning to appear.

Academics have responded to this ve of interest with increased re- rch on different aspects of bank- otcy. At Cornell's Johnson Gradu- School of Management, Profes- s Morse and Wayne Shaw re- ntly completed a study that exam- s the pricing of bankrupt securities d the returns associated with trad- g in them.

The timing was right, according to orse. "Unfortunately, we sometimes g the Street," he notes. "But we re very timely with this study. e've received a lot of calls on it."

The study notes that little is nown about the investment charac- ristics of bankrupt firms. Using data r firms that were actively traded nd then filed for bankruptcy be- ween 1973 and 1982, the professors earched for the returns associated ith major events in the Chapter 11 ocess and evidence of abnormal re- rns.

Morse and Shaw tried to use ac- nting data to create a model that uld identify profitable bankruptcy ading strategies. They explored uch variables as size, working capi- al, retained earnings, return on as- se tal debt to equity, and audit opinions. According to the study, "None of these tests provided any in- dication that publicly available ac-

vestment purposes.

The professors were able to calculate average returns for legal events associated with the reorganization process. For example, the development of a reorganization plan increases the value of the stock 8.8%, the creditors' acceptance increases the value by 10.7%, and confirmation of the plan seems to have little effect on the stock.

The Morse-Shaw study has a mixed message for Wall Streeters who are looking for huge profits from trading bankrupt securities. Its findings indicate that no "abnormal" returns are available. But Morse points out, "This does not mean that there are not strategies that will work." But it does mean the search for profitable trading strategies may be difficult.

'Academic theories are a good way to look at problems from different angles.'

Heading into the future, professors are beginning to move beyond traditional research in valuation to new areas of investment banking. These research efforts are, in many cases, years and breakthroughs away from showing up on Wall Street.

For example, some academics have been trying to model Wall Street's bidding wars. The models would presumably give M&A pros some insight into the likely results of different strategies.

Some of the research has looked at how firms can preempt competing bids. Professor Michael Fishman of the Kellog Graduate School of Management recently published an article in *The Journal of Finance* titled "Preemptive Bidding and the Role of concerning the medium of exchange of an offer, the probability of acceptance, the probability of competing bids, expected profits, and the costs of bidders."

According to the paper, the medium of exchange does have an influence on the outcome of a bid. Some of the implications of the study are: the expected payoff of an initial bidder is lower if its initial offer is securities instead of cash; the probability of competing bids is higher if the initial offer is securities instead of cash; the probability that the target will reject a bid is higher if securities are bid instead of cash; and the more expensive a study of a target is, the higher the probability that an initial bid will be in cash and the lower the probability that there will be multiple bidders.