



Introduction



Instructor

- Instructor: Tianyang Wang (Tian)

– Ph.D., University of Texas at Austin



– Chartered Financial Analyst®



CFA Institute

– Certified Financial Risk Manager (FRM)



Global Association
of Risk Professionals

– Associate of the Society of Actuaries (ASA)

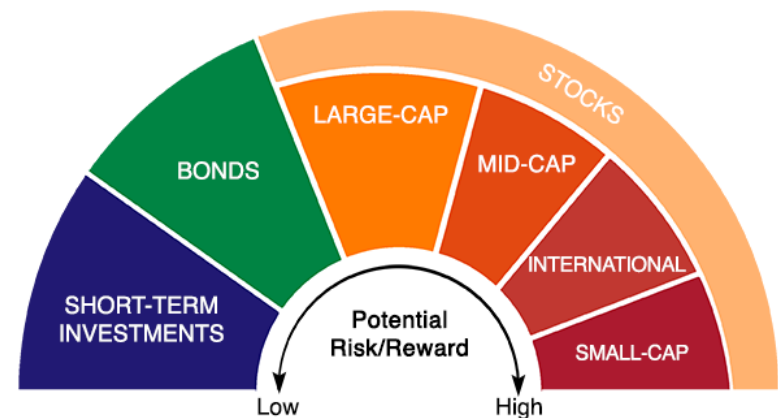


SOCIETY OF
ACTUARIES

– Office Location: RW 329

– Email: Tianyang.Wang@colostate.edu

Risk Management is Everywhere

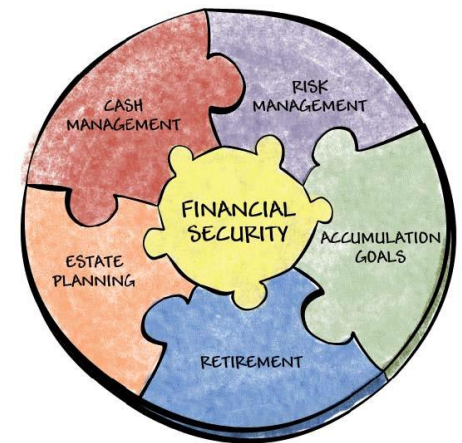
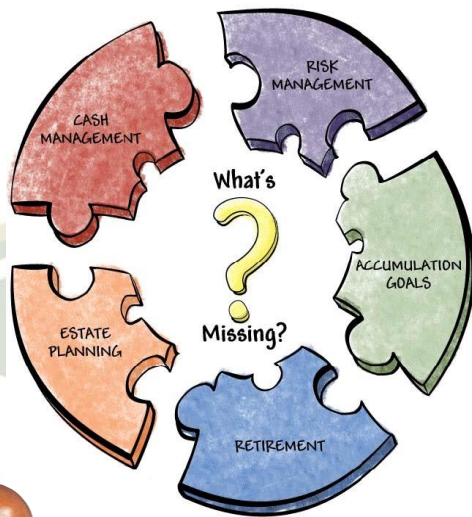


Uncertainties in Different Industries



Protect Your Financial Security

- Investing is the best way to secure your future.



Be a Good Driver of Your Portfolio

“Investment vehicles” is just another way of saying "a way to invest."



"Why Risk Management?"

"The only alternative to risk management is crisis management -- and crisis management is much more expensive, time consuming and embarrassing."

"Without good risk management practices, government cannot manage its resources effectively. Risk management means more than preparing for the worst; it also means taking advantage of opportunities to improve services or lower costs."



IGNORE
ME AT YOUR
OWN RISK

The Language of Randomness



Becoming a CFA



CFA Institute

CFA Structure

- **Level I exams** consists of basic knowledge and comprehension questions focused on investment tools; some questions will require analysis.
- **Level II exams** emphasize more complex analysis, along with a focus on valuing assets.
- **Level III exams** require synthesis of all the concepts and analytical methods in a variety of applications for effective portfolio management and wealth planning.

CFA Structure

Investment Tools

Asset Valuation

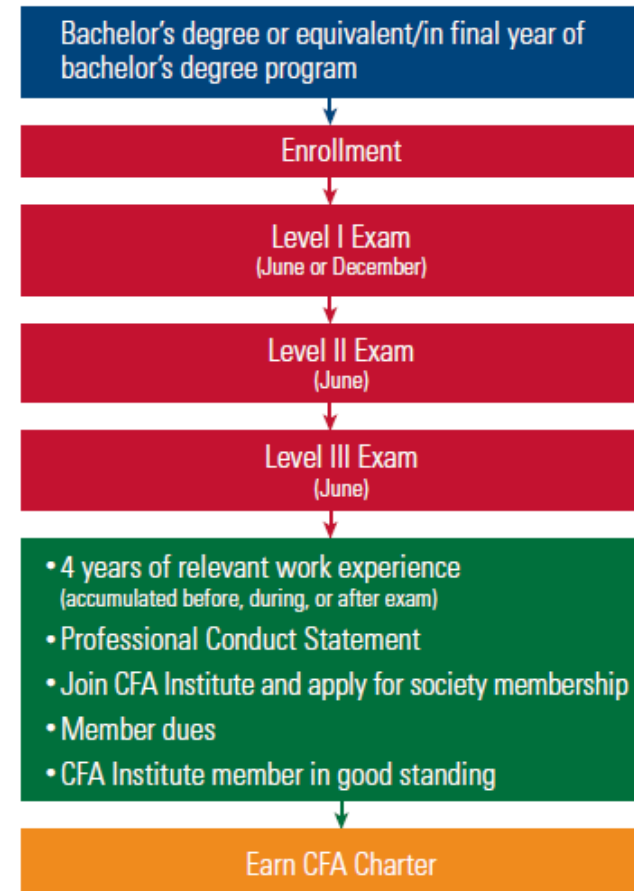
Portfolio Management

Topic Areas	Level I	Level II	Level III
Ethics/ Professional Standards	15%	10%	10%
Quantitative Methods	12%	5 - 10%	0%
Economics	10%	5 - 10%	0%
Financial Statements Analysis	20%	15 - 25%	0%
Corporate Finance	8%	5 - 15%	0%
Equity Analysis	10%	20 - 30%	5 - 15%
Fixed Income	12%	5 - 15%	10 - 20%
Derivatives	5%	5 - 15%	5 - 15%
Alternative Investments	3%	5 - 15%	5 - 15%
Portfolio Management and Performance Presentation	5%	5 - 15%	45 - 55%

Source: CFA Institute Website

LEVEL I	LEVEL II	LEVEL III
100% multiple choice 240 questions Knowledge based	100% multiple choice Vignette style 120 Questions	50% written 50% multiple choice (60 Questions)

ROADMAP TO THE CFA CHARTER



Becoming a Financial Risk Manager

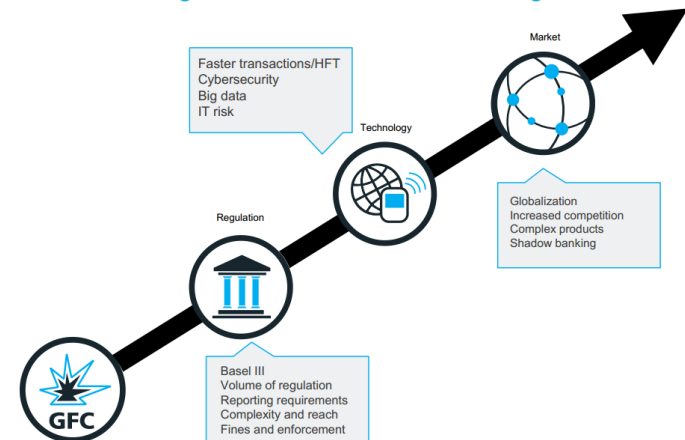
Using the FRM[®] to Build and
Advance Your Career

Financial Risk Manager  **GARP** | Testing and
Certification

Emergence of the Risk Management Profession

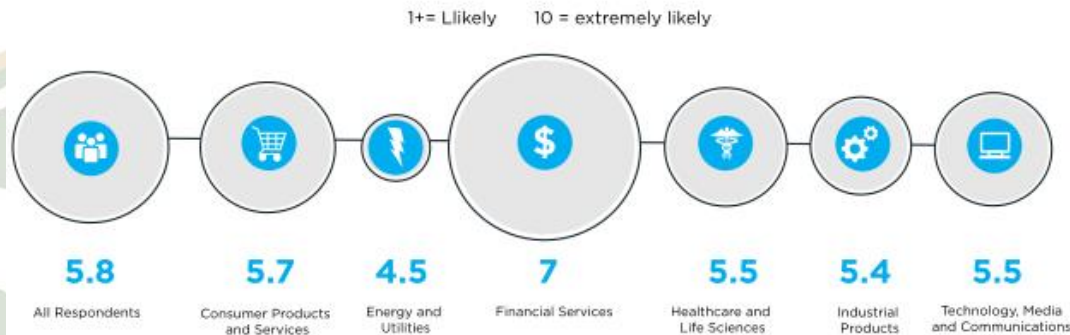
- ❑ Risk management profession only loosely existed 20 years ago
- ❑ Drivers of risk management as a profession
 - Notable risk management failures
 - Financial innovation
 - Risk measurement techniques
 - Computational power
 - Regulatory Initiatives

Forces Driving the Demand for Risk Managers



The Demand for Risk Managers is Growing

Plans to add Risk Management Resources



protiviti[®]
Risk & Business Consulting
Internal Audit

NC STATE UNIVERSITY
POOLE COLLEGE OF
MANAGEMENT

“Crackdowns and new rules on banks are creating a **hot new employment market** in one corner of wall street: **risk and compliance**”

THE WALL STREET JOURNAL. MARKETS

WORLD STOCK MARKETS

Lenders Bolster Risk and Compliance Staff

Email Print Comments f t+ in A A

By RACHEL LOUISE ENSIGN CONNECT

May 4, 2014 9:34 p.m. ET

Crackdowns and new rules on banks are creating a hot employment market in one corner of Wall Street: risk and compliance.

Due to stepped-up regulatory oversight and some high-profile lapses, banks are boosting hiring of workers who evaluate risks and make sure their firms comply with laws and regulations.

J.P. Morgan Chase & Co. has been the most aggressive of late, with plans to add more than 13,000 people to its staff tasked with bolstering controls. The flurry of hiring has in some cases sent compensation soaring, with pay for some consultants at J.P. Morgan rising to more than \$100 an hour compared with \$60 an hour or less at some smaller banks.

The number of risk and compliance jobs on Wall Street isn't tracked, but recruiters say the increase recently has been sharp.

The hiring effort is creating a "war for talent" among large banks and a "vacuum" at smaller banks, said Destree Rickard, managing director and head of the compliance practice at recruiter BarkerGillmore. Even if a job seeker isn't necessarily willing to go to J.P. Morgan or another big bank, they may use the larger bank's interest to get more money at a current employer, she added.

GARP and the FRM

As the leading professional association for risk managers, GARP's mission is to advance the risk profession through education, training and the promotion of best practices globally.

- Not-for-profit association, founded in 1996
 - Over 150,000 members from 195 countries and territories
 - Governed by Board of Trustees comprised of leading risk executives and researchers
 - Offices in Jersey City, NJ and London
- Financial Risk Manager (FRM)
 - Leading global professional designation program for risk management
 - Administered by GARP since 1997
 - Program objective — assess an individual's ability to measure and manage risk in a real-world environment
 - FRM Committee comprised of senior risk managers and researchers oversee program



The FRM Journey

The FRM® Journey

FRM Exam Part I: Tools used to assess risk (4hrs)

Foundations of Risk Management

20%

Quantitative Analysis

20%

Financial Markets and Products

30%

Valuation and Risk Models

30%

FRM Exam Part II: Application of those tools (4hrs)

Market Risk Measurement and Management

25%

Credit Risk Measurement and Management

25%

Operational and Integrated Risk Management

25%

Risk Management in Investment Management

15%

Current Issues in Financial Markets

10%



2 years relevant
work experience



Certified
Financial
Risk Manager
FRM®



Voluntary CPD
40 hours/2 years

Growth in GARP FRM® Exam registration

5,734
in 2004

13,681
in 2008

40,000
in 2014

Since 2008
registrations
have
increased
194%

Currently there
are more than
31,000
FRM's
worldwide

In 2013
candidates
came from
141
different
countries

Year-on-year Growth by Country for FRM® Exam Registration 2013-14

United States
+6%

Germany
+13%

China
+34%

India
+7%



A large, stylized, light green ram head logo is positioned on the left side of the slide, partially cut off by the edge. It features a circular border and a central face with large, curved horns.

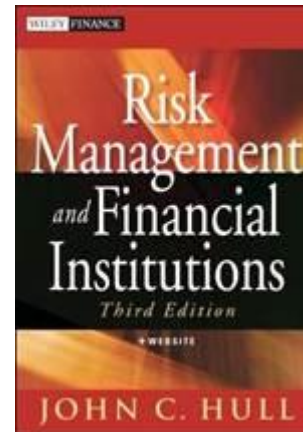
Course Structure

Course Goals

- *The art and science of describing, analyzing, and managing of risk*
 - Collecting, Analyzing, and Interpreting Data Under Uncertainty
 - Decision-Making in the Face of Uncertainty
- Learn to
 - Describe **risk/return**
 - Analyze **risk/return**
 - Manage **risk/return**
 - Think critically about **risk/return**



- Textbooks:



- Excel

- We will focus on the use of Excel-based Modeling in this class.
- Instructions to access Excel, Crystal Ball

Important Dates

Week	Date	Topic	Date	Topic	Due	HW/Case
1	23-Mar	Introduction & Foundations of Risk Management	25-Mar	Market Risk and Interest Rate Risk		
2	30-Mar	How Traders Measure and Manage Their Risks	1-Apr	Value at risk (Model-Building Approach)	1-Apr	HW 1
3	6-Apr	Value at Risk (Historical Simulation and Monte Carlo Simulation Approaches)	8-Apr	Expected Shortfall and Extreme Value Theory (Stochastic Optimization)	8-Apr	HW 2
4	13-Apr	Review and Practice	15-Apr	Exam I	15-Apr	Case 1
5	20-Apr	Estimating Volatilities	22-Apr	Correlations and Copulas		
7	27-Apr	Hedging Strategies	29-Apr	Real Options and Exotic Options	29-Apr	HW 3
8	4-May	Scenario Analysis and Stress Testing	6-May	Putting it All Together (Enterprise Risk Management)	6-May	HW 4
9	11-May	Review and Practice	13-May	Exam II	13-May	Case 2

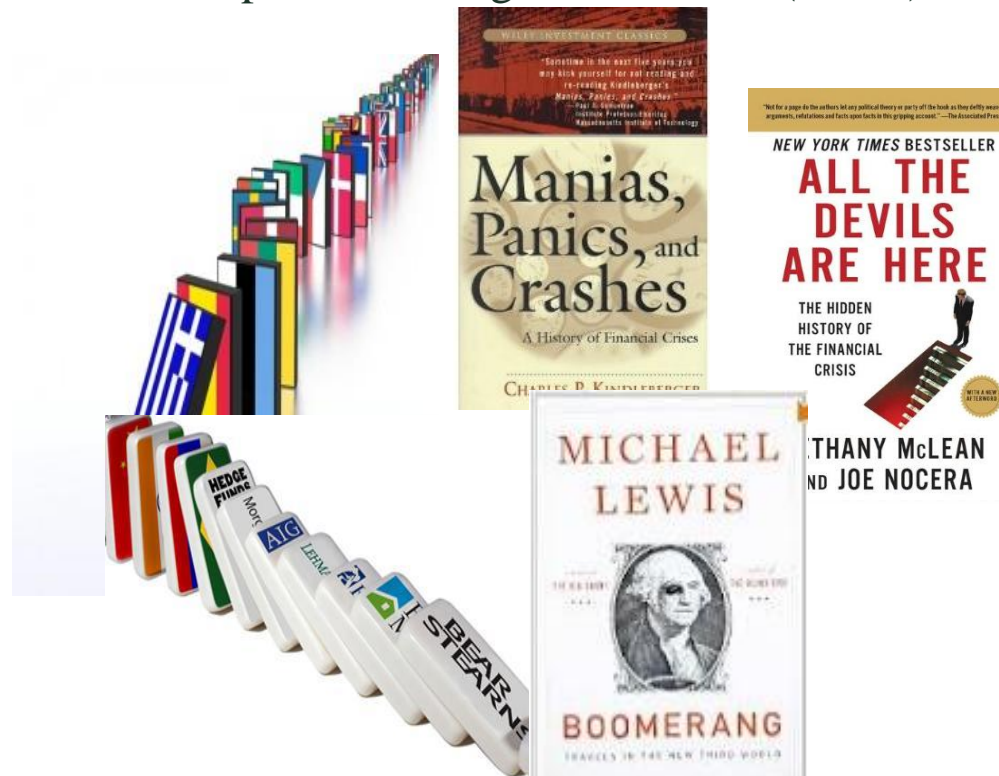


Presentation Schedule

Week	Topic	Topic
1		Market Update Presentation 1 Financial Crisis Presentation 1 Risk Management Presentation 1
2	Market Update Presentation 2 Financial Crisis Presentation 2 Risk Management Presentation 2	Market Update Presentation 3 Financial Crisis Presentation 3 Risk Management Presentation 3
3	Market Update Presentation 4 Financial Crisis Presentation 4 Risk Management Presentation 4	Market Update Presentation 5 Financial Crisis Presentation 5 Risk Management Presentation 5
4	Market Update Presentation 6 Financial Crisis Presentation 6&7 Risk Management Presentation 6&7	Exam I
5	Market Update Presentation 7 Financial Crisis Presentation 8 Risk Management Presentation 8	Market Update Presentation 8 Financial Crisis Presentation 9 Risk Management Presentation 9
7	Market Update Presentation 9 Financial Crisis Presentation 10 Risk Management Presentation 10	Market Update Presentation 10 Financial Crisis Presentation 11 Risk Management Presentation 11
8	Market Update Presentation 11 Financial Crisis Presentation 12 Risk Management Presentation 12	Market Update Presentation 12 Financial Crisis Presentation 13 Risk Management Presentation 13
9	Market Update Presentation 13 Financial Crisis Presentation 14&15 Risk Management Presentation 14&15	Exam II

Financial Crisis History Presentation

- Tulip Mania (1637)
- South Sea Bubble (1720)
- Panic of 1819
- Long Depression (1873-1896)
- Panic of 1907
- Wall Street Crash of 1929
- Great Depression (1929-1939)
- Japanese Asset Price Bubble (1986-1990)
- Black Monday (1987)
- 1991 India Economic Crisis
- 1994 Economic Crisis in Mexico
- 1997 Asian Financial Crisis
- 1998 Russian Financial Crisis
- LTCM Bailout (1998)
- Dot-com Bubble (1997-2000)
- Argentine Great Depression (1998-2002)
- Subprime Mortgage Crisis (2007-2010)
- Icelandic Financial Crisis (2008-2011)
- Irish Banking Crisis (2008-2013)
- European Sovereign Debt Crisis (2010-)

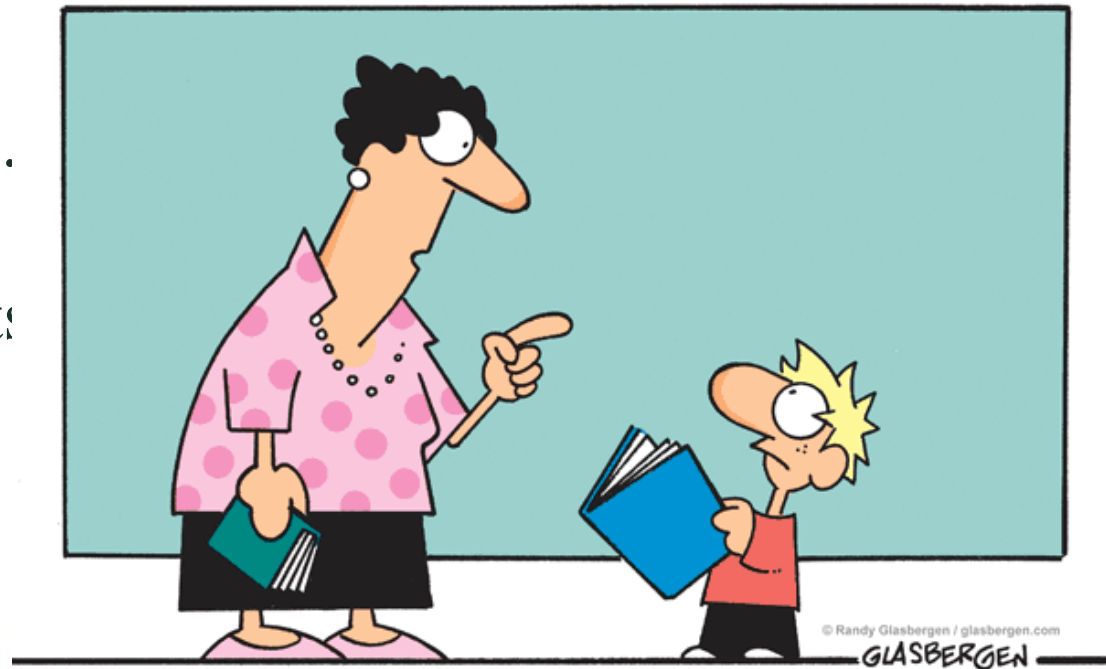


Risk Management Failures Presentation

- Describe the key factors that led to and the lessons learned from the following risk management case studies:
 - Drysdale Securities (1976)
 - Metallgesellschaft (1991)
 - Kidder Peabody (1980, 1992-1994)
 - Barings (1994)
 - Bankers Trust (1994)
 - Prudential-Bache Securities Scandal (1993-1995)
 - Morgan Grenfell Asset Management (1995)
 - Sumitomo (1995-1996)
 - Long Term Capital Management (LTCM) (1998)
 - JPMorgan, Citigroup, and Enron (2001)
 - Allied Irish Bank (1997-2002)
 - Société Générale (2008)
 - Bernard Madoff's ponzi scheme (2008)
 - JPMorgan Chase Trading loss (2012)
 - LIBOR scandal (2012)

Homework and Cases

- Practice is necessary to become proficient at different quantitative methods.
- Click on Assignments and then access an assignment.
- Keep track of the **DUE DATES!**



"It's called 'reading'. It's how people install new software into their brains"

Grading policy

Class participation	10%
Homework	20%
Case Studies	20%
Exam 1	25%
Exam 2	25%

Plus/Minus grading applies to this course. Grades of 90 or above will earn an A- or better, 80 or above will earn a B- or better, etc.



Right Place at the Right Time



MSBA IN FINANCIAL RISK MANAGEMENT

Fall		Spring	
1st 8-Weeks	2nd 8-Weeks	1st 8-Weeks	2nd 8-Weeks
Financial Statistics			
Investments	Quantitative Methods	International Finance	Financial Engineering
Enterprise Valuation	Debt Securities Analysis	Financial Modeling	Financial Risk Management

Keep it simple: Take Small Bite...

