The Future of Actuarial Science
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Vice Chairman, Enterprise Analytics
Guy Carpenter, New York

The future is here
Get to know your Speaker…

Born in California
Raised in Texas

Work in New York City
Live in New Jersey

Global Exports from New Jersey
Global Exports from New Jersey

Pull Down Thy Vanity
More Fun Facts About Your Presenter

- CAS actuary for 27 years
- Current CAS Board Member
- Studied Engineering @ uni
- Fan of philosophy, poetry and military history
- Known to pander to audiences

British Words I Love

- Smart
- Cheeky
- Boot
- Bonnet
- Burberry (the wife loves that one)
The Future of Actuarial Science

The Future of the Actuarial Profession
The Future of the Actuarial Profession

• Current State
• Closer Look at The Franchise
• SWOT Analysis
• Some possible futures
• Bits of humour mixed in
Great Time to be an Actuary

• Central position at the nexus of massive forces battering all elements of human activity
  – Climate change
  – Longevity
  – Genomics
  – Technology
  – Demographics

• Profession has the Inside Track to provide expertise, insights, and solutions
  – © 2013 Casualty Actuarial Society
What drives the demand?

Core Issues of Existence

- Longevity
- Disability
- Health
- Home
- Automobile
- Employment
- Uncertainty
- Contingency
- Funding mechanisms
- Social engineering
- Wealth transfer
- Rights, obligations, entitlements
- Social contract

Demand is strong and getting stronger

1999 CAS CEO Survey

What Can We Do Better

- Develop general business skills and a broader business perspective
- Learn to operate under uncertainty and learn how to take business risks
- Generate creative ideas or solutions
- Grow – business people must grow and mature beyond their technical training
- Improve modeling techniques: (1) develop models that do not require large bodies of historical data, and (2) incorporate current information and trends into models
- Provide quicker, more responsive solutions
- Improve teamwork skills with non-actuaries
Morris report (2005)

- Could cling to our reserved roles
- *Risk competition inroads and ultimately a declining position*
- Or could expand the franchise
- *Like the Australians*
Humour Break

How to lose a franchise
Is there an Actuarial Franchise?

- Actuaries apply fairly standard statistical methods to really bad data
- Exclusive knowledge?
- Patent protected?
- Brand enforced?
- Guild enforcers?

The Actuarial “Franchise”

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The Actuarial “Franchise”

- Licensed, Professional, Financial Contingency Analysts
- The Franchise is the Profession

The Profession
What is the Profession?

A Control Volume (from fluid mechanics)

- A boundary into and out of which material flows
- Container that persists over time
- Field phenomenon: the CV is not the material within it, nor is the material the CV

What is the Profession?

A Control Volume

- A Shared Asset of Reputation
- Inherited from past and current actuaries
- Transferred to future actuaries
- A delicate, wonderful thing
- Evolved over time, nearly impossible to start from scratch
- Don’t botch it up!
Humour Break

Taste of Texas for Ya *(Value-add)*

- Yonder
- Y’all
- All Y’all
- Dance with the girl that brung ya
- Don’t git above your raisin’
Taste of Texas Quiz

• You can have my gun when you…
• …pry it from my cold, stiff fingers
Strengths

• Position
  – We are the envy of professions around the world
  – Example: radiologists in the US

• Strong, self-sustaining reputation
  – Thanks to the caliber of new talent attracted to the profession (high quality inflow)

• High barriers to entry for competing professionals
  – Would need to convince regulatory bodies of inadequacy of actuarial performance, and have an alternative profession ready

• Self-educating facilitates mid-career entry
Strengths: We are Legion
*The Lost Tribes of Actuaries*

- Reliability engineers
  - They use Weibull curves!
  - Service warranty portfolios are insurance
- Credit analysts
  - The “actuarial method”
- Reservoir engineers (oil and gas reserves)

**Pharmaceutical Pipeline**
*Negative Property Cat Reinsurance*

Pharma

- Lipitor

Property Cat

- Katrina
Weaknesses

• Self-educating means we are slow to adapt
  – ERM, capital modeling, stochastic reserving via self-study and timed examination?
  – We only feel comfortable testing what we know – how to innovate?

• Mathematicians need closed-form solutions and answers

• Long course of study can limit mobility into different functions in companies

Weaknesses: Our Strength

• Like a football club who have gone undefeated and never trailed in a single game

• Don’t know how to play from behind
Threats from Without

- Statisticians and data scientists
- Financial engineers
- Tradability
- Securitization
- New educational models
Threats from Within

- Complacency
- “Maintaining the Rigour” of the designation
- Scarcity mindset

Opportunities

- Reputation and inside track position
- No guarantees on the specifics, but would rather have the seat at the table
- Look at the state of current and future demand – the amount and degree of unsolved problems facing our public
Pension Reinvigoration

*DWP, Nov 2012*

- Increase the amount people are saving in pensions.
- Increase the amount people receive for their savings.
- Enable industry innovation and development of new products including those which will give people more certainty about their pensions and encourage more risk-sharing.
- Increase transparency and build trust, confidence and engagement in pension saving as the norm.
- Ensure the sustainability and stability of the UK pension system.

Money - Occupational pensions

Government outlines 'defined ambition' pension proposals

New pension scheme could split the savings risk between workers and their employers

*Hilary Osborne*

theguardian.com, Thursday 7 November 2013 11.02 EST

Jump to comments (108)
25 Nov 2013

PENSION INSURANCE CORP BUYS £1.4BN LONGEVITY PROTECTION

UK-based defined benefit pension plan consolidator and solution provider Pension Insurance Corporation (PIC) has bought £1.4bn ($2.26bn) of longevity protection. PIC chief financial officer Rob Sewell noted..."for each year that life expectancy exceeds predictions, liabilities increase by about 3%".

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Research Items: Life Practice

- Asset Liability management
- Defined Ambitions
- Extreme Events
- Policyholder Behavior in Extreme Conditions
- Takaful Life Insurance
- Longevity Catalysts
Research Items: Health and Care Practice

- Cancer Modelling
- Critical Illness
- Genetics
- Income Protection
- Long Term Care

Research Items: General Insurance Practice

- Advanced Pricing Techniques
- Discrimination or Differentiation?
- Emerging Mobile Technologies
- PPOs
Research Items: Finance And Investment Practice

- Social Finance & Impact Investing - measuring non-financial returns
- 'Disintermediation': the likely rise of Peer-to-Peer Investing and Alternative Financing Models
- Why Retire? Alternative models to pensions
- Designing Investment Vehicles to Mitigate Agency Risk
- How and Why to Get Actuaries into the Wider Fields - especially Education

Three Possible Futures
Future 1: Hold

• No erosion of current (traditional) strongholds
• See Morris

Future 2: Annexation

• Vertical and horizontal expansion from existing strongholds
  – See 1999 CEO survey
• May require more time-effective means to accreditation
  – E.g., U.S. Bar Exam for attorneys = three days
Future 3: Risk Engineer™
Hybridizing with the Lost Tribes

• Reliability engineers

• Credit analysts

• Pharmaceutical pipeline managers

• Reservoir engineers (oil and gas reserves)

Future #3: Risk Engineer™
Hybridizing with the Lost Tribes

• **Untradeable** part of the Financial Engineering Spectrum
  – Or held-to-maturity, low liquidity, incomplete market

• See 2008: when the credit markets seized, people had to “mark-to-model” which we do all the time
What then must we do?

• Respect and enhance our Reputation with key stakeholder communities
  – The Reputation is our greatest (and most fragile) shared asset

• Get engaged with the Research items in your Practice
  – Future is now

• Think hybridization and a nimble value proposition
  – Bringer of light, not lamplighter

The Future of the Profession is YOU
Expressions of individual views by members of the Institute and Faculty of Actuaries and its staff are encouraged.

The views expressed in this presentation are those of the presenter.