September 2nd, 2012

ECO 2506

Risk Management for Financial Managers

A. Course Outline

Outline: This course will focus on the risks faced by the manager of a portfolio of financial assets. Such risks include credit, liquidity, interest rate, currency, systemic, country and sovereign risks. These risks frequently have lumpy and unpredictable characteristics. Elements of un-measurability often frustrate the empirical estimation of the potential impacts of such risks. The course will examine the various risk management techniques used by financial managers to address these problems, and the strengths and limitations of each of the techniques within an operational business setting.

Time of Lectures and Seminars: Monday, 9.00 am to 12.00 noon,

> **Lecture Times:** Classes will begin at 9.00 am, and lectures will last until 12 noon. Beginning on October 15th, the first hour of most sessions will be devoted to a Seminar for the review of answers to the Test and the Mid-Term Exam, and then to approaches to structuring responses to the various essay questions.
>
> **Location of classes:** Max Gluskin 106

Contact with Dr. Crean: Contact with Dr. Crean is preferable just after lectures on Monday.
E-mail - john.crean@utoronto.ca. Please keep E-mails for shorter questions, and for setting up appointment times. E-mails will normally be answered promptly during normal business hours. Any questions that have general application to the course will be answered in class.
Mailbox: in the Economics Department, Max Gluskin Building.
Office hours: normally Monday and Tuesday between 12.00 pm and 2.00 pm, and at other times by arrangement. Meetings are best set up by appointment to avoid conflict with other students.

Office: Economics Department, Room 324

Web Site: https://portal.utoronto.ca/

Gradings:	Test	15%	9.10 am, September 24th, 2012
	Mid Term Exam	20%	11.10 am, October 1st, 2012
	Written Paper	30%	Essay outline due: October 9th, 2012 (submission by e-mail) Essay due: November 12th, 2012
	Final Exam	35%	
		100%	

References:

a) **Basic Text Book:** Much of the basic material for this course will be found in:

Ross, Stephen A., Westerfield, Randolph W., Jaffe, Jeffery F., & Roberts, Gordon S., *Corporate Finance*, Fourth (2005) or Fifth (2008) Canadian Edition, McGraw Hill Ryerson, [Referred to below as “RWJR”]. References are to the Fifth Edition – but the chapter headings will give you a clear idea where the material is located in earlier editions

b) **Notes to Lectures:** For certain lectures where published texts or articles are wanting or unavailable, detailed supplementary Notes to specific lectures will be posted on the course web-site prior to the particular lecture. References to these Notes are included below under the appropriate lecture heading. In addition, short Outlines for each lecture will be provided on the course web-site prior to the lecture.

c) **Other Supporting References**: which will be used for further material will be found in:

Jorion, P, *Value at Risk*, 2nd edition, McGraw-Hill, 2001.

Kolb, Robert W., *Futures, Options and Swaps*, 4th edition, Blackwell Publishers, 2002. [Referred to below as “Kolb”.]

Crouhy, Michel, Galai, Dan, and Mark, Robert, *Risk Management*, McGraw-Hill, 2001. [Referred to below as CGM.]

d) **Articles and other material**

Academic journal articles are available in electronic form on *J-Store* at the U of T Library. Where materials are available over the Internet, the reference below provides the internet address.

Lecture Outlines and Related Readings

September 10th, Lecture 1 - Introduction.

a) Introduction:

Course objectives. Outline of lectures and of required student work.

b) Some Fundamental Concepts:

See Notes to Lecture 1 – Key Themes

Review all of RWJR, Part 1

Frank Knight's distinction between 'risk' and 'uncertainty' is to be found in: Knight, Frank, *Risk, Uncertainty and Profit,* New York, 1921, Chapter 1.

c) The Leverage Decision: Borrowing and Risk Transfer:

The importance of the leverage decision. Reasons for firm borrowing: seasonal working capital; capital expenditure; the tax shield and optimal borrowing. The Modigliani-Miller hypothesis. Effect of arbitrage – pricing of corporate securities and the value of the firm at different leverage levels. Risks to the firm – business cycle, competition, product risk, interest rate risk, etc. The potential for illiquidity. Risk of insolvency and bankruptcy. The optimal leverage judgement.

RWJR, Chapters 14 "Corporate Financing Decisions and Efficient Capital markets" to Chapter 17, "Limits to the Use of Debt."

Additional Reference:

Meyers, S.C., "Capital Structure", *JEP*, Vol. 15, no. 2., Spring

September 17th, Lecture 2 - Market and Liquidity Risks, Concepts of Hedging; and introduction to Industry Risk

a) Interest Rate and Liquidity Risk

Interest rate risk. Concepts of hedging. Markets to hedge interest rate risk. The forward and futures markets. Swaps. Limits to hedging. Accounting for contracts. The analysis of interest rate and liquidity risk in corporate reports.

RWJR, Chapter 26 ("Derivatives and Hedging Risk")

Additional reference: Kolb, Chapter 5 and 20.

b) Foreign Exchange and Commodity Risk

Foreign Exchange Risk. Concepts of hedging, and techniques to hedge foreign exchange risk. The forward and futures markets. Effect of arbitrage – the Interest Rate Parity Theorem. Swaps. Limits to hedging. Problems of basis risk. The analysis of foreign exchange risk in corporate reports

Commodity Risk – sources, hedging and the identification of the risk in corporate reports.

See "Notes to Lectures 1 & 2 – FX, Interest, Commodity and Liquidity Risk"

RWJR, Chapters 26 "Derivatives and Hedging Risk" and Chapter 32 "International Corporate Finance"

Additional Reference: Kolb, Chapter 9 .

c) Options and hedging:

Options – basic concepts. The Bi-variate model. Arbitrage & the use of the risk free approach to pricing options. Use of past data on prices to estimate future movements. Volatility and frequency distributions. Problems with assumption of underlying frequency distributions. Basis risk when hedging. Their use by corporations in hedging risk. Corporate bonds and equities seen as options on the future income stream of the corporation.

See Notes to Lecture 2 – Binomial Options Pricing.

RWJR, Chapters 23 “Options and Corporate Finance – Basic Concepts”, and Chapter 24 ”Options – Extensions and Applications”

Additional References:
Jarrow, R.A., “In honor of the Nobel Laureats Robert C. Merton and Myron S. Scholes: A Partial Differential Equation that Changed the World.”, *Journal of Economic Perspectives (JEP)* Vol. 13, no. 4, Fall, 1999, pp. 229 – 248. (on *J-Store*) - A good non-mathematical outline of the impact of Black-Scholes on the world of finance.

Kolb, Chapters 10 and 11.

September 24th **Lecture 3 - Industry and Company Risk**

a) **9.10 am - Test on the analysis of interest rate, liquidity, foreign exchange and commodity risks to a particular company – Kinross Gold Corporation - from its 2011 Annual Report.** This annual report is available at http://kinross.com/media/230034/kinross%202011%20annual%20report%20final.pdf. (For details on the test, see below under "Student Work.")

b) **Credit Risk - : The Drivers of Industry Risk**

Industry risk – volatility of margins. Types of industry, and the drivers of industry risk. Evaluating industry risk. Competitive position of companies within an industry.

See Notes to Lecture 3 - Industry Risk

c) **Credit Risk – Evaluating Company Risk.**

The company’s operations, and how it makes money. Its competitive position within its industry. The importance of industry “comps”. Leverage and fixed charge coverage.

Importance of Management to competitive position. Potential problems with management: agency problems; financial reporting problems. Governance Issues.

Structured approach to the risk evaluation of a corporation. Prioritization of risks by potential impact on cash flow and values. Identification of the 3 or 4 key risks.

See: Notes to Lecture 3 - a) Spreadsheet on Loan Losses
Notes to Lecture 3 - b) Risk Evaluation Checklist, and
Notes to Lecture 3 - c) Corporate Finance Model

Additional References:
Baruch, L., "Corporate Earnings, Facts and Fictions", *Journal of Economic Perspectives*, Vol. 17, no 2, Spring, 2003, pp. 27-50. (on *J-Store*)

McDonough, W.J., "Issues in Corporate Governance", in *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, Vol. 8, No. 8, Sept/Oct 2002.
http://data.newyorkfed.org/newsevents/speeches_archive/2002/mcd020929.html

October 1st, Lecture 4 - Credit Risk

a) Structured Risk Analysis Applied to a Specific Firm – Kinross Gold Corporation, results for fiscal 2011.

Prior to the Seminar, students will be expected to have reviewed the 2011 Annual Report of Kinross Gold Corporation and the Second Quarter, 2012, quarterly report. See http://kinross.com/investor-centre.aspx. Students bring to class printouts of the pages covering the Management Discussion and Analysis, the Financial Statements and the Notes to the Financial Statements, as well as the Q2 Financial Report. Numbers drawn from these reports will be discussed in Class.

See Notes to Lecture 4 – a) Kinross Comps.

b) Securitization:

Objectives: lower cost funding and risk shedding. Types of assets that are sold – receivable and inventory securitization. Risks to sponsors. Securitization of consumer paper, mortgages, other long term assets. Special purpose vehicles, and their passive nature. Agency issues. Management of the assets and of the funding of the vehicles. CLO's, CBO's and CDO's.

See Notes to Lecture 4 – b) Securitization of Working Capital.

c) Mid Term Exam

11.10 am – 12 noon.

This exam will focus on concepts of market risk discussed in the course up to the end of the second hour of lectures on September 17th, 2012. Material on industry risk and credit risk or Kinross will not be included in this test.

Results of the Mid-Term Exam will be returned to students on October 15th and the answers discussed in the seminars of October 15th and 22nd.

October 8th, Thanksgiving Day. No lectures.

October 15th, Lecture 5 - Indicators of Corporate Risk

a) Seminar – Review of answers on the Test and the Mid-term Exam

b) Role of Rating Agencies. Other Indicators of Corporate Risk

The methodology of rating agencies, and the role of risk ratings. Expected default ratios (EDF's.) Variations in EDF by cohort through time. Bond yields and equity prices as two different leading indicator of risk. KMV and other risk models. Trading market gossip – Enron and Barings.

RWJR, Chapter 21 "Long Term Debt."

Reference: CGM, Chapter 7.

Additional Reference:

White, Lawrence J., "The Credit Rating Agencies", *Journal of Economic Perspectives*, Spring 2010, Pages 211-226.

c) **Risk Perspective of Creditors – the Banks:**

Rewards – limited to spreads and fees; risk is loss of interest and some or all of principal. Major impact on view of risk-taking. Role of internal risk rating systems. Estimates of EDF, exposure at default and loss on default. The role of covenants and security. Pricing algorithms. The work-out credit. Acceleration.

See Notes to Lecture 5 – Spreadsheet on Loan Pricing - to be handed out at the Lecture.

RWJR, Chapter 21 "Long Term Debt."

October 22nd Lecture 6 - Creditor Risk perspectives and the Troubled Company

a) **Seminar – Review of answers to Mid-Term Exam**

b) **Risk Perspectives – Other Creditors:**

Bond holders – no upside payment from company beyond terms of bond. Indentures, covenants and security. Risk and yield, and limits to bond financing. Impact of rising risk levels for issued bonds. Junk bonds and the role of vulture investors. Acceleration.

Trade Creditors – short time horizon. Appetite for receivable risk. The flight of the trades.

RWJR Chapter 29 "Credit Management".

c) **The Troubled Company; Liquidity Risk**

The emergence of problems. Problem identification from outside – the shortcomings of GAAP. Obscured problems such as off balance sheet obligations. The role of management, of Boards and of auditors. Valuation and going concern issues. Fraud. The tipping point – almost always a liquidity crisis.

See Notes to Lectures 6 and & 7 - Gone Concern Analysis

October 29th, Lecture 7 - Workouts and Insolvency

a) Seminar - Review of answers to Mid-Term Exam

b) The Insolvency

Objectives of insolvency regimes. Chapter 11, BIA and CCAA. The Collective Action problem. The stay and exclusivity. Debtor in possession loans. Differing objectives: Management, banks, bond holders, trades, equity holders and vulture investors. The plan – voting and consequences of failure. The grand game. The role of the bankruptcy court judge. Erosion of value. The outcome – issues of efficiency vs. distribution.

See Notes to Lectures 6 & 7 – Gone Concern Analysis
Note to Lecture 7 – Bargaining Under Bankruptcy

RWJR, Chapter 31 ("Financial Distress")

Reference: Crean, J.F., "Credit Risk, Default Probability and the Economics of Bankruptcy" Working Paper No. 354, Department of Economics, University of Toronto.
http://www.economics.utoronto.ca/index.php/index/research/workingPaperDetails/354

b) Gone Concern Analysis – the Credit Work-out

The filing as a 'break point'. Impact on value of senior debt, and of any underlying security. Attitude of senior lenders to working with client in both pre-petition and post-petition period. Pre-packs.

Who pays for all this? The implications for the structuring and pricing of loans and bonds for solvent companies.

See Notes to Lectures 6 & 7 – Gone Concern Analysis
Note to Lecture 7 – Bargaining Under Bankruptcy

Additional Reference:

Franks, J and Torous, W., "An Empirical Investigation of US Firms in Reorganization", *Journal of Finance,* Vol. 44., July, 1989, pp. 747 – 769, (on *J-Store)*

November 5th. Lecture 8 - Financial Institution Risk Management

a) Seminar – review of material for particular Essay Questions

b) Risk Management – The Financial Institution & Credit Portfolios.

The functions of financial intermediaries: Deposit taking and liquidity creation; credit risk analysis that cannot efficiently be done through the markets. FI's are risk takers and managers.

The management of credit portfolios. Origination and loan management. Risk grading. EDF's – from the bank's analysis, rating agencies, KMV and other models. Estimation of embedded risk. Portfolio management – KMV. Use of co-variance estimates to build efficient portfolios. Secondary Loan Market; securitizations. Estimation of required capital. New Basle.

c) Risk Management – Equity Required by Credit and Trading Books:

Computation of equity required by credit books. Interest rate risk arising from deposit taking and lending. VAR. Curve running. Gap analysis and funding risk. Interest Rate trading portfolios. The Mortage Finance Company. Matching. Duration. FX portfolios; gap analysis. Pro-trading positions. Factor sensitivity measures. Stress testing.

See Note to Lecture 8 – Value at Risk (VAR) in a Trading Book.

CGM, Chapters 5 and 6 (sections 1.0 – 5.0) and Chapters 7-9 and 11.

Additional Reference

See The Royal Bank of Canada, *Annual Report, 2011*, the risk analytic section, at www.rbc.com (key "Investor Relations", "Annual Reports" and "Management Discussion and Analysis".)

November 12th **Lecture 9 - Financial Institution Risk Management – Con't.**

a) Seminar – Review of material for particular Essay Questions

b) Risk Management – The "Risk Enabled Bank" .

The "Risk Enabled Bank": Credit Risk, Market Risk, Liquidity Risk, and Operational Risk. The risk management function. Aggregation of risks across portfolios of credit and traded instruments. Definition of risk appetites. The role of capital requirements. Setting limits. The role of the Board, auditors and regulators.

See Note to Lecture 9 – Bank Risk Management Systems

Additional Reference:

CGM Chapters 2 to 4 and Chapter 6 (Sections 1.0 – 5.0)

c) FI Risk Management – When – and why – things go Wrong

Credit mistakes, and the role of the credit cycle. Market Risk Failures. Management failures. Failures by auditors and regulators. Systemic Risk.

Additional Reference:
Jorion, Philippe, "How Long-Term Capital Lost its Captial", *Risk*, September, 1990, pp. 31 - 36. (copies available from Dr. Crean on request.)

November 19th, **Lecture 10 - Regulators. Sovereign and Country Risk.**

a) Seminar – Review of material for particular Essay Questions.

b) The role of the Regulator and the Lender of Last Resort.

Systemic risk. Risk of a flight to quality. Examples of Chicago banks in 1934, and the near-bank crisis in the UK in 1974. The role of the lender of last resort. The role of deposit insurance. Regulation and New Basle

The perils of moral hazard.

b) Sovereign and Country Risk

Difference between sovereign and country risk. The drivers of these risks. Emerging market capital flows. Analysis of country risks. The costs of a crisis. The role of the IMF.

Examples - the Far Eastern crisis of 1997-98, and reactions of Thailand and Korea. Argentina. Proposals for reform of the international financial 'architecture'

Implications of the nature of country exposure for analysis and management of risk for FI's active in emerging markets.

Additional Reference:
Somers, L.H., "International Financial Crises: Causes, Preventions and Cures" *American Economic Review*, Vol. 90, no. 2, May, 2000, pp. 1 - 16. (on *J-Store.*)

November 26th, Lecture 11 - The Origins of the Current Financial Crisis and the Failures of Risk Management.

a) Seminar – Review of material for certain Essay Questions

b) The Market for Securitization and its Risks

The risks of each asset type in an economic downturn; models to evaluate these risks. RMBS. Credit default swaps and CDO's.

References:

Coval, J., Jurek, J., and Stafford, E., "The Economics of Structured Finance", *Journal of Economic Perspectives,* Winter, 2009, pp. 5 – 26

Mayer, C, Pence, K, and Sherlund, S., "The Rise in Mortgage Defaults", *Journal of Economic Perspectives,* Winter, 2009, pp 27 - 50

c) The Global Financial Crisis, and the Multiple Failures of Risk Management. The nature of the systemic risk and the reaction of the Authorities.

References:

Bernanke, Ben S., "Causes of the Recent Financial and Economic Crisis", Testimony before the Financial Crisis Inquiry Commission, Washington, D.C., September 2, 2010.
http://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm

Shin, H.S., "Reflections on Northern Rock: The Bank Run that Heralded the Global Financial Crisis.", *Journal of Economic Perspectives,* Winter, 2009, pp. 101 - 120

Ceccetti "Crisis and Responses: The Federal Reserve in the Early Stages of the Financial Crisis", *Journal of Economic Perspectives,* Winter, 2009, pp. 51 – 76

Crean, J.F., "Sub-Prime, The Crisis that Keeps on Giving", Presentation at a Department of Economics Workshop on the Financial Crisis, December 2007. (To be posted on the course web-site.)

December 3rd, Lecture 12 – Systemic Risk

a) Seminar – Review of material for certain Essay Questions

b) Anatomy of Systemic Risk:

Systemically Important Real Sectors: Their Nature, and the drivers of their collapse. Implications for statistical risk models, and the high risk of Type II errors. Concentrations of firm bankruptcies driving bank insolvencies. The anatomy of systemic risk. Implications for risk management and for regulation.

Reference: Crean, J.F., and Milne, F., "The Anatomy of Systemic Risk" – will be posted on the course web-site.

c) A summing up.

The variety of risks and of risk perspectives. The measurable and unmeasurable. High impact, low probability risks. The need to think of risks in a consistent framework.

B. Student Work

A: Test on Interest Rate, Liquidity, Foreign Exchange and Commodity Risks
15% of the overall course mark

9.10 am to 10.00 am, September 24th, 2012

The test will be based on the financial results for Kinross Gold Corporation for 2011. Questions will focus on the interest rate, FX and commodity price risks identifiable in the Company's 2011 Annual Report. In preparation for the test, students should fully analyze the company's statements to pick out where these risks may be identified and, where possible, quantified. Questions on the test will call for an identification of each of these risks along with references to the location(s) in the Annual Report where these risks are referenced. The test will be an open book test; students must ensure that they have a copy of the 2011 Annual Report of Kinross Gold Corporation with them when writing the test. They should take a hard copy of the Report and mark-up the relevant points so they are readily to hand during the exam.

The Note to Lectures 1 & 2 – Interest, FX, Commodity and Liquidity Risk provides an analytical framework within which the 2011 results of Kinross Gold Corporation may be analyzed by the student in preparation for this test.

B: Mid Term Exam 20% of the overall course mark

11.10 am to noon, October 1st, 2012

The exam will cover topics on market risk covered in the lectures up to and including the lecture on September 17th, 2012. The material on industry risk or on credit risk or Kinross Gold A.T. will *not* be included in this exam.

C: Essay 30% of the overall course mark

Essay topics and related bibliography are given in a separate Handout to be posted on the course web-site.

An Essay Outline must be submitted no later than October 9th, 2012. This will be returned at the lecture on October 15th, along with comments where appropriate.

The Essay Outline should be 1 to 1 ½ pages (and must be no longer than 2 pages), double spaced, including a list of the 4 or 5 key references that will be used. It should be in point form, and should clearly outline the point of view to be argued, and the key supporting themes. The outline should be prepared in Microsoft Word and sent to me at my e-mail address. (If this is not possible, a hard copy may be left in my mailbox in Max Gluskin.)

See Notes on Essay Preparation – to be posted on the course web site.

Essay due November 12th, 2012.

The final essay should be 15 to 18 pages long (and in no case longer than 20 pages), double spaced, including all source references, tables, and charts.

The overall mark on the essay will be based 20% on the outline and 80% on the final essay.

Students should ensure that they are familiar with the instructions on writing available at the website *Writing at the University of Toronto* at http://www.writing.utoronto.ca/home.

Essays must be submitted in typed form, double spaced, with the typeface being no smaller than 12 pitch.

They must contain the student's name, Student Number and e-mail address.

Where Dr. Crean has questions or advice to give relating to either the Essay Outline or the final Essay, the student will be invited to meet with Dr. Crean and the paper returned with the mark following the discussion.

Submission of Essay: The Essay is to be submitted on paper to Dr. Crean either following class or to his mailbox at the Department of Economics. The student's obligation is to ensure that the essay is submitted by noon on the day on which the work is due. Late submission of the essay without an adequate reason will face a penalty. For each week day that the work is late, a 10% reduction in the mark that would otherwise be given will be assessed. In the case of serious illness or domestic affliction, the student must promptly request from the instructor a waiver of the penalty and a new deadline for the submission of the work. A doctor's certificate may be required at Dr. Crean's discretion.

Each paper must clearly identify the student and the student's E-mail address.

Plagiarism and other academic offenses: are subject to severe penalties. It is the student's responsibility to ensure familiarity with the University's policies and practices with regard to writing and proper attribution. Guidelines are available http://www.utoronto.ca/academicintegrity/

English Language Competency: The written work in the course will require a reasonably fluent command of written English. Should a student have any concerns about his or her competency in the English language, she or he is to talk to Dr. Crean about the issue at the outset of the course.

D. Final Exam 35% of the overall course mark.

The final exam will provide a significant range of choice in questions to answer.

There will be a question asking for definitions of various concepts, markets, hedging techniques and risk control strategies covered in the course. The question will be obligatory, but will contain significant choice of items that may be addressed.

Students will be asked to address three questions drawn from a range of alternative issues covered during the course. Students can expect that the work done on the topic covered in their essay will provide the basis for addressing one of these questions. In addition to this topic, students should have good familiarity with the topics covered in the related lectures. Their knowledge should be in sufficient depth that they are prepared to answer the essay type analytical questions.

Each of these four questions will be worth 25% of the marks on the exam.