Is Risk Your Opportunity?

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MARK YU
Vice President & Marketing Actuary, Client Markets
Swiss Re Life and Health North America
Overview

- What Is An Actuary?
- Why Actuary?
- How To Become An Actuary?
- Career Advice
What Is An Actuary?
Actually, Actuaries...

- Analyze, measure, convert and manage financial risk into opportunity in many types of industries.

- Use a combination of strong mathematical and statistical analytical skills, financial theory, business knowledge and an understanding of human behavior.

- Develop and validate financial models to guide decision making.

- Are creative problem solvers who see the “whole picture.”
What is Risk?

Old-School Webster Definition:
- Possibility of loss or injury
- Someone or something that creates or suggests a hazard
- The chance of loss
- The degree of probability of such loss the chance that an investment (as a stock or commodity) will lose value

New-School Actuarial Definition:
- Opportunity
- Not a negative concept
- A kind of capital, one that actuaries are best equipped to turn into a successful enterprise
The Actuarial Point of View

- Actuaries don’t merely speak to what we can lose; they focus on what we can gain
Risk is Opportunity?

Challenge:
- Option1: Roll a dice -> payout $1-$6
- Option2: Flip a coin -> payout: head -> $7, tail-> $0

Questions:
- Expected cost for each game?

Challenge Two:
- Now consider them as two investment options: Each requires the same upfront investment of $2, which one will you choose?
Evolving Nature of Risk

Environmental Epidemic

Cellulosic ethanol plants planned in Tennessee, L.A.

Risk Management Expert Added To BMO Board

Silent Virus likely to spark next pandemic

Clear and Present Danger
Traditional Opportunities

Insurance

- Health
  - Design Health Savings Accounts
  - Design and manage Reimbursement vs. Indemnity

- Life
  - Design and price life insurance products
  - Design and manage investment strategies
  - Develop mortality tables

- Property/Casualty
  - Estimate funds needed for unpaid insurance claims
  - Design catastrophe insurance coverage
  - Model retention changes
Traditional Opportunities

Pension/Retirement
- Design Social Security funding
- Design 401k vs. employer-sponsored pension plan
- Design pension benefits plans
New Opportunities

Non-Traditional Actuarial Opportunities

- Financial services
- Design trading strategies
- Design hedging strategies
- Manage securitization risks
Case Study: Mortality Classification

- Common belief that mortality varies by socioeconomic class
  - People who have better socioeconomic class have better life style and therefore should live longer

- Possible determinants:
  - Occupation
  - Education level
  - Income level
  - Marital status
Case Study: Mortality Classification

- How do actuaries utilize this information?
  - Define class for each parameter
  - For each parameter, find out how mortality varies by class
  - Find out how each parameter interacts with each other
  - Build a table with factors for all possible combinations
Enterprise Risk Management (ERM)

- There is a growing need for organizations to link their risks across their business units and adopt a more comprehensive framework.

- ERM is the process of risk analysis across an entire organization.
ERM Professional Credential: Chartered Enterprise Risk Analyst (CERA)

- Developed in response to non-traditional business needs
- CERAs model future events by converting data that drives strategic decisions with a 360-degree view of an organization’s risk profile
- To learn more about the CERA credential, visit www.CERAnalyst.org/Campus
What’s Next For Actuaries
Why Be An Actuary?

U.S. Department of Labor
- Actuary employment expected to increase by 24 percent
- Less sensitive to economic cycles

Financial Rewards
- $44,000 – $52,000 – Entry-level actuaries
- $100,000 – ASA credentialed actuaries

Education Benefits
- Learn while you earn – Most employers provide full educational financial support while you pursue your credentials

2007 Actuary Named One Of the Best Careers

Actuary Ranks Top Four Careers In The Past Six Editions
Earning Potential

### Average Actuarial Salaries

- **0.0 - 4.5 Years of Experience**
- **4.6 - 9.5 Years of Experience**
- **9.6 - 14.5 Years of Experience**
- **14.6+ Years of Experience**

Note: Compensation may vary significantly according to years of experience, geographic region and responsibilities.

A Strong Career Outlook

A recent Society of Actuaries survey of employers found:

- The profession is becoming more relevant to the needs of larger companies
- Actuarial jobs are increasing
- High value of enterprise risk management (ERM)
- Role of Chief Risk Officer (CRO) opening up to actuaries
How To Become An Actuary

- Most actuaries study actuarial science in college but come from a range of other disciplines including math, finance, statistics and engineering
- Actuarial students should complete college coursework in economics, applied statistics and corporate finance, so they can meet pre-exam requirements
- Other foundational coursework should include probability, calculus and business communications
Professional Credentials

- The Society of Actuaries certifies actuaries in the fields of:
  - Life Insurance
  - Health Benefits Systems
  - Pension and Retirement Systems
  - Finance/ERM
  - Investment

- The Casualty Actuarial Society certifies actuaries in the fields of:
  - Property
  - Casualty
  - Similar risk exposures

- The Canadian Institute of Actuaries co-sponsors the SOA and CAS certification exams and provides a Canadian country-specific workshop
Day In The Life Of An Actuary
Skills Employers Are Looking For

- Thinking out-of-box
- Vision
- Research
- Result-Driven
- Communication
- Team Players
- Presentation Skills
- Integrity
- Leadership
- Reliability
- Flexibility
- General Business Skills
- Project Management
Advice For Students Who Want To Be Actuaries

- Develop disciplined study habits
- Acquire a well-rounded curriculum, including classes approved for VEE credit
- Sharpen your communication and general business skills
- Take actuarial exams while in school - the sooner you start, the sooner you will finish
- Obtain an actuarial internship
- Find mentors
The University of Iowa

- The University of Iowa Major in Statistics and Actuarial Science: [www.uiowa.edu/admissions/undergrad/majors/at-iowa/Stats-ActuarialSci.html](http://www.uiowa.edu/admissions/undergrad/majors/at-iowa/Stats-ActuarialSci.html)

- The University of Iowa Actuarial Advisers:
  - Actuarial Professor: Dr. Nariankadu D. Shyamalkumar, shyamal-kumar@uiowa.edu
  - Academic Adviser: Undergraduate 
    Carol Hunsicker, carol-hunsicker@uiowa.edu
  - Academic Adviser: Graduate 
    Professor Elias Shiu, elias-shiu@uiowa.edu

- The University of Iowa Actuarial Science Club: [www.stat.uiowa.edu/actsci/club](http://www.stat.uiowa.edu/actsci/club)
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www.RiskisOpportunity.net