



**Actuaries
Institute**

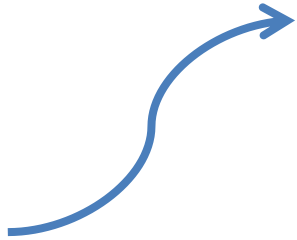
My career journey

My career journey

Life actuarial
student

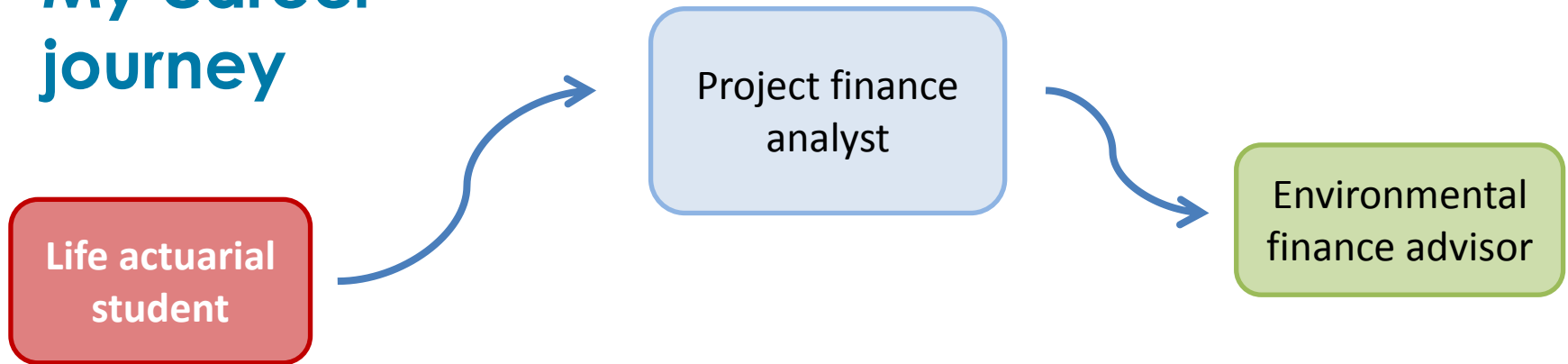
My career journey

Life actuarial
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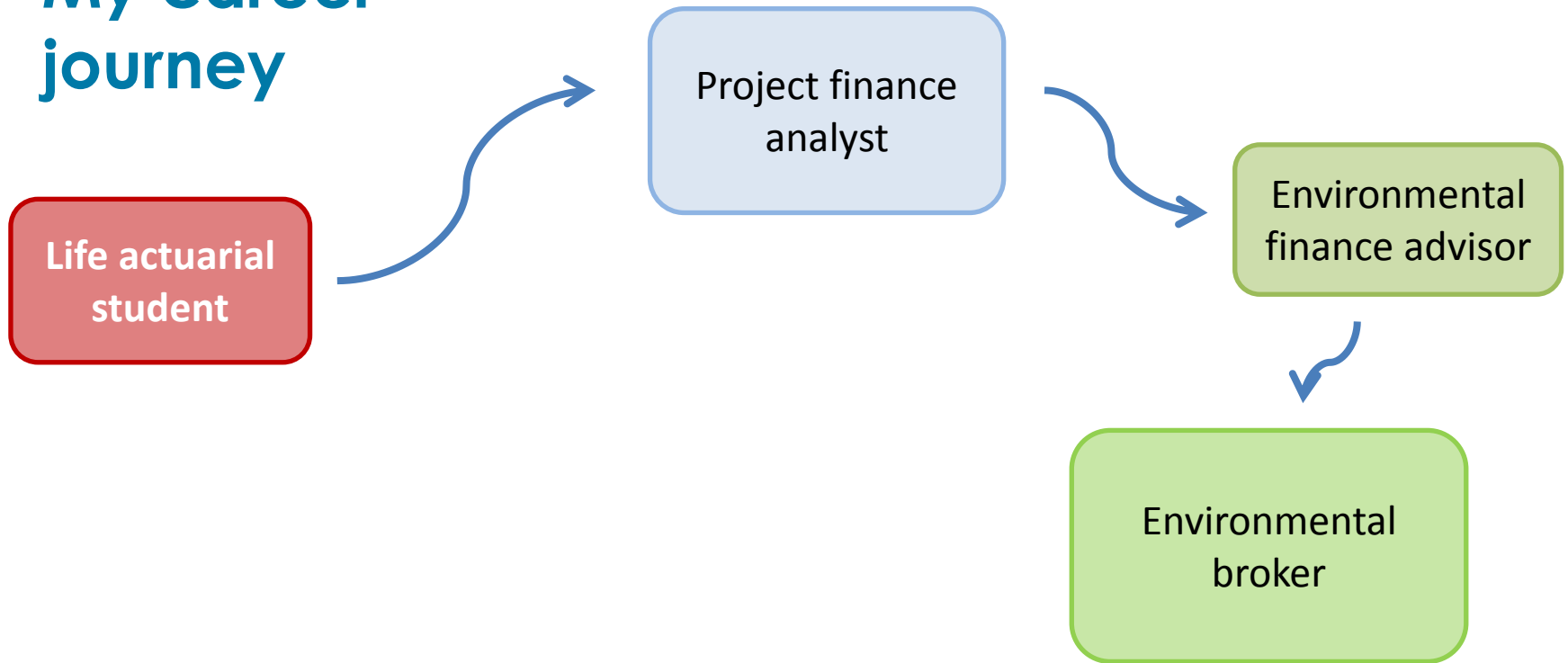


Project finance
analyst

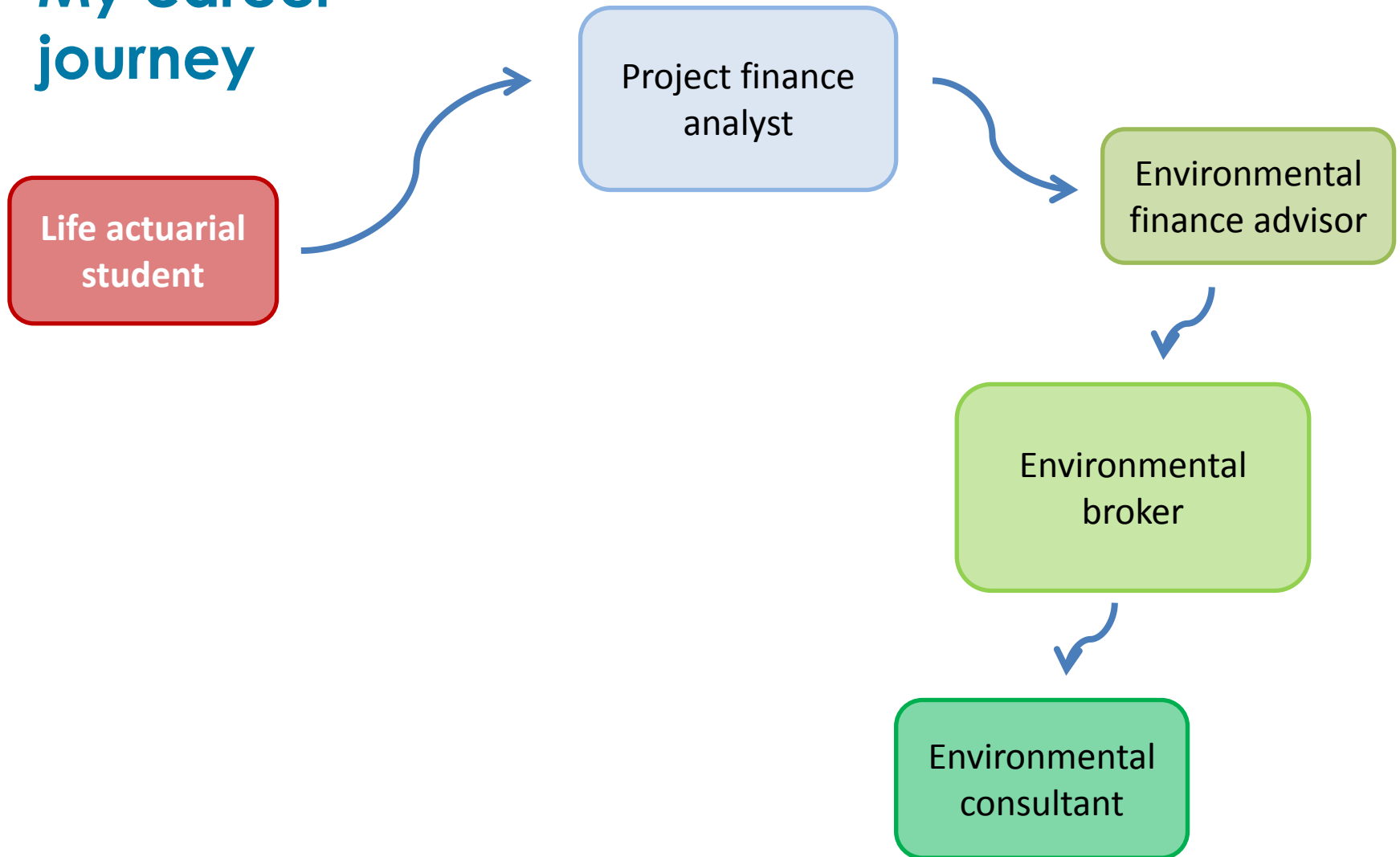
My career journey



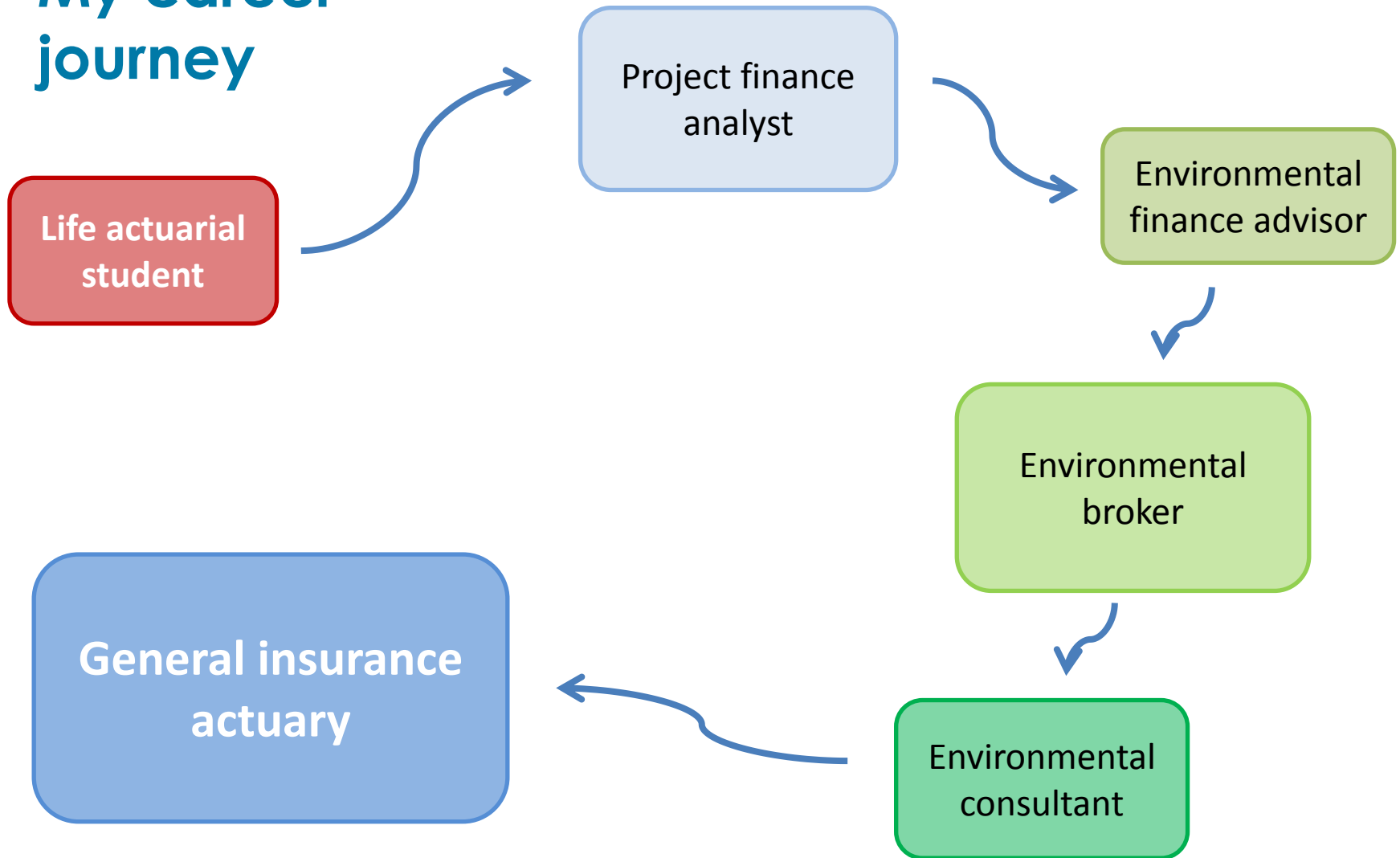
My career journey



My career journey



My career journey



Wider fields

My own journey

Project finance – great exposure across industries



And some unusual projects ... such as a radio-spectrum action

- The government wants to allocate a scarce resource, in this case, radio-spectrum, which can be used for various forms of telecommunication (in this case primarily mobile phone services)
- In this case we advised a firm who wanted to get into the Australian mobile phone market
- Government seeks a large upfront payment, but how do you auction radio-spectrum that cover wide geographic areas and different sections of the spectrum?
- Use a “Simultaneous multiple round action” to pre-qualifying bidders
- Very intense process, multiple rounds over a month, intensive consultation between rounds to assess competitors strategies and our decisions
- Here’s a short video that illustrates the bidding (conceptul)

Radio-spectrum action video

The next step on the journey was environmental finance

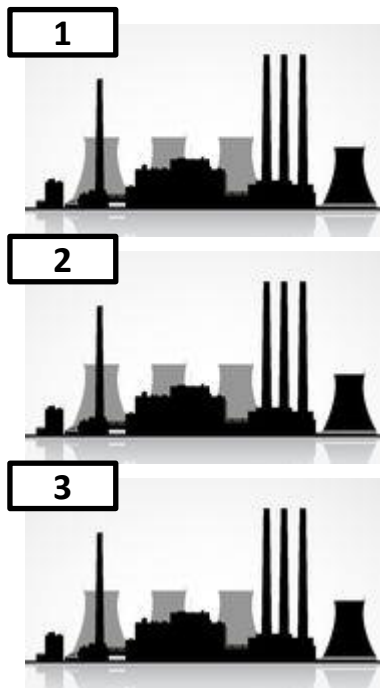
- Environmental finance refers to the use of market mechanisms to achieve environmental outcomes
- It is about putting a price on pollution, meaning that what was previously free (e, emitting harmful substances) would have a real cost
- Initially an academic topic, with the first real practical demonstration were the SO₂ and NO₂ emissions trading schemes in the US
- A range of applications were identified, in particular, to global warming from CO₂ emissions – led to a great deal of complexity, debate and disagreement

Emissions trading

“Command & control”

Our problem

Need to reduce SO₂ emissions –
should we use Command &
Control or “Emissions Trading”?



Emissions
reduced (t)

Cost to reduce
emissions

Emissions
reduced (t)

10

\$10 / t

10

0

\$30 / t

10

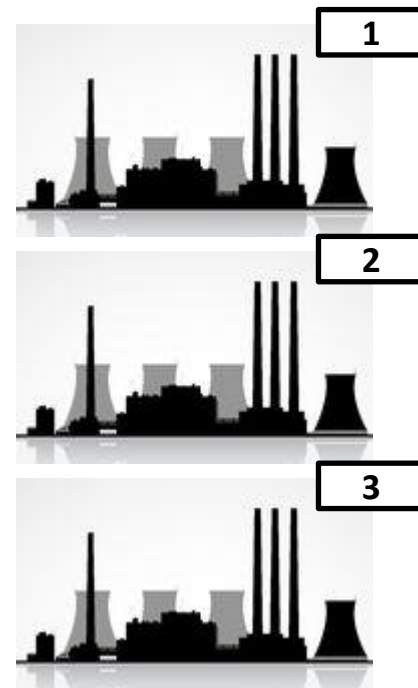
20

\$5 / t

10

Reduction = 30t
Cost = \$200
Avg cost / t = \$6.67

Reduction = 30t
Cost = \$450
Avg cost / t = \$15



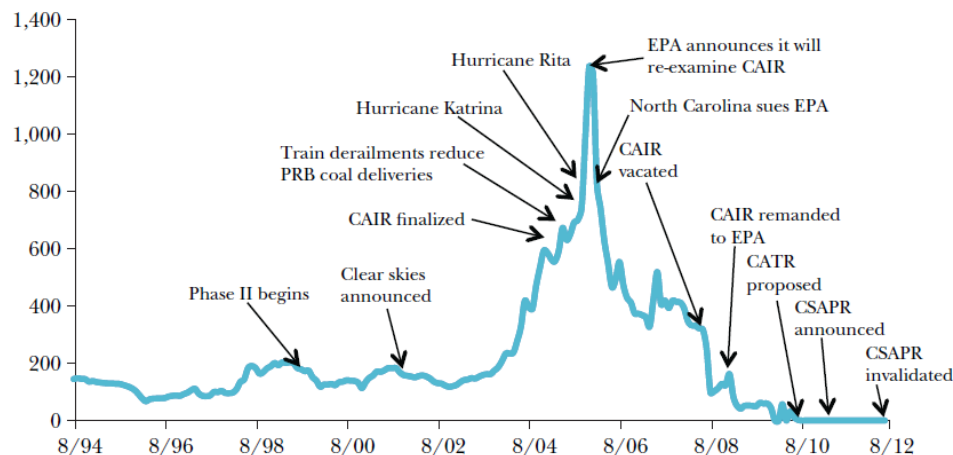
Outcome

Emissions trading delivers the
same environmental benefit at a
much lower cost.

US SO₂ trading

Stable price for long during the 1990s, then impacted by political uncertainty which ultimately led to the collapse of the scheme

Figure 2
SO₂ Allowance Prices and the Regulatory Environment, 1994–2012
(1995 dollars per ton)



Source: Journal of Economic Perspectives
http://web.mit.edu/ceepr/www/publications/reprints/Reprint_248_WC.pdf

EU Emissions trading

EU scheme started strongly, but over-allocation and recession have driven prices from a high in the mid 20's to around 2.75 per tonne of CO₂e

Respiratory problems

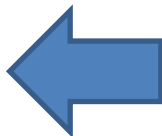
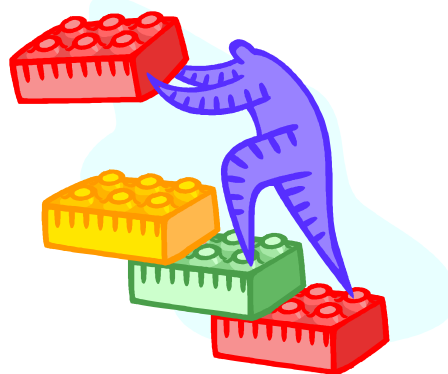
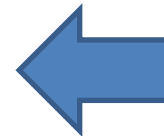
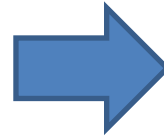
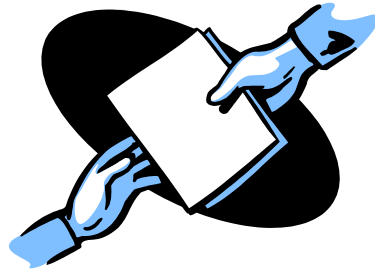
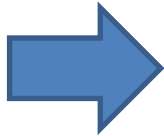
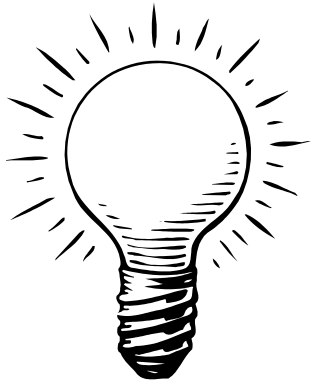
EU ETS carbon spot price, € per tonne



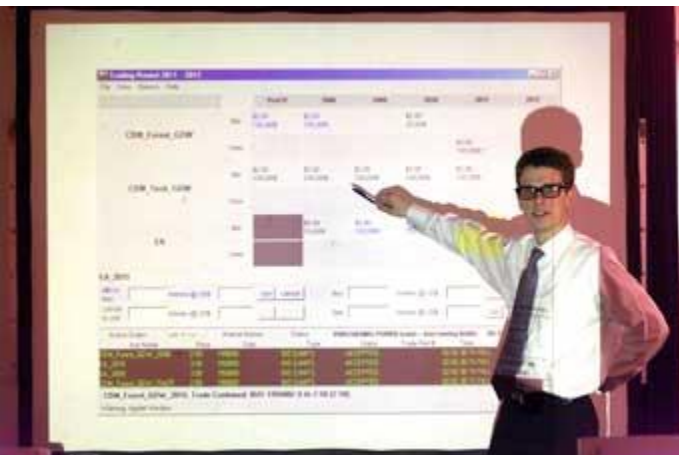
Source: Thomson Reuters Point Carbon

Source: Extracted from an Economist article
<http://www.economist.com/news/finance-and-economics/21576388-failure-reform-europes-carbon-market-will-reverberate-round-world-ets>

CO2e – idea to real business



CO2e – launch



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NEWS

Monday, July 02, 2007

Editorial Page Editor: The time to solve global warming is now - The weather looked awful when I peeked out of the airplane window last week: Torrential rain, lightning and wind gusts that seemed to lift the Boeing 757 off the ground. But none of that was as striking as the announcement that the flight was canceled. Nearly

MARKET DATA

Market	*MPI
NOx SIP Call 2007	▼ 21.528
SPOT SO2 Market	▲ 0.280
SC NOx RTC 2006 Cycle 2	▲ 0.200
SC NOx RTC 2007 Cycle 1	▲ 0.083
SC NOx RTC 2007 Cycle 2	▲ 0.083

Dollar change from the last MPI. *

[What is the MPI?](#)

Business valuations – how do you value a GI business

- Before I moved to Asia, I spent almost 5 years as a business valuation specialist – valuing acquisition opportunities for IAG
- I had to re-learn the M&A / banker language to have credibility
- The technical side was straightforward – more about how the results are presented – simplify the message, but be able to demonstrate depth of thought & analysis
- Conceptually valuation is based on growth, profitability & risk – with most of the value contained in the terminal value (ie, beyond 3, 5 or 10 years)
- Business valuations are less about technical analysis and more about logical and the selection of reasonable assumptions

My learnings from the wider fields

- In certain roles, it becomes natural to incrementally shift into different areas – in my case it was due to opportunity and interest
- The opportunity arose because of my skill-set, though not exclusively due to being an actuary
- My regret is that I could have made more of these opportunities if I had been a more experienced actuary (ie, if I knew then what I know now)
 - Turning analysis into value
 - Communicate findings in a simple, engaging manner
 - Focus on the most important issues

What about you?

Professional

Personal

What are your interests?

Experience

What is your edge?

Skill-set

Personality

Location

Where do you want to work?

Industry

Type of organisation

What is your passion?











“New economy” companies – does Google have an actuary [Yes]? Facebook, Twitter, etc?

“Old economy” companies – energy, manufacturing, telco, renewable energy, space exploration & commercialisation, etc?

General insurance

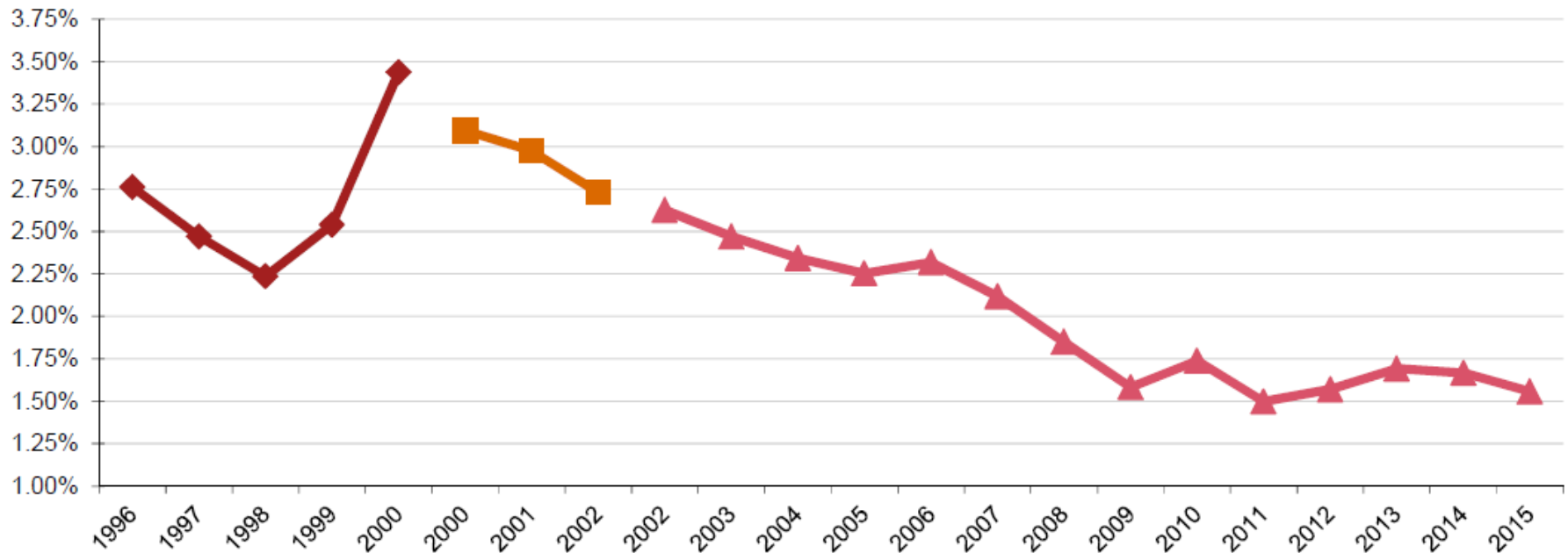
My own actuarial journey

Areas of actuarial practice – get all your stamps

 RESERVING	 PRICING	 DATA	 CAPITAL	 REINSURANCE
 PERSONAL LINES	 COMMERCIAL LINES	 PORTFOLIO MONITORING	 NATURAL PERILS	 FINANCIAL REPORTING

Western Australia Workers' Compensation industry premium rates

Average recommended premium rates by underwriting year

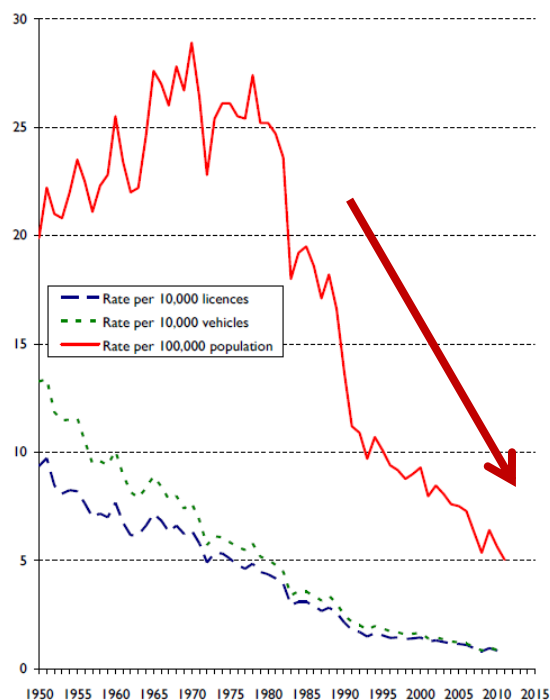


Source: PricewaterhouseCoopers Actuarial report (publically available)

http://www.workcover.wa.gov.au/NR/rdonlyres/34FF4D6C-0575-49B5-A3E4-BAA850FF237A/0/201415WorkCover_ActuarialAssessment_PremiumRates_FullReport.pdf

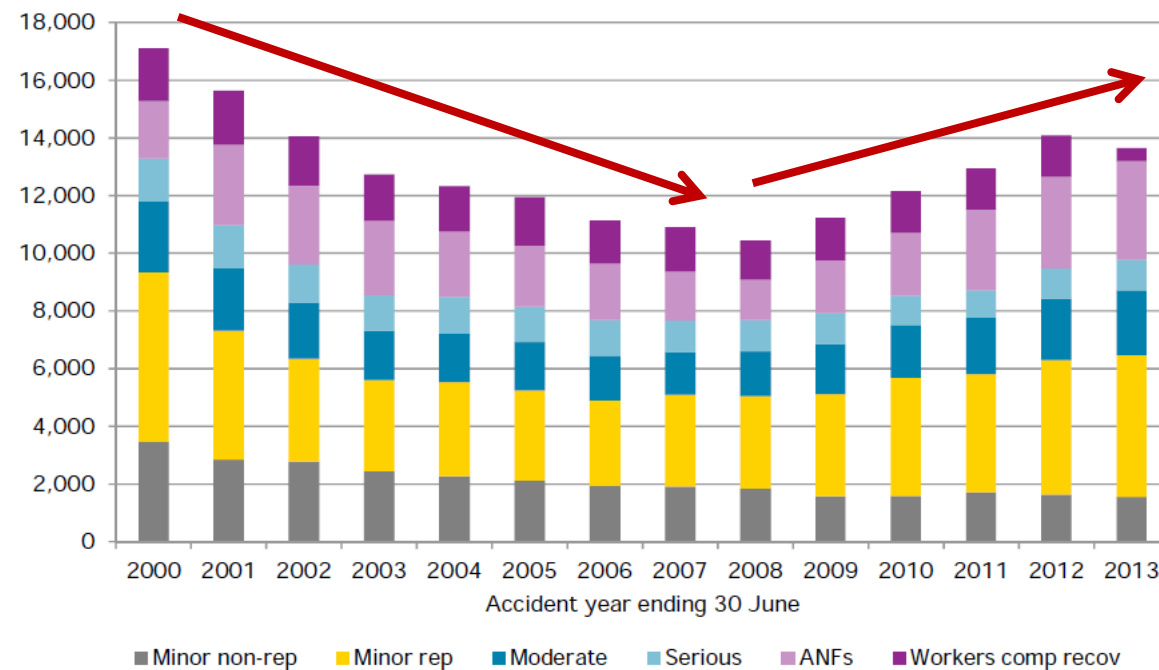
NSW CTP pricing and reserving challenges

Figure 1: Fatality rate per 10,000 vehicles, 10,000 licence holders and 100,000 population for years 1950 to 2011 in NSW



Note: Fatality rate is expressed as the number of persons killed in road crashes per 10,000 vehicles on register, per 10,000 licence holders (licences on issue prior to 1997) and per 100,000 population.

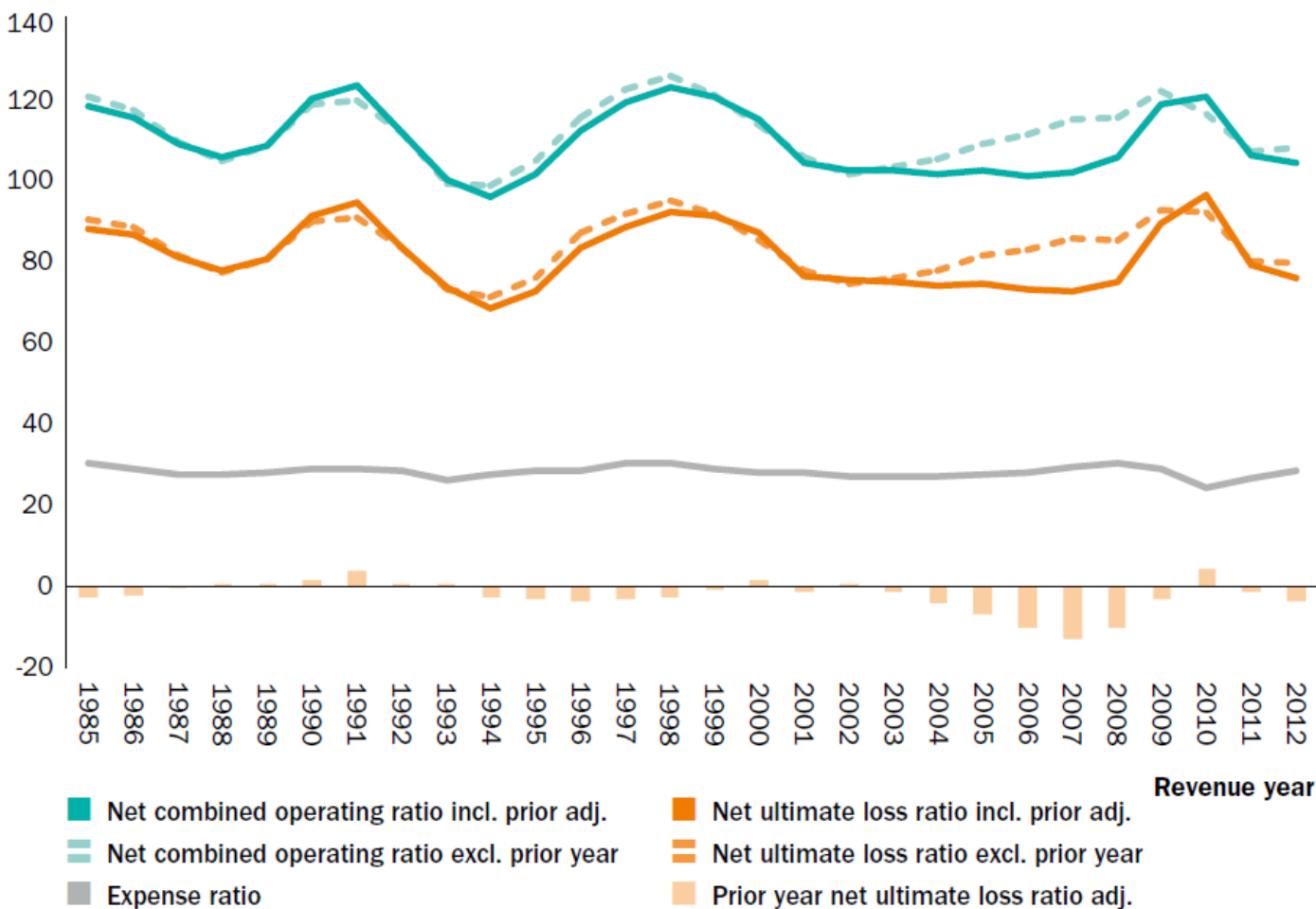
Figure 3: Ultimate number of full claims and ANFs



Source: Ernst & Young CTP Scheme Performance Update 2013
<http://www.maa.nsw.gov.au/default.aspx?MenuID=329>

UK motor insurance – volatile results

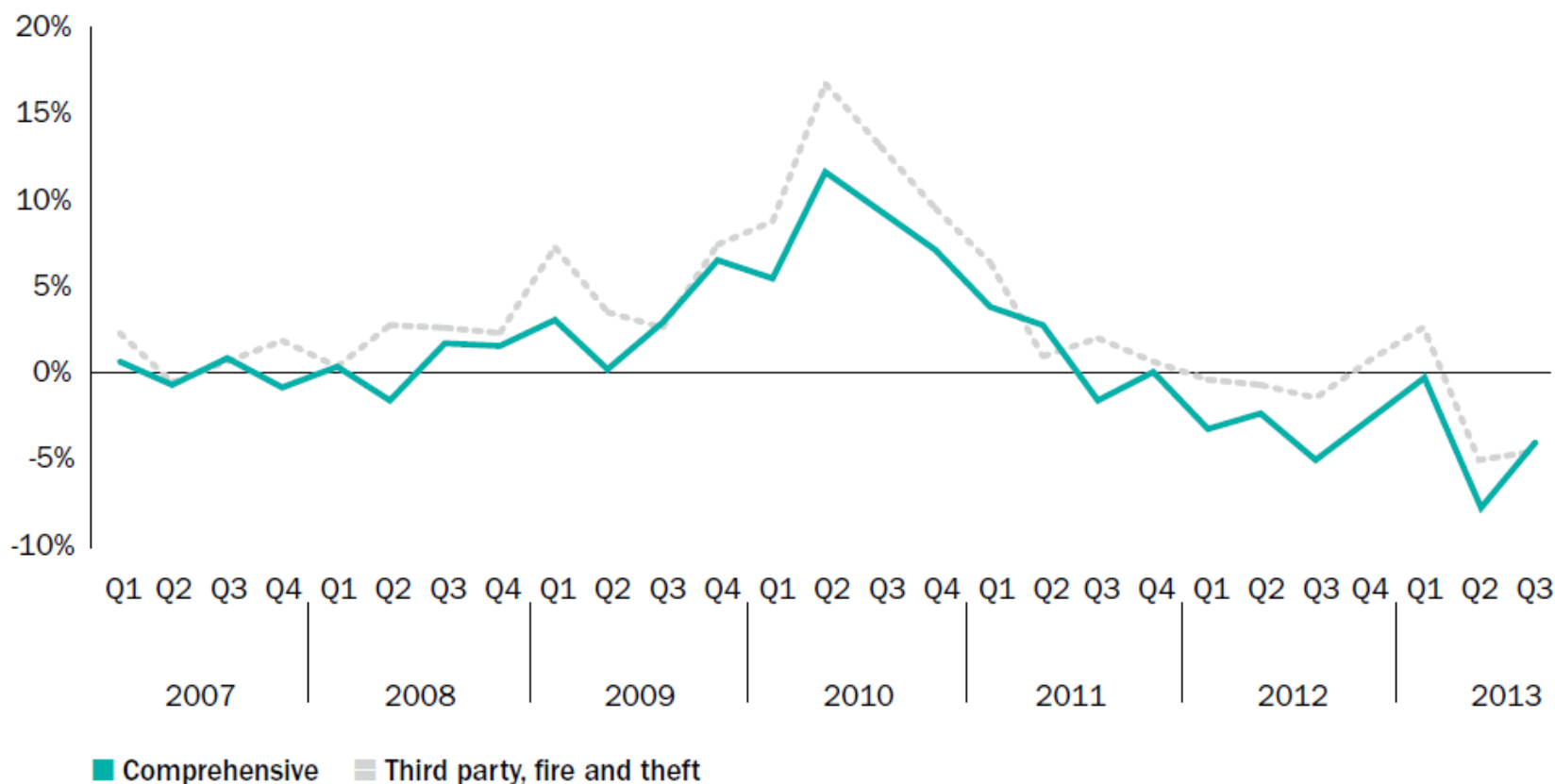
Figure 01. Total market results by account year



Source: 2012 PRA returns (figures include an adjustment for UKI one-off restructuring costs).

UK motor insurance – price volatility

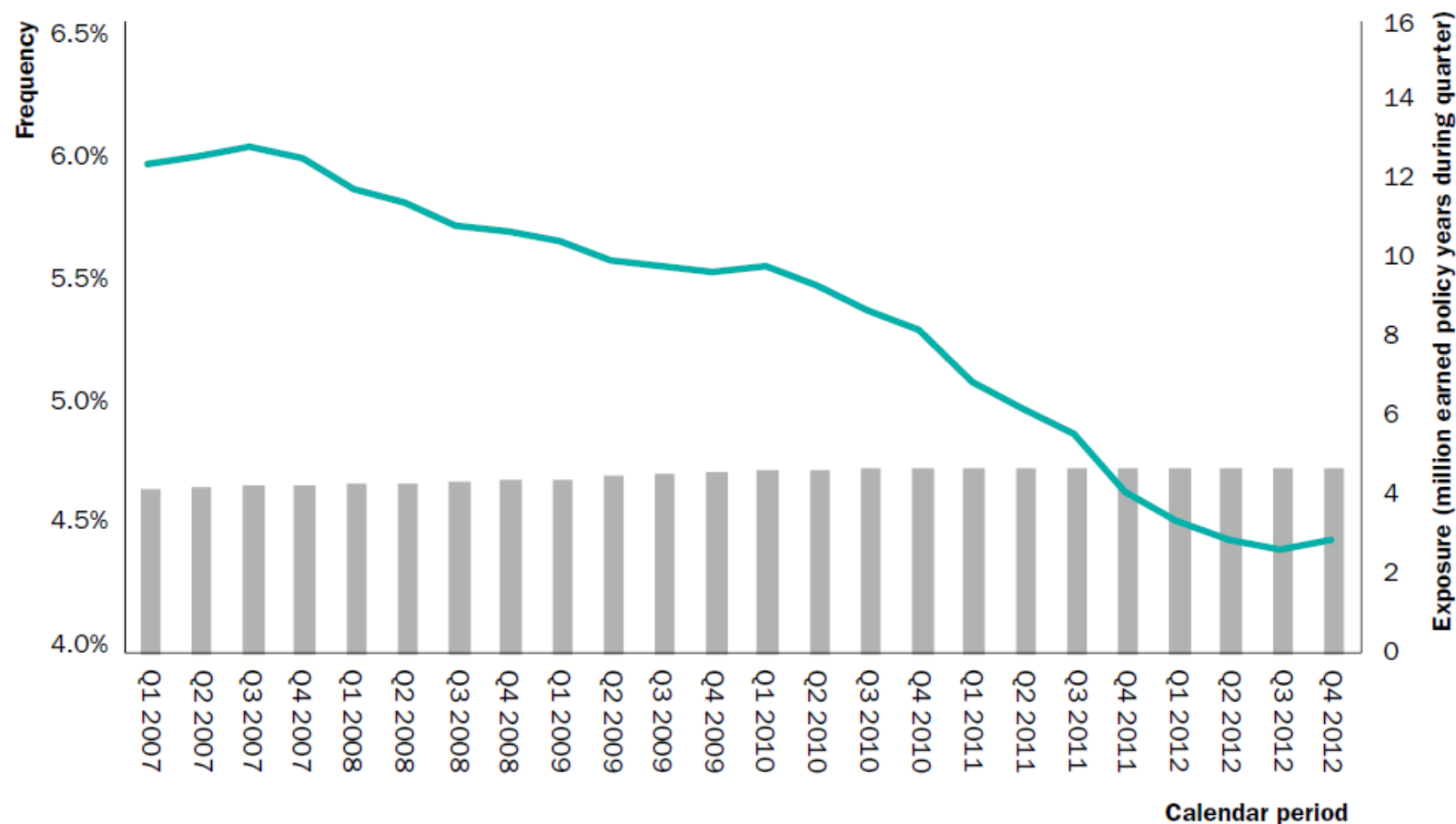
Figure 02. Quarterly private motor price movements



Source: Confused.com Car Insurance Price Index in association with Towers Watson.

UK motor insurance – fewer accidents

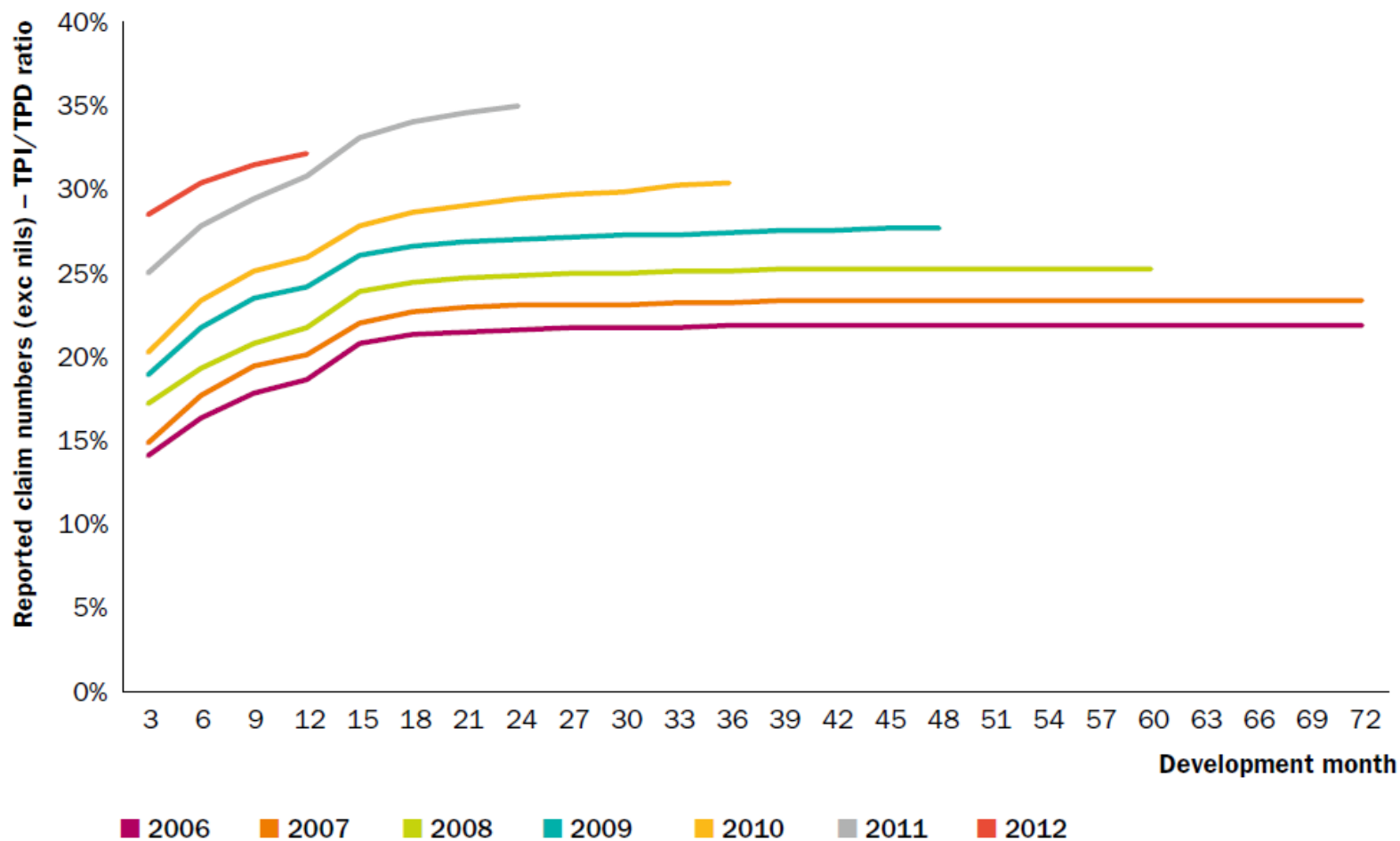
Figure 03. Frequency of reported TPD claims – private car comprehensive only



Source: Institute and Faculty of Actuaries Third Party Working Party.

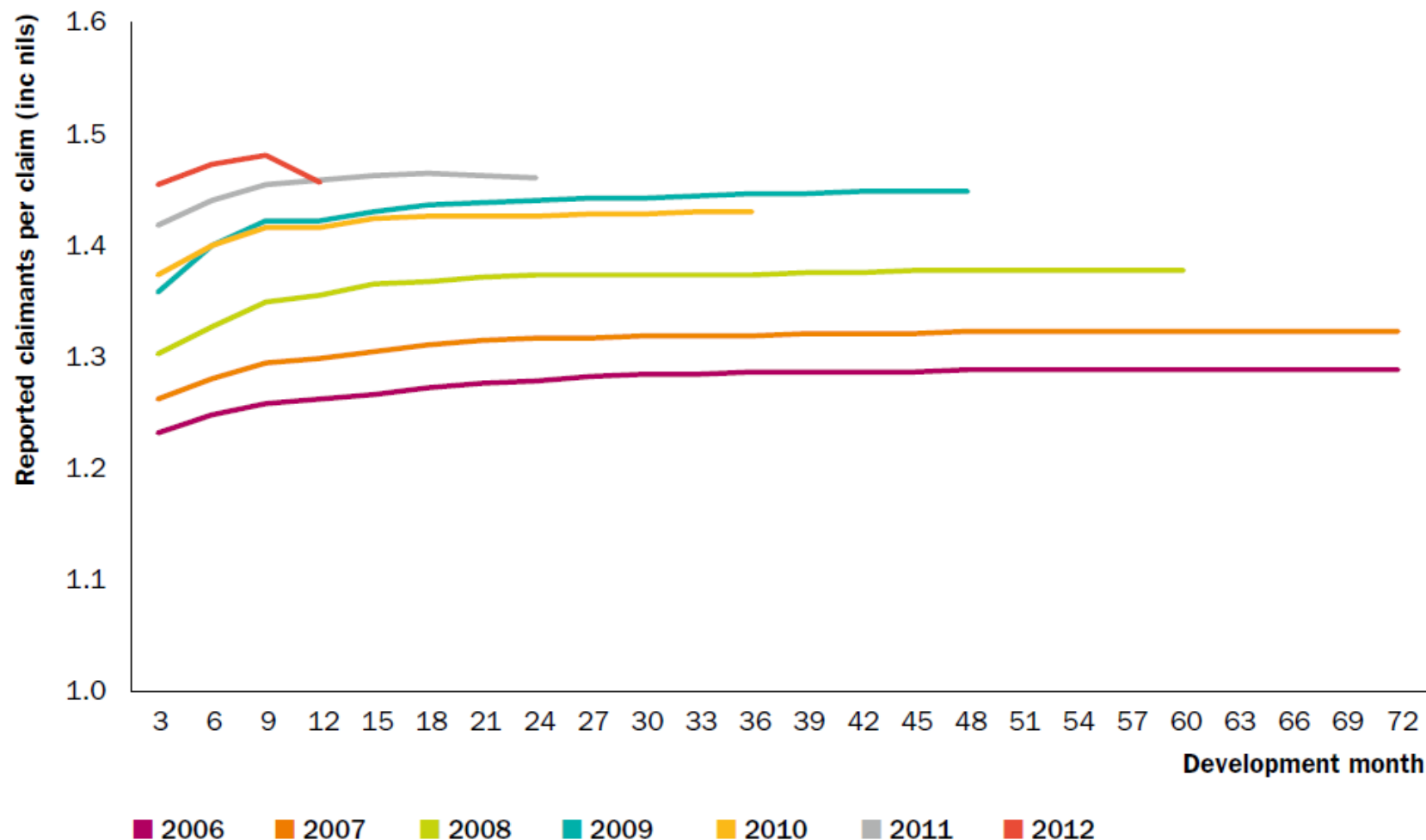
UK motor insurance – more TPI claims

Figure 04. Proportion of TPD claims with TPI component – private car comprehensive only



UK motor insurance – more claimants per claim

Figure 05. TPI reported claimants per claim – private car comprehensive only



Actuarial and general insurance in Asia

My observations



Motor TP and
slow legal
system

Huge market,
more like a
continent than a
country

Mature
markets,
insular

Very young
markets

Early stage of
development

Fragmented
market

Love their
cars!

800 hundred
actuaries
needed

General observations

- Distribution channel focused on agency and banca with minimal direct
- Branches tend to be highly autonomous and independent
- Pricing approaches vary – from free market to quasi-tariff to full tariff
- Claims leakage arises from a surprising range of sources
- Incredible variability and variety across the region
- Regulators have very different approaches

Back to actuarial basics

Observations

- Quality and availability of data is generally poor (with some notable exceptions)
- Simple models
- Communication of results focuses on the reserving position in isolation of business context

So what ...

- Opportunity to introduce new methods and approaches
- Opportunity for actuaries to add a lot more value to the business

Actuarial value-add

Observations

- Focus tends to be on statutory requirements rather than business engagement

So what ...

- Actuarial and technical analysis can have a significant impact on many of areas including claims leakage, risk selection and portfolio monitoring
- Opportunity to identify problem areas and use technical analysis to action

Portfolio monitoring

Observations

- Portfolio monitoring tends to be fairly basic

So what ...

- Actuaries are very well placed to monitor emerging experience, identify areas of concern, highlight implications and recommend action
- Important way to add-value to the business beyond statutory requirements

Technical expertise

Observations

- General level of technical capability could be improved, though varies by country
- Methods are usually textbook based, what tends to be lacking is the use of actuarial techniques to solve practical business problems
- Rare to see sophisticated actuarial modelling applied

So what ...

- How can practical skills be imported from other geographies
- Grow the actuary as a critical part of the management team

Back to business basics

Observations

- Business processes can vary considerably from mature markets and from country to country

So what ...

- Understand business processes in detail
- Don't assume that's things are done in the same way as home
- Always need to ask questions

Claims leakage

Observations

- There is a lot “claims leakage”, mostly driven internally, some externally
- In developed markets, external factors drive long tail reserving, in developing markets it is often weighted to internal factors

So what ...

- Actuarial and technical analysis can have a significant impact on claims leakage and risk selection

Due diligence and M&A

Observations

- Very different approach to a mature market due to data issues and business approaches

So what ...

- Need to go back to basics rather than blindly apply actuarial models
- Less focus on technical actuarial analysis
- More focus on whether the data makes sense and how to use the limited data provided to draw robust conclusions

Regulatory approach

Observations

- Varies significantly by country and are driven by different motivations and environmental considerations

So what ...

- Need to know the local regulations (and the regulators)

