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**COURSE F-585 "LITE": A LOOK AT INVESTMENT  
BANKING AND FINANCIAL INSTITUTION MANAGEMENT**

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*During the past several years, the Fellowship syllabus has been strengthened with a number of exams on investment and finance topics. This teaching session will introduce Course F-585 to "seasoned" actuaries who missed the opportunity to study this material on their road to Fellowship. Given the time frame, the focus of this session will be only to expose the various subjects covered, identify reading materials, and highlight a few topics. No pop quizzes, we promise!*

MR. RICHARD S. MATTISON: I head the asset/liability management area at Paul Revere Insurance Group, and I'm also chairperson of the SOA Finance and Investment Education Objectives Committee. My preview will be on the textbooks and journal articles that we use in the finance and investment tracks. Michel Rochette is a Fellow of the Society of Actuaries. He is a professor of the actuarial school at Laval University. Michel specializes in the evaluation and management of credit risks in financial institutions. He is also Vice Chair of the Course 580 examination. I work on the education side and Michel works on the examination side. If you have exam comments, see Michel, and if you have education suggestions, see me.

Our agenda is as follows: I'm going to briefly tell you about the SOA objectives for each track. These are both relatively new tracks for our profession and to some extent they're still evolving, but I'll talk about our current objectives for the track and this course. Applied Corporate Finance is a required course on both tracks. Michel will be giving an overview of Course F-585 as a whole, and he will go into more detail about one of our texts, *Financial Institutions Management*, by Anthony Saunders (Burr Ridge, IL: Richard D. Irwin, Inc., 1994). Then I will talk again about the second main text for this course, *The New Corporate Finance*, by Donald H. Chew, Jr (New York: McGraw-Hill, 1993).

In terms of the finance and investment tracks, my committee, among other things, is working on our vision and objectives. Hopefully these will be relatively detailed documents that go into specific support review and serve as the education objectives for these two tracks. The finance track offers everything that the actuary/chief financial officer (CFO) needs to know about the finance side of a financial institution, such things as the relationship with the banking community that is going to raise capital, the efficient ways of raising capital, shareholder relations, and dividend structure. The investment track is a counterpoint. We cover everything that the actuary or asset/liability manager needs to know to manage the financial market risk of an enterprise or a line of business. Those are ways to try to get at the distinctions of the finance track and the investment track, and again these will be evolving as we go forward.

In terms of some of the core specifics, we're going to be focusing on the Course F-585 report as it applies to corporate finance. The first two courses aren't necessarily in the order that students will take them, but we have both courses or both tracks of courses on financial management, which is sort of a basics course that picks up a range of

traditional financial management issues within the life insurance company context. We have the five corporate finance courses, but they are not really done from an insurance company perspective. It's more from a financial institution's perspective or a corporation as a whole.

In a finance track, we specialize in the valuation of the financial reporting side. We have an advanced valuation financial reporting course. We also have a corporate finance course which is a generic, college-level, broad-based corporate finance course; it's not insurance specific. There's also a corporate strategy and solvency management course which is traditionally based in terms of an insurance organization's involvement in solvency management.

On the investment track, besides the same first two, we also get into optional pricing theories. We have a derivatives course that makes use of stochastic calculus. These are some of the techniques that are being developed outside of the actuarial profession to evaluate and price contingent risks. We want to make sure our profession learns and uses these techniques. So we do have a course on derivative securities, and we also have a course on advanced portfolio management that gets at more of the issues in terms of what an investment department has to worry about or what fund managers have to worry about. It has every component. There's performance measurement, total return, the capital asset pricing model, and an applied asset/liability management course. These are upper-level, fellowship-specialized courses. At the basic level, we have a theory of interest course and at the core level, we also have two investment-related courses that give students a broad overview of financial markets, assets, and the players. They also provide a broad look at asset/liability management. This is the content for the applied corporate finance course.

MR. MICHEL ROCHETTE: I believe that if you want to learn about finance, you should always do it from the angle of an actuary. This is not necessarily the case for one who wants to become an expert like a broker or an accountant, but always study topics from the angle of someone who measures risks, whether it is life insurance, fire insurance, homeowner's insurance, or credit risk.

Before I actually go into the exam itself, I'd like to give you my definition of what an actuary is. It is essentially a professional who specializes in the valuation of risk. An actuary also tries to value the consequences of those risks and tries to get involved in the management of those risks. I think this is a pretty broad definition.

The book I'll be referring to is *Financial Institutions Management* by Saunders. The author also refers to that same concept so I think this is an important book for this kind of exam. As I read the book, I noticed that the environment is changing. There's consolidation in the insurance and pension industries. You all know that New England Life will merge with Metropolitan in the U.S. We've had failures and mergers of life insurance companies in Canada. Banks in Canada will start issuing life insurance in 1997 at the counter so that creates opportunities for actuaries, and it also creates some threats. And if you want to move into other fields or try to do something else within an insurance company, you'll need some additional knowledge.

There's also an interesting statistic that I read in the book that said that two-thirds of all financial assets in the U.S. are controlled by financial institutions over which we

## COURSE F-585: INVESTMENT BANKING

have no control. In other words, they're controlled by banks or finance companies. We actually control, and are involved in industries that control about one-third of all the assets; I'm referring to life insurance companies and pension plans. I believe there are some opportunities out there, but it's just a matter of acquiring the right knowledge. Also some of you might be thinking of learning more about finance in general because you're thinking about a career transition. In the meantime, it's a bit threatening to move from one type of a business to a different kind, but with some knowledge and some expertise, you can do it very easily. That's essentially one of the reasons why you might want to study either the finance track or the investment track. Remember to always approach it from the angle of an actuary.

Course F-585 is one of the exams in the finance track section. The book that I'm using, *Financial Institutions Management*, is broad in scope. As I mentioned, this book proposes that modern financial institutions are in the risk management business and they manage potential risks. That goes along with my idea that you can be an actuary if you try to evaluate risks whether it is life risk, management risk, export risk, solvency risk, credit risk, or others. I think that part of the book would be very useful to some actuaries. Although the author tried to present it for all financial institutions, he concentrated more on banking. He goes very quickly over the other industries like life insurance or pension plans, but I think that should not be a problem since we all should be familiar with these industries. It's a very interesting book from which to learn more about the banking industry and its risks.

The first part of the book is organized around the process of risk evaluation. He presents the kinds of risks that a bank faces, and then he presents the kinds of risks that a life insurance company faces. The risks (such as interest rate risks) are identical in both kinds of industries. An insurance company and a bank both face that kind of risk, although the contingencies are different. He also presents other kinds of risks like the failure or the death of a business versus the death of a person. In the life insurance company, you try to value the financial consequences of the death of a person while the bank tries to value the financial consequences of the death of a company. It may sound strange talking about the death of a company, but that's exactly what it's all about. Of course the "death" can be influenced by Chapter 11 in the U.S., but that kind of risk can be valued as well, so it's interesting to learn more about these risks.

The author also talks about some of the laws and regulations that you should be aware of if you want to work in financial institutions, like banks. Also if actuaries want to work in those fields, you should know some of the accounting practices and some of the terminology that's being used in those financial institutions. For instance, he talks about the C-1, C-2, C-3 and C-4 risks which you're all familiar with, but he also mentions other kinds of risks such as sovereign risk, credit risk, and country risk. He gives a definition of these risks and he presents some of the people who are involved in the management of those risks including actuaries and nonactuaries. It's interesting to know who actually does what in those financial institutions. These are more the qualitative aspects of the book.

The author then picks up with more quantitative analysis and presents the different kinds of risks that one can face in a financial institution. He talks about the credit risk. The credit risk is essentially the default of a firm, and this is what the banking industry is all about. He talks about the operational risks that occur when, according to him,

technology does not produce the economies of scale, or when you make an investment project for a manufacturing firm and there's a probability that you will not get the return you expected to obtain.

You know about the foreign exchange risk. The author talks about the sovereign risks which refers to the expropriation, the foreign exchange control and to the default of a country. You can probably remember when Mexico defaulted. Usually it's the government who controls that kind of decision. Sometimes it could default on its long-term assets and not default on its agricultural buys. Although valuing that kind of risk is not as precise as it is for life insurance when determining risk of death, it can be valued as well.

The author goes on to talk about liquidity risk, which refers to the situation when depositors try to withdraw their money quickly. As I was reading about the liquidity risk, I thought about the cash flows of the life insurance company that have been studied heavily by actuaries in light of changes in the interest rates. The same concepts could be applied to this situation.

Saunders then gives an overall perspective of different kinds of risk, how he defines them, along with presenting some measurement of risks. That's the section I thought is the most interesting for actuaries who are usually involved in models and measurements. For example, he mentions and talks about different values of credit risks, like the fee or charge for loans, the loan originating fees, the value of collateralizing when you issue a mortgage. Then he presents some mathematical models like discriminant analysis. Then he talks about the Altman's Z score, which is a linear regression to account for the different possibilities that a firm may face when it defaults. Then he talks about other kinds of theories like portfolio theory which is essentially like risk theory for actuaries. These are some of the techniques that he uses. Then he talks about sovereign risks and he mentions qualitative approaches and quantitative approaches like the statistical models based on the debt-service ratio or import-export ratio of a country. That's probably more in the realm of economists, but I think that economists and actuaries can work together. In fact, when I used to work for Export Development Corporation, I was working with economists and I found that we were a good team because we both had a forward-looking approach. Although economists look at the global economy, we use a more specific approach, contrary to accountants who have more of a backward approach of trying to accumulate past results. Once you have identified the risk, you want to measure it.

Probably the most interesting portion for actuaries is the management of risks, and that's the last major section of the book. He also talks about different products that can be used in managing depending on the circumstances, like deposit insurance or the FDIC. He talks about the implementation of risk-based premiums for banks by the FDIC, and I'm not aware that actuaries have been involved in this calculation, but probably some economists were. He talks about the PBGC. He mentions different ways of managing risks, and I think that's where actuaries could be useful. For example, banks and financial institutions often have a concentration of risks whether it is in the same region or the same economic sector or in high-risk countries like Brazil and Algeria. Actuaries could calculate the financial consequence of a country failing and that's very useful information for management of those financial institutions. Also, securitization could be applied by actuaries.

## COURSE F-585: INVESTMENT BANKING

The overall aspect of this book is to identify, measure, value risks. So, in conclusion, I think that actuaries who want to know more about these subjects should be studying for these exams. We already have some strengths that we should not forget about. We use good analysis and good modeling techniques, and I would encourage some actuaries to go back and study risk theory and life insurance based on the statistical approach. We could apply these techniques to nonlife insurance, nonpension, and nonhealth insurance companies.

However, we have some weaknesses in the sense that we don't know much about other financial institutions' practices. Sometimes actuaries and nonactuaries talk about the same thing, but they don't use the same terminologies. I never use words like C-1, C-2, C-3, or C-4 risks because nobody understands these words. It is preferable to use the actual word like "general business risk" for C-4, for example. We have to know more about other financial institutions in order to get involved and I think this exam should help you. I think there is an opportunity in the market in the sense that financial institutions are getting more and more complex. They're being integrated and that creates some opportunities for us. For example, when I worked at Export Development Corporation, it was negotiating deals with Turkey. Some of the people who were negotiating deals worth millions of dollars could not even calculate an internal rate of return. They were asking me to do that. However, we have to realize that we're not alone in the market. There are already other professionals who are involved in the management of those institutions. We have to prove to them that we can add value to their business or companies. Richard will talk about the other part of this exam.

MR. MATTISON: I'll discuss the other main text used for this course called *The New Corporate Finance*, added for the spring 1996 exams. It's a relatively inexpensive, soft covered text. It reflects a quality side, investment banking by block, but the new corporate finance: where theory meets practice. It's edited by Donald H. Chew, Jr. and is a compilation of articles and essays mainly written by academics. These articles have been published in other financial journals that Donald Chew has been involved with. One of the good things about this, besides the fact that it's cutting edge in terms of corporate finance theory and applications, is a kind of scholarship that one doesn't always find, study materials that are well written and current. In that sense it is a delightful text and I encourage you to take a look at it. You can order it through the Associateship and Fellowship catalog or you can call the publisher, McGraw-Hill.

We don't use the whole text in our course. It is brand new to some of the other sections, some of its chapters and other sections in some of our other exams, but it's the first time we've introduced it. It's organized in seven parts. The first one is "Market Efficiency"; the second section is "Capital Budgeting"; third is "The Capital Structure and Dividend Policy"; fourth is "Raising Capital"; fifth is "Risk Management"; sixth is "Corporate Restructuring in the 1980s"; and "Workouts and Bankruptcies in the 1990s" is seventh. For applied corporate finance, we use some chapters from part 1, "Market Efficiency," then we jump to quite a few sections from part 4, "Raising Capital." Part 5, "Risk Management," includes the use of derivatives as a risk management tool for corporations, and hopefully, if warranted, we'll take some of the materials from this and put it on a derivatives course so we can have both the theory, option pricing theories that has calculus in that course, and some more applications there. We also use some chapters from Section 6, "Corporate Restructuring in the

1980s.” We haven’t progressed to the 1990s yet in terms of the bankruptcies and workouts, but we may pick up some of that either in this course or some of the other courses within that track.

I’m going to talk about some of the chapters within these sections. I won’t go into depth on all of them; I’ll just give you some perspective on what we have on the course. Under the “Market Efficiency Section,” we have two chapters. The first one is, “Do Bad Bidders Make Good Targets?” The idea here is getting at agency theory and the concept or the issue is the potential loss in value in public companies caused by the separation of ownership and control, management versus shareholders. This hasn’t happened in mature companies with substantial free cash flow, and it gets at the different incentives or objectives between management and shareholders. Most companies’ management likes to grow, perhaps in nonprofitable enterprises. One of the implications of this is the market for corporate control, takeovers, and things like that. It can be both a problem and a cure. If a mature company has substantial free cash flow that they choose not to give up to shareholders but invest in nonprofitable expansion, that’s the downside of a liquid market for raising capital to do takeovers. As a counterpoint, if they purchase with that free cash flow enterprises or companies that aren’t really adding value to the shareholders, the market has a way of getting back at them. The market really has to, over the long haul, use a control mechanism. What you find out is the company that has been a bad bidder or the market that moved its share price down as a result of a takeover or purchase, is far more likely to become next year’s takeover candidate.

Chapter 7 is “An Analysis of Trading with Profits.” Some investment firms may think that they can make money by buying low and selling high. In this chapter, it’s referred to as the myth of speculative positioning. The market is quite efficient, you really can’t bet your liquidity on being able to make your profits by buying low and selling high. Firms can also look at a source of profit as the value of the turn if they’re a market maker in a security, and they view this as a substantial source of profit. That can be true for large firms that have the size and capital to back up that position, but all in all that isn’t a source of profit for investment firms. The real source of profit is in customer business. The real source is the revenue generated by serving the customers’ needs as a broker. That chapter focuses on the issue of how investment firms make their money. It’s not because they know what to buy—the market’s too efficient for that. It’s not because they’re really a market maker by and large. It’s because they’re providing customer service.

We have a number of chapters in part four, “Raising Capital.” We use Chapters 1, 2, and 4. We also use Chapter 3, “An Overview of Corporate Securities Innovation.” One of the important issues is innovation in the financial markets. It does this by reallocating the risk. Instruments that were created allow people to off load risk and others to buy or accept risk if they’re willing to take it. It also adds value by increasing the liquidity in the marketplace, the ability to sell instruments either directly or synthetically without lowering the price. We also see innovation as in reducing agency costs, and the issue of a potentially divergent effect between managers and shareholders. It also works to reduce underwriting actual insurance costs. It provides access and circumvents the constraints in the marketplace. Examples of corporate security innovation include adjustable rate loads, mortgage-backed securities (MBS), collateralized mortgage obligation (CMOs), dual pricing bonds, index notes, zero-coupon bonds,

## COURSE F-585: INVESTMENT BANKING

convertible preferred stock lines, portable convertible bonds and equity-linked notes. An equity-linked note is an interesting product that allows an insurance company to buy something that it can hold as a bond on its books and its capital structure. But it can have an equity linkage if it's either a stop or an index. If it appreciates beyond some target level, you can add an equity life return component to that investment but on your books, it's treated as a bond.

Another chapter in this section is, "Introduction to Mezzanine Finance and Private Equity." A mezzanine is a "between level"; it's between the senior secured debt and equity, and you hope that your lender takes up the best of both. Some examples include things like private placements that may turn out to be junk bonds if things don't work out very well. They trade like an equity or a bond if the company is not doing very well. You may have things like private placements with a warrant attached to it.

Chapter 6, "Initial Public Offerings," discusses an investment banker's perspective on the risks of being an underwriter of securities as well as the issuers' perspective and what they have to worry about. It takes a two-dimensional look at it.

Chapter 7, "Raising Equity in an Efficient Market," is written more from a corporation's perspective. It talks about one of the best ways to go to the market and view an equity offering. It tells about the options and the pros and cons. Topics or approaches are one of a common underwriting, a best-efforts underwriting, an auction, a rights offering that you put out to your existing shareholders, and the 415 shell registration. It's a chapter that's focusing on a corporation's perspective, like the pros and cons of issuing more equity.

Chapter 8 is, "Are Banks Different?" There's some evidence from the stock market. It's an interesting chapter that looks at banks as a source of capital and what the source of capital tells the market and how the market evaluates that. If we look at the market response, the effects are viewed as having a credible advantage in gathering information and about monitoring companies that they lend to. It's a bit of a story that bankers won't lend you money unless you don't need it, and that market sort of views it that way. Bankers have inside information and the market views a bank loaning money as very positive. Public firms view bank lending as a significant positive result or positive reaction from a stock market but it's a negative result for almost all kinds of security offerings. This is viewed as positive news since it's a signaling to the marketplace that good things are going on in this company. When we look at how companies or corporations raise capital, much of the surprising feature is that, by and large, it's internally generated, it's retained earnings. On average of 60% of the funds that corporations need for growth are from retained earnings and short-term sources. And when they go out for things like raising capital by equity, the market may consider that maybe they're doing that because they feel the stock is overpriced. This is a good opportunity to sell stock in the marketplace because shareholders or the market community doesn't necessarily value the stock appropriately.

LYONS are liquid yield-option notes. These are zero-coupon, convertible, putable, callable bonds. It's again a putable bond, a callable bond, convertible to equity, and a zero-coupon bond. This was developed by Merrill Lynch in mid-1985 by Mitchell E. Call. Merrill Lynch has a substantial amount of activity in its cash benefit accounts.

In looking at what customers did with their response, he realized that individuals were willing to risk a portion of their funds on options, on high-risk investments, as long as their principal or the majority of their funds was secure. He designed an instrument, LYONS, that he thought would appeal to this marketplace. It gives them a chance to have a very secure investment grade bond that has some equity component to it without having to actually own equities with the convertible feature.

One of the interesting things about this is the benefits of financial innovation to the firm. This has been quite a successful product for Merrill Lynch. It had about 43 issues since the first one in 1985, and it raised about \$112 million in capital from this. About half of that is really owned by individual customers, by the retail customers as opposed to financial institutions, so it really has an appeal to that marketplace. Both have been very profitable for Merrill Lynch. Typical spreads on convertible securities tend to ring about 1.7%. During this innovation early on, they were able to keep a 3% underwriter spread. Now it's down to the 2.5% level so it still kept some of that spread advantage and it has earned about \$250 million in profits for Merrill Lynch.

Section 5 on "Risk Management" has some chapters on derivatives but we don't use them for this course. But again, on the theme of financial innovation, this chapter was written by Reggie Miller. People have probably heard of his other works. One of the things that a derivative does is it allows a more efficient transfer of risks to those who want to bear it. One of the comments that he makes is that a set of instruments in the market, futures and options contracts, the markets themselves, both formal and informal, act and function like a gigantic insurance company. This is a very efficient way to transfer risk and to price risk, and that's an interesting concept. We may look at the analog in the insurance industry. Can we look to the paradigm in health care and find a more efficient way to develop our clients in the marketplace? If we use a market approach to also price risk of health insurance companies, there may be other ways to look at it as well.

Chapter 2, "The Evolution of Risk Management," gets at off-loading risk perspective. Companies that deal overseas and companies that don't want to carry the exchange risk want to be able to sell their product overseas and not be worrying about whether their exchange rates are going up or down. Also we have things like commodity prices and interest rate risk, and financial innovation allows companies to focus on their core competencies or their core businesses and avoid things that they don't want to have to worry about.

In "Corporate Restructuring in the 1980s," Chapter 1 discusses the takeover controversy analysis and evidence. Some of the interesting aspects of this chapter is that takeovers in effect provide competition for stockholder management. If you think you can run a company better and that you can do a hostile takeover, you can raise capital and push the existing management out and your team can come in so it provides competition for stockholder management. It also raises that issue of free cash flow and the problem of companies having maturing industries and cash that they can't necessarily profitably reinvest. Do they have the right investment structure to give that back to the shareholders, or is there an incentive structure geared towards growth? They invest that money whether it's profitable or not.



## COURSE F-585: INVESTMENT BANKING

Chapter 3, "Causes and Consequences of Hostile Takeovers," takes a look specifically at the value added in hostile takeovers. Some of the leveraged buyouts or takeover activity is friendly. What about the hostile ones? In general where the hostile takeovers were linked with poorly performing companies, the reaction was they had nowhere else to go but up, and so, in general, hostile takeovers have tended to add value in the marketplace. The information does support that especially when the market has already viewed existing management or existing results very poorly and, of course, beaten down their stock.

Chapter 5 is "Lessons from a Middle Market Leveraged Buyout." This was about the lawn care products company, Scott Fertilizer. ITT owns Scott and wanted to divest itself and put Scott on the block. It didn't involve management at Scott; it just put it up for bidding. I think there were 11 or 13 firms that came in the leveraged buyout of the firms. They took Scott over without any of Scott's management involvement, and then worked very closely with existing management to realign their incentives. It required a substantial equity investment from senior management. Since they, in effect, had risk to senior management, they increased the pay structure for senior management, and made sure they realigned the incentives for senior management. They also took on substantial debt for the company and as a consequence of that, there were certain very restrictive covenants that the company made regarding use of the cash flow. There were also restrictive covenants in terms of not being able to sell off the lines of business or clients. They had restrictions on what cash they used that came on debt. That would be cash from operations. The conclusion from this is really that the pressure of servicing a heavy debt load from Scott as well as the emphasis on equity ownership by management led to tremendous performance improvement at this company. They didn't change management, or the product, or their manufacturing plant, but they made sure that the incentives of management were very closely linked with the incentives of the shareholders so both were focused on the same thing—shareholder value. It's a very interesting case study on the need to align management's interests with the shareholders interests to make sure you achieve your objective.

That's a quick review of the chapters we use from this text in this course. I think a key issue is innovation. We need innovation to meet the needs of customers; we need new products in the financial marketplace. We want to do this within the actuarial profession because we want to make sure that we're looking outside of our field in terms of ways we can solve problems. Another side of the finance and investment tracks is that there are opportunities for actuaries to reinvent who they are, what they do, and what skills can they bring to their clients or customers. They can bring new skills that can be used to attract different sorts of clients such as banks and other financial institutions as well as risk management experts for corporations or Fortune 500 companies.

I hope this whets your appetite for the textbook and the course as well.

**FROM THE FLOOR:** Would you care to comment about any other readings that are in that exam?

**MR. ROCHETTE:** In fact, there are two syllabi. There are two other study notes and text studies on risk-based capital (RBC) for commercial banks.

RECORD, VOLUME 21

MR. MATTISON: The new catalog hasn't been published, but we have a Harvard case study on Enron Gas Service. Enron is an interesting corporation in that it stepped away from looking at itself simply as a gas company, and more as a financial service company. It has developed contracts, financial instruments that facilitate their business in working with producers of natural gas as well as buyers. It's a company that has branched out from their core of business of being a gas company to also developing financial instruments that really facilitate the needs of their customers. They manage a book of risks on that basis much like an investment banking firm who manages business. Interestingly enough, there has been some development recently in electricity in terms of derivatives or contracts related to electricity and Enron is also involved with that.