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Are you comfortable with your risk management framework?

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Are you comfortable with your risk management framework?

By Mike Thornton

Mike Thornton challenges businesses to consider what their risk management framework is trying to achieve, and how it could be missing the mark.

Risk management frameworks can be complex. That's because there are a number of components related to policies, procedures, systems, governance and people, and these need to impact and influence thinking across all risks categories, in all parts of the business.

As a result, it comes as no surprise that risk management frameworks can be complex, cumbersome and poorly integrated into the business. Unless this is aligned and consistent with the culture, structure and operating rhythm of the business, it will introduce inefficiencies and frictional costs, as well as sub-optimal outcomes. The form may well be in place, but the substance might be lacking, and you might obtain a false sense of security from going through the motions, executing processes that are missing the mark.

To be effective and efficient, a risk management framework needs to be seamlessly integrated into business processes, and be consistent with the culture, structure and operating rhythm.

Ultimately, if risk management is not leading to the right conversations, and is not impacting strategic thinking and the allocation of resources, it is missing the mark.

Risk management ought to be simple

At its core, risk management ought to be simple. A focus on awareness, prioritisation and people ought to be sufficient to drive the right outcomes.

- Awareness: Are you aware of your risks, the causes and the potential impacts? Are these transparent and well understood by executives and the board?
- Prioritisation: Are you working on the most important risks? Are sufficient resources allocated to address them? Are you transparently making the tough prioritisation calls?
- People: Does your culture and management disciplines support this? Do you encourage leaders to actively manage their risks and make these transparent?

A focus on these simple principles should go a long way to making sure that risks are consistently identified, transparently discussed, prioritised, and where appropriate, acted upon.

Tough prioritisation calls should establish what will and won't be worked on, ensuring that capital and resources are allocated efficiently. The businesses culture, management and operating rhythm should create a self-reinforcing system that learns, refines and reprioritises risks on an on-going basis.

Finally, risk management disciplines and the prioritisation process can be 'right-sized' for the business, so that this is consistent with desired financial outcomes and risk appetite.

Why do we find this difficult?

It's not that easy! In practice, businesses are different, and within them, people don't behave consistently.

Businesses have different cultures, sub-cultures and operating rhythms, and people have different priorities, interests and agendas. Some executives will naturally and intuitively manage risks, balancing this effectively with other priorities, whilst others will see the management of risk as a distraction from other more important issues and interests that warrant attention right now.

Even if this is done well within business units, it is often challenging to ensure that this occurs consistently for end-to-end processes that straddle several parts of the business.

As a result, it is not easy to develop one, simple, self-reinforcing system, that is aligned to your culture, structure and operating rhythm, and is going to operate effectively and consistently right across your business.

Moreover, as all businesses are different, there is no cookie-cutter approach!

Focus on the outcomes you are looking for

This is why a focus on outcomes is essential. If you can clearly articulate a few simple outcomes that need to be achieved, these will provide a consistent frame of reference.

For businesses who already have mature risk management frameworks, this provides a way of reviewing its effectiveness. For those businesses who are enhancing their approaches, a focus on outcomes will help to set the direction, increase buy-in and engagement, tease out key issues early on, and help to shape the actions designed to deliver these.

For example, should individual executives 'own' each of the businesses key risks, recommending and driving mitigating actions, and taking accountability for the remaining residual risk? Such an objective might be obvious to risk practitioners, but can be confronting to some executives.

Putting an objective out there sets the scene, removes ambiguity, and helps to drive the supporting processes.

The alternative is developing processes and tools you think you need, only to realise later that these are poorly integrated into the business, costly, and are missing the mark.

So, are you comfortable with your risk management framework? Is it time to step back and consider what you're trying to achieve?

Creating inclusive insurance for all

By Queenie Chow and Renata De Leers

It is, without doubt, the poorest people in the world who are most in need of the security that insurance brings. Queenie Chow discusses why the micro-insurance market has low penetration, and why actuaries are so well placed to assist.

Micro-insurance has the potential to address the protection for financial needs for more than 4 billion individuals. While micro-insurance is referred as the inclusive insurance designed for the low-income population, unfortunately it is not being fully accessed by this group. In the absence of market knowledge and its consumers, providers for these low-profile risk mitigation products have limited capacity to the match the products with consumer needs. As such, the micro-insurance market continues to have low penetration and renewal rates.

An example of my experience is discussed below.

The situation

Fonds National de la Finance Inclusive (FNFI) is a government initiative that aims to provide inclusive financial protection and savings products for low-income population in Togo. In addition to
providing financial education to low-income groups, it also supports initiatives for effective management in the area of micro-enterprise. One of the initiatives of FNFI is providing small loans reimbursable in short periods (6 months -to 2 years), targeting extremely low-income workers in the rural sectors in Togo. Each loan will be accompanied with a bundled micro-insurance product (health, personal accident and property) and a separate micro-credit life product.

Unfortunately, insurers did not recognise the features of micro-insurance and have proposed a conventional insurance product with small premiums and small sums insured. I had the valuable opportunity to work under the guidance of my 'local' Belgian actuarial colleague with 20 years of experience in this socio-economic environment to reorient the initial product offer towards an authentic 'micro-insurance product' in hope of kicking off micro-insurance in Togo.

What is an authentic micro-insurance product?

In many ways, micro-insurance requires a shift in thinking for insurers. Insurers often have the misunderstanding that micro-insurance products are insurance policies with small premiums and little benefit payout. In reality, different from conventional insurance products, the design of micro-insurance products has some unique implications. A "good micro-insurance product" must satisfy the following important attributes of 'S.A.U.V. E' – simple, accessible, easily understood, valuable and efficient.

Understanding your client

A micro-insurance product has different needs on underwriting, claims management and product simplicity while also requiring scale, innovation and risk management. One of the cases in point during our project working with FNFI is that the insurance provider intended to use the same claim declaration template form as their existing insurance product for the new micro-insurance product. For the low-income groups in Togo, the illiterate clients in the village with no pen and paper, such declaration templates will by far be inaccessible. A product will fail if it is not well designed, and may weigh on the reputation of insurance in developing markets.

The pricing experience of this new micro-insurance product further emphasises the importance of understanding the client's profile and their needs in order to provide valuable insurance to different groups among the low-income population. The pricing

that the insurer initially submitted to the regulator was based on the behaviour and experiences of their industrial insured population (middle and high-income class). Furthermore, such pricing assumption was created based on extraction from an IT system that lacked reliable and sufficient underwriting and claims data. Can we accurately price the risk of a group of an extreme low-income population using the past experience of a privileged class whilst using the exact same arithmetic formula without contingency loading? Only through adequate understanding of our clients' profiles and needs can we enhance the design of appropriate products and identify the steps which should be taken to ensure the adoption of these products by the poor.

In closing

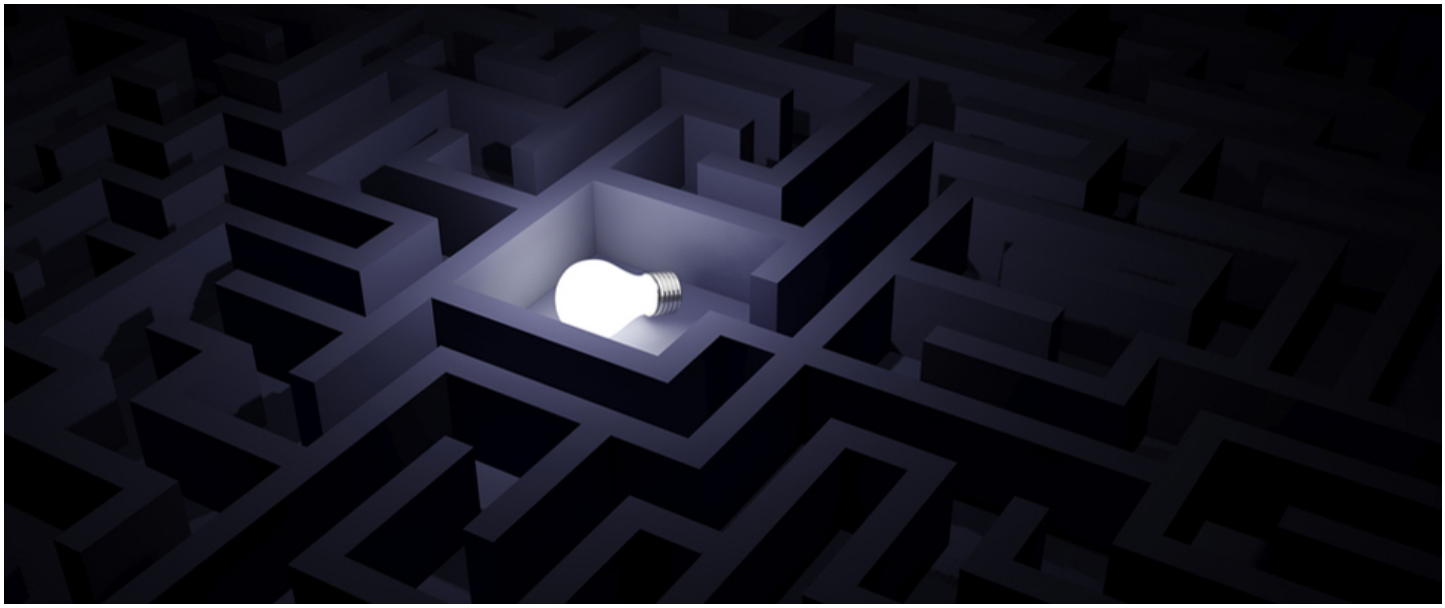
As the French say – "on ne peut pas aimer ce qu'on ignore" or "one cannot love what one cannot know".

In order to provide a successful micro-insurance product, insurers must understand:

- the needs of their clients;
- their current risk-management behaviour;
- the overall potential market.

Competent and skilled regulators are crucial as they should coach, develop and lead these new markets that targets vulnerable clients.

The actuarial skill-set is well placed to assist governments with the appropriate design and implementation of micro-insurance products to the poorest people in the world.



Thinking strategically about technical processes: Part 2 - How much can you really save?

By Phil Stott

In the second instalment of this series, Phil Stott shares his opinion on the benefits of thinking strategically about core technical processes.

In my previous article, I suggested that thinking strategically about our core technical processes – that is, taking time out to reflect on whether we are doing them in the most cost-effective way – is an idea whose time has arrived. In my experience, most actuarial teams do not do that – they just allow their processes to evolve as needs change; and I made the argument that this 'normal' approach leads to serious inefficiencies.

But just how 'inefficient' is this 'normal' way of operating? How much time and money could we save by thinking more strategically about these things?

A simple example

To illustrate the argument I am making, let me propose a very simple example – one, however, which is typical of the way that many actuarial teams operate today, in my experience. Here is the scenario:

You are the manager of a product pricing team, and you are asked to quote on the pricing of a new product variant. This work involves a certain amount of technical actuarial work to be carried out in an Excel spreadsheet, with the results sent to the intermediary who has asked for the variant.

You pass the spreadsheet setup work onto a senior team member, since it is too complex to pass onto a junior. That side of the work takes 10 days to set up, and you personally spend a further four days reviewing the work and refine the assumptions. Including on-costs, the total cost of the exercise is around $10,000.

An evolving scenario

So far, our example is all plain sailing. The task has been performed by the best available resource and there is no inefficiency. If this were the end of the matter, there would be no cause to complain about the process involved.

However, in my experience this is typically not the end of the scenario. And so, here is stage #2:

The client is so pleased with the piece of work your team has performed that they come back a month or so later for a similar yet different product variant. The new calculation is (a) sufficiently different from the previous piece of work that a new spreadsheet needs to be set up, but (b) sufficiently similar that the original work should be used as a base.

What do you do in these circumstances? The typical response is to ask the same senior resource to also perform the new task, using the previous piece or work as the starting point. What other alternative is there? Because the new task is based on the previous one, there are certain economies to be gained (say, 50%), but the task will still take five days to set up, and a further two days to review, at a cost of $5,000.

Recurrent technical processes

Again, if this was where our example finished, there would be no inefficiency. However, an example like this typically evolves very rapidly into what I call a recurrent technical process (RTP) – that is, a series of processes which repeat on a regular basis, each one slightly different to the previous ones, but all clearly related to each other. In this example, the RTP takes the form of regular requests to produce similar product variants, justified on the grounds that each client deserves to have their individual needs catered for.

We have reached the end of our economies of scale using the current process; each new variant still takes about five days to set up the spreadsheet and a further two days to review, at a cost of $5,000. More to the point, as these requests are coming in every couple of months or so, this particular senior resource is spending a significant amount of their time doing this sort of quote. Resources and budgets are being stretched.

The time for strategic thinking!

The moment you realise that you have evolved an RTP is the time to start thinking strategically. What you really need to do is to develop a generic spreadsheet model that is sufficiently generalised to cater for all the variants that you are likely to encounter. It will be fully parameterised and fully documented (so that your most junior resource can be trained to use it), and subject to audit control and spreadsheet design guidelines. It will be a process that is designed to 'last the distance', because it is acknowledged that it will be continually in use.

How much will such a generic spreadsheet model cost? Many actuaries will be surprised to realise that it costs not much more than the original spreadsheet; the surprise, however, is because most of us have no training or experience in designing such models. Our only experience with spreadsheets is of the 'do it quick and then throw it away' type. But a well-designed spreadsheet is not hard to construct, once you know how to go about it.

Let's assume it takes twice as long as the original project – in my experience, this is overly conservative – and therefore costs around $20,000. But what have you gained? On an ongoing basis, each new product variant will be manageable by at most two days' data entry work for your most junior resource and half a day for review from your more senior analyst. The ongoing cost will be closer to $500 instead of $5,000 each time. Your well-designed generic spreadsheet could be good for at least two years without major re-design – again, I am being conservative here – and, at one new variant every two months, that equates to at least 12 variants at $4,500 savings each time.

Thus, based on conservative assumptions, the investment of $20,000 to build a generic spreadsheet model could save you $54,000 – not a bad return on investment! Not only that, but your systems will be more manageable, more secure, less error prone – and your most senior resources will be spending their time on designing quality software and exercising actuarial judgment rather than 'grunt' work, which will do a power of good for both morale and efficiency. Now that's what I call a good day's work!

A challenge

Of course, the example I have chosen is very specific, but it is generalisable to most actuarial teams. If you are a valuation team, your RTPs may be those infamous 'manual reserves' that started life as a one-off exercise to please the chief actuary, and then evolved into a regular monthly calculation. If you manage a planning or capital management team, they will be something else again. The user-defined application you use may be a SAS procedure or an Access database rather than an Excel spreadsheet. But one thing I am sure of – those pesky RTPs are here to stay, and virtually all actuarial teams seem to be clogged up with them.

Take this simple challenge: do an audit of the workload of your team for the next month, and record how much of their work is taken up with RTPs – jobs that could be made considerably simpler if more generic and robust processes were developed. And then apply a savings factor of 73% ($54,000 / $74,000, applying expectations from the example above) to that proportion of your cost centre budget. What do *you* stand to gain by learning to think strategically about technical processes? I suspect you will be surprised by the answer.

Of course, the emphasis needs to be on the word 'learning'. There are powerful reasons why most of our actuarial teams do not realise these sorts of 'easy wins' – mostly because they have never been taught how. Over the next few articles, I will teach you some principles that will enable you to start on this learning process. By doing so, I will be doing myself out of some business – after all, most of my consulting practice these days involves doing exactly this sort of thing for my clients – but somehow, I think I would rather spend my time helping others to do it for themselves…

Insuring emerging cyber risks

By Jeremy Waite and Peter Yeates

Cyber insurance cover is a rapidly-growing sector within the general insurance industry. Actuaries can add real value by helping insurers to understand how cyber risk can impact their portfolios, but more sophisticated scenario modelling is required for the $20 billion industry. Jeremy Waite and Peter Yeates report.

In the World Economic Forum's Global Risks 2016 report, cyber risk is firmly positioned as a major risk in terms of likelihood and impact:

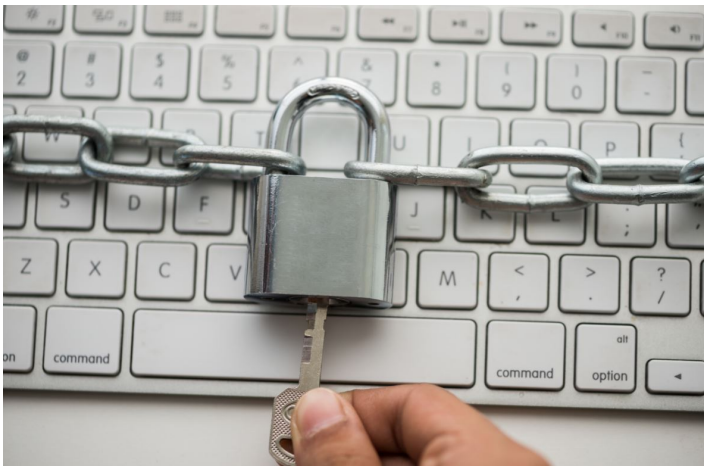
'Cyber risk' means any risk of financial loss, disruption or damage to the reputation of an organisation from some sort of failure of its information technology systems. Such a risk could be deliberate, unintentional or operational.

Organisations are potentially vulnerable to both direct impacts, as well as the effects on key companies in their supply chain or their extended enterprise. For insurers, these considerations extend to their insureds via insurance claims.

"The cyber market is growing by double-digit figures year-on-year, and could reach $20bn or more in the next 10 years." - Nigel Pearson of Allianz - *A Guide to Cyber Risk*

Cyber insurance cover is a fast-growing sector within the general insurance industry. We estimate that, in 2014, the global premium income for standalone cyber insurance increased by 50% as compared to the previous year, and now totals around $2 billion -representing 0.1% of the premium pool. This is estimated to reach $20 billion in the next 10 years[1] .

The Growth of Cyber Insurance Products



The early growth in cyber insurance was driven by US federal and state regulations requiring disclosure and notification of breaches of personal data. As a result, 90% of premiums are currently written in the US. This situation is expected to change rapidly with the recently finalised EU General Data Protection Regulation scheduled to come into force in mid-2018. This legislation is expected to create a similar level of demand for insurance cover in Europe. Australia is currently consulting on draft legislation[2].

Prevention of cyber-attacks is preferable to collecting insurance payouts after they occur. However, global cyber security spending is estimated to be in excess of $80 billion p.a. (expected to increase to an estimated $170bn p.a. by 2020) and high profile targets continue to be breached. In this context, the spending of $2 billion on post-event insurance looks small in comparison. A further driver of growth is likely to be a strong uptake in the SME sector where insureds have fewer resources to devote to cyber security and brokers are increasingly highlighting the value of the cover.

Cyber insurance products are not yet standardised, but typical designs reflect their origins in covering data breaches. They provide cover for first party losses and forensic investigation triggered by data breaches or cyber-attack, as well as for third-party exposures, notification and regulatory costs. Cyber gaps and exclusions in traditional policies, together with the emergence of stand-alone cyber insurance solutions for new

risks, often create a complex picture, where businesses struggle to fully understand the boundaries of their cover.

In the US, cyber cover is marketed in part as a service offering, more akin to kidnap and ransom, with insurers providing access to panels of service providers who are experienced in responding to cyber-attacks. This is designed to help the insured access services which mitigate the claims, manage disclosure and notification requirements as well as providing a shield legal privilege. As well as mitigating after-the-event damage, the hope is that these measures will also limit the ultimate cost to the insurer.

Aggregation Risk - a Burden for Insurers?

The non-physical nature of cyber risk makes it possible for insurers to suffer losses from a vast number of clients spread across different industries and geographies as a result of a single event. This aggregation risk could result in insurers or reinsurers finding themselves burdened with catastrophic losses which they cannot afford to pay.

While a cyber-attack at scale – i.e. a 'black swan' or 'cyber 9/11' event - has yet to occur, it should not be an excuse for inaction. Experts increasingly assert that it is only a matter of time until such an event occurs and fear that most countries, including the UK, are ill prepared[3].

Aggregation can occur when one cyber event triggers multiple cyber insurance claims over a diverse range of insureds (for example by penetrating a common service provider) or by triggering multiple types of policies (for example reputational risk, Property Damage, Professional Indemnity, and Directors Errors & Omissions) for a smaller group of insureds.

Quantifying these aggregations is an emerging area. The PRA has asked UK insurers to run a simple retail scenario; Lloyd's requires managing agents to submit three different cyber Realistic Disaster Scenarios (RDS) at the end of Q1 2016; AM Best now requires separate reporting of cyber insurance written[4].

Cyber Scenarios

Considerable effort is currently going into producing cyber scenarios which can be used to evaluate and quantify an insurer's cyber exposure. Scenarios under active development include breaches or business interruption of cloud servers, mail services and payment providers, power grid attack and remote activation of sprinkler systems. The following are some more detailed scenarios currently available:

Data breach at major retailers

Last year the PRA required UK insurers to consider an aggregation of their 15 largest retail clients, assuming that all policies without cyber exclusions suffered losses of at least 90% of policy limits[5]. This represents a model of the classical data breach with associated response and third party impacts. While the scenario may appear simple, the process of calculating it requires insurers to identify industry groups, aggregate exposure to specific insureds and consider whether policy wordings appropriately include sub-limits or exclude cyber losses.

Database corruption

Cambridge Centre for Risk Studies (CCRS) has produced the Sybil database cat scenario[6], which considers a widespread, long-term corruption of a widely used database system such as Oracle or SAP. This necessitates reconciliation and rework across a wide range of industries, impacting both insureds and insurers, as well as causing wider economic losses, with potential market impact.

This scenario highlights the potential involvement of several risk categories and is grounded in the types of attacks which have been seen in the past, albeit on a wider scale.

While the scenario describes economic losses in great detail, using it to calculate insurance losses requires a lot of additional assumptions.

Electricity grid attack

CCRS, together with Lloyd's produced the Erebus Business Blackout scenario[7] with a cyber attack shutting down the northeast US electricity grid, affecting 93 million people and a third of US economic output. Power remains out for up to 2 weeks. This leads to losses from direct damage, loss of revenue, supply chain disruption and lost economic output. This has close parallels with the recent events in Ukraine[8] .

This scenario helps us think more broadly about how cyber threats might affect a typical insurance portfolio. While the original trigger is a cyber-attack, the proximate cause of most of the damage is loss of power or supply chain interruption.

This scenario includes a detailed methodology to calculate the insurance losses.

Modelling

Modelling the aggregation of physical risks is well established. For example, a large amount of historical data is used to build probabilistic models with regard to natural catastrophes. This data does not exist for cyber risk, which means that insurers have to rely on experts making educated assumptions when assessing the severity and frequency of possible cyber catastrophe scenarios. This has led to there being an extremely wide range of estimates for the likely cost of each of the scenarios.

Actuaries can help insurance companies here by understanding the risks and scenarios and the key influences on the assumptions that can lead to working/coverage both for the insurance and reinsurance of such risks.

Opportunity

With the rapid growth of cyber insurance and the growing scrutiny on managing the aggregation of cyber risk, there are opportunities for actuaries to identify the impact of cyber threats on insurers and insureds; develop better models for cyber risk aggregation; and design products to manage these risks appropriately.

Actuaries outside of general insurance firms can ensure that cyber risk is integrated into their risk management strategy and not siloed into the IT department. Cyber insurance should be considered as part of the discussion of cyber risk appetite. The opportunity for insurance growth and upside and downside is large, and Actuaries have much to add in this emergent insurance class.

If you are interested in joining the Cyber Insurance working group please contact Peter or Jeremy.

[1] Nigel Pearson of Allianz "A Guide to Cyber Risk", http://www.agcs.allianz.com/insights/white-papers-and-case-studies/cyber-risk-guide/

[2] Exposure Draft - Privacy Amendment (Notification of Serious Data Breaches) Bill 2015 https://www.ag.gov.au/Consultations/Pages/serious-data-breach-notification.aspx

[3] Kaspersky quoted by Gibbs, 2014 http://www.theguardian.com/technology/2014/may/01/eugene-kaspersky-major-cyberterrorist-attack-uk

[4] Required in the 2016 Supplemental Rating Questionnaire (SRQ) http://www3.ambest.com/ambv/bestnews/PressContent.aspx?altsrc=14&refnum=23530

[5] PRA General Insurance Stress Test (2015) http://www.bankofengland.co.uk/pra/Documents/supervision/activities/generalinsurancestresstestingjuly2015.pdf

[6] Sybil Logic Bomb Cyber Catastrophe, CCRS (2015) http://cambridgeriskframework.com/page/25

[7] Erebus Business Blackout http://www.lloyds.com/news-and-insight/risk-insight/library/society-and-security/business-blackout

[8] http://arstechnica.com/security/2016/01/first-known-hacker-caused-power-outage-signals-troubling-escalation/

Innovation in the Australian Managed Funds Industry

By Eric McNamara

Eric McNamara looks at the innovative EFG product launched by actuaries in the 1960s and at the evolution of the managed funds industry in Australia.

Today, Australian managed funds are quoted at around $2 trillion, having doubled since 2007. According to the Deloitte Super report, superannuation system funds are expected to reach around $8 trillion by 2033. There have been many developments in our industry that have facilitated this growth. These range from regulation, innovation, needs based and taxation driven steps to fuel our staggering managed fund system asset growth.

A managed fund is any investment vehicle where the underlying assets (stocks or bonds for example) are selected by the fund manager and the investments are pooled for the benefit of all investors, with each investor holding an interest in the fund. They choose the assets for you and charge a fee for doing so. These funds could be actively or passively managed (or somewhere in-between). Or, as in some cases, the fund could be a "fund-of-fund" structure where the investment firm chooses a selection of fund managers rather than particular stocks or bonds.

Australia is no stranger to innovation; whether it be our system of compulsory superannuation contributions or our global lead in developing investment structures. Along this vein, I would like to focus on a managed fund from 1965, namely, National Mutual's (later AXA, now AMP) "E-F-G" diversified fund. However, to begin, I shall give some context of the period in question.

The early managed funds (as covered in the IFSA/KPMG 2005 paper titled "Fifty years of managed funds in Australia") were very basic in nature. They primarily were unit trusts in shares or property.

Units were offered to the public in the First Australian Unit Trust in 1936. It was referred to in its prospectus as 'modern method of scientific investment'. The table below (from the same IFSA/KPMG paper) shows the basket of shares within the First Australian Unit Trust.

THE FOLLOWING ARE THE INVESTMENTS WHICH CONSTITUTE EACH UNIT

of

FIRST AUSTRALIAN UNIT TRUST

Commercial Bank of Australia Ltd.	200—10/–	Ordinary	shares
The Adelaide Steamship Co. Ltd.	50—£1	,,	,,
Tooth & Company Limited	100—£1	,,	,,
Associated Newspapers Ltd.	50—£1	,,	,,
Australasian Paper & Pulp Co. Ltd.	50—£1	,,	,,
Australian Glass Mftrs. Co. Ltd.	25—£1	,,	,,
Broken Hill Proprietary Co. Ltd.	50—£1	,,	,,
Colonial Sugar Refining Co. Ltd.	5—£20	,,	,,
David Jones Limited	50—£1	,,	,,
Drug Houses of Australia Ltd.	50—£1	,,	,,
Dunlop-Perdriau Rubber Co. Ltd.	100—£1	,,	,,
Electrolytic Zinc Co. of A/sia Ltd.	100—£1	,,	,,
General Industries Ltd.	150—12/6	,,	,,
Goldsbrough Mort & Co. Ltd.	50—£1	,,	,,
Henry Jones Co-operative Ltd.	50—£1	,,	,,
Kandos Cement Company Limited	50—16/–	,,	,,
Sargents Limited	50—£1	,,	,,
W. R. Carpenter & Co. Ltd.	50—£1	,,	,,
Yarra Falls Limited	100—£1	,,	,,
Broken Hill South Limited	50—£1	,,	,,

Another notable early investment vehicle, the Universal Flexible Trusts, was founded in 1955 under the guidance of an actuary. These early noted funds and others were progressive as they

allowed investors to hold units in a basket of shares which prior to this was impossible.

By the early 1960's life offices were offering managed funds for superannuation investing. These funds were mostly backed by interest-bearing investments and tended to have much lower expected return than equity type solutions. Therefore, the insurance industry had to innovate or lose business to schemes that could offer a higher expected return.

Then in 1965 came the EFG fund. They key players were Huntley Walker (Assistant General Manager), Ken Dodson (Senior Investment Officer) and Ron McDonald (Superannuation Manager). These actuaries developed the EFG fund to solve the current urgent issues of the time described above. The initial use was exclusively for superannuation but that would change over time.

EFG was a huge step forward for life offices and for broader Australia. EFG had its own life office statutory fund and it was subdivided into the different asset classes. "E" for Equity units made up of shares and property, "F" for fixed interest and "G" for the then mandatory Government sector investments. Very early on they realised they needed to split out shares and property so the three asset classes became four.

Clients could now choose their asset allocation and invest in a diversified asset holding with monthly unit pricing. This was unheard of anywhere else in Australia at the time. Not only was a new approach to life office investing being born, clients were making asset allocation decisions.

Given that asset allocation is attributed to contributing arguably up to 90% of total performance (depending on the study), this was a huge leap forward in Australia's superannuation investment maturity.

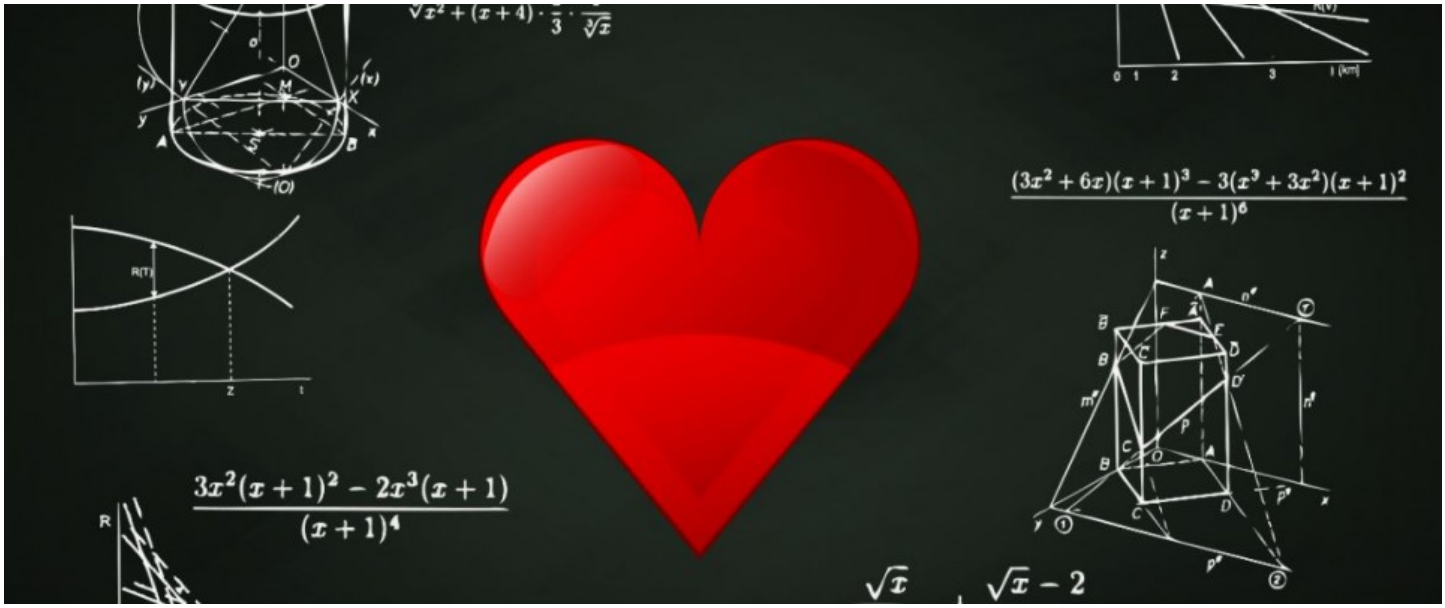
It took some time for clients to get comfortable with the choice of Equity units. This is quite remarkable when you think of all the choices we have today. Today's concept of a default eases this choice burden but certainly does not remove it.

Not only did EFG change the nature of investing with insurance companies but it changed the way we think about investing. In the 1960's there was not the investment industry of today and all our asset models to enable efficient and informed asset allocation decisions. For the first time, life office customers had to think about asset allocation and risk appetite. Today risk appetite is an industry in itself. We have witnessed the rise of the insurance CRO in terms of the mandate of the role and the importance within the Executive structure of firms.

Today diversified managed funds are nothing new. Daily unit pricing is standard and division of obligations into separate statutory funds is how our industry operates. Investment choices are greater than ever with specialist Hedge funds, Private Equity, Low Correlation funds, Catastrophe Bonds and Managed Futures (to name a few) all being available. When considering, for example, core long-only equity funds, the number of providers is mind boggling.

In addition, after over fifty years of managed funds dominating the wealth management landscape, technological innovation is driving a move towards direct ownership and exchange traded vehicles. We are seeing strong growth in investor directed portfolio services that allow investors to tailor investment strategies to meet their individual needs, including tax management. Often these self-directed managed funds will utilise the expertise of a fund manager, but the stock holdings are held directly in the name of the investor. We have also seen the rise of Exchange Traded Funds (ETF's), with an increasing level of specialist structures. It is possibly too early to say, however, given the current trends it appears that the popularity of managed funds is on the decline. We can certainly deduce that competition in this space will become fiercer over time.

The Australian Managed Fund journey continues.



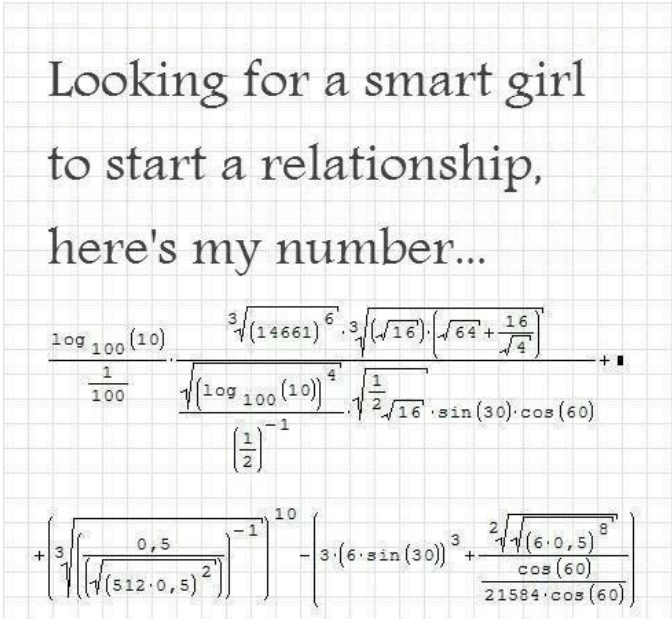
Looking for love?

By Kirsten Flynn

Sick of being single? Want 2016 to be the year you find love? Then head to your nearest pub, club, games convention or actuarial conference and try out these 10 pickup lines.

Disclaimer:

- These pickup lines were compiled by a single actuary for use on other single actuaries. Actuarial judgment should be applied before using for other purposes.
- Past performance is not an indicator of future success and it is not possible to predict the outcome of applying these pickup lines with certainty. The author takes no responsibility for the outcome of applying these pickup lines. The author is in no event liable for damages of any kind incurred or suffered as a result of the use or non-use of these pickup lines.

1. I model for a living.
2. I'd like to lie tangent to your curve.
3. My love for you is endless, like a perpetuity.
4. I'd leave all my models behind to be with you.
5. My interest in you is compounding continuously.
6. Want to live longer? Marry an Actuary - it'll seem longer.
7. I promise I will always be with you, until death or disability do us apart.
8. You're so beautiful, I will decrement right now if you don't go out with me.
9. If I put 3 red balls, 5 black balls, 2 white balls and 1 green ball in an urn, what's the probability of you coming home with me tonight?
10. 

Welcome to new Members

By Actuaries Institute

Welcome to the Institute's newest members!

October, November and December 2015

Australia

Chaitanya Sunil ANNAMNEEDI (VIC)

Gareth Charles Anthony BIGGS (ACT)

Ellen Lucy Janet BRUCE (NSW)

Daniel Anh Minh BUI (NSW)

Vivien CHAU (NSW)

Gege CHENG (VIC)

Rong DING (NSW)

Shih Ching FU (WA)

Sin Ling FUNG (VIC)

Boban GORGOSKI (NSW)

Ruchen HAN (NSW)

Wenlin HU (ACT)

Hunter HUANG (NSW)

Yuting HUANG (NSW)

Viet HUYNH (VIC)

Shufan JIANG (NSW)

Christopher Ta Zen KAO (NSW)

Bernard Nico KLEYNHANS (QLD)

Wai-Yan Yannie KOT (NSW)

Matthew LARKIN (NSW)

David LEBER (VIC)

Wenxin LI (NSW)

William LIM (ACT)

Calise LIU (NSW)

Shen LIU (NSW)

Siding LUO (VIC)

Jason Seng Hok LY (NSW)

Stuart Gordon MAINLAND (NSW)

Timothy Hayden MARSH (NSW)

Madeline Jane MCGRADE (NSW)

Ying May Evelynn NG (VIC)

Thu Dieu NGUYEN (WA)

Lisa Thi Thanh Nhan PHAN (VIC)

Harry-Antony POULOS (NSW)

Snigdha PRASAD (NSW)

Yuhan SHI (ACT)

Chongyangzi TENG (NSW)

Elaine TING QIAN LING (WA)

Sarah Wanfun TIONG (NSW)

Monet VAN TONDER (WA)

Yunxiao WANG (VIC)

Hongzi WU (NSW)

Yilin XIA (QLD)

Chao YANG (NSW)

Alexander Yongsheng ZHAO (NSW)

Bei ZHU (NSW)

Overseas

Pemika CHIRAPAISARNKUL (Thailand)

Worapat CHIVTHANASOONTON (Thailand)

Pasu CHOKESUWATTANASAKUL (Thailand)

Ratchata CHOTPRASITCHAI (Thailand)

Saran DIAWWATTANAWIWAT (Thailand)

Qi Luffy GONG (China)

Kongpot HANNIRUNKOOR (Thailand)

Pranav Jayesh KHANDHAR (India)

Prakarn KIDNGUN (Thailand)

Han LI (China)

Kar Choon LIEW (Malaysia)

Hui Liang LIM (Malaysia)

Sawanya NILYOK (Thailand)

Kittamook PHIROMSWAT (Thailand)

Waraach RATANAPIPOP (Thailand)

Zhenghao SHEN (China)

Geoffrey Chung Yew TIN (Malaysia)

Michael TONG (New Zealand)

Ruixing WENG (China)

Parawee WITHAYASUPANAN (Thailand)

Joanne YAP (Malaysia)

Sarah YATES (New Zealand)

Poramet YOSAMORNSUNTORN (Thailand)

Yanchuan ZHANG (New Zealand)

February 2016

Australia

Michael ALO (VIC)

Eli BARR (VIC)

Kusuv Bikram BHANDARI (NSW)

Hiu Kong CHAN (NSW)

Li CHEN (VIC)

Ashley Young CHEW (NSW)

Anthony Paul CLISSOLD (NSW)

Yufei DONG (ACT)

Richard Paul DUNN (NSW)

Jenny FAN (VIC)

Jevon FULBROOK (VIC)

Beauden Leonard GELLARD (WA)

Luke HEINRICH (NSW)

Elias ISTANBOULI (NSW)

Vennutharan JEYATHASAN (NSW)

Jeremy JOE (NSW)

Varun K CHANDY (NSW)

Matthias KOH (VIC)

Bo Kyung KU (NSW)

Kibeom KWEON (NSW)

Isaac Harris LANE (NSW)

Trevor Chun Kit LEE (NSW)

Minhao LEONG (NSW)

Ruizhu LI (NSW)

Yi LI (NSW)

Maria Xueqing LIU (VIC)

Yuxin LIU (NSW)

Zhao LIU (QLD)

Su Hong LOH (NSW)

Celine NG (NSW)

Minh Quan NGUYEN (NSW)

Elizabeth Hui Ying ONG (WA)

Casey ONISHI (WA)

Kai Feng PAN (NSW)

Kruti PATEL (QLD)

Fahad Rehman SHAH (NSW)

Yuntai SHEN (NSW)

Chaowu SONG (VIC)

Victoria Alice STECHER (VIC)

Jason Ming-Qing SUN (VIC)

Jia Yong TEO (NSW)

Christina WAKE (NSW)

Leanne WONGSODIRDJO (VIC)

Yefei WU (NSW)

Joanna XIONG (NSW)

Sheena Xing Yee YAP (WA)

Tianmin ZHANG (NSW)

Xin ZHANG (NSW)

Zehui ZHAO (VIC)

Angela ZHOU (NSW)

Yongkang ZHOU (ACT)

Zhiting ZHOU (NSW)

Zichun ZHOU (ACT)

Overseas

Matthew Simon BOTUR (New Zealand)

Jimin BYUN (New Zealand)

Shukyi CHAN (Hong Kong)

Yu-Chu CHEN (New Zealand)

Vera Puti Puti CLARKSON (New Zealand)

Yu GAI (Singapore)

Lerh Shong LOW (Malaysia)

Mengqi SHEN (New Zealand)

Shenyu SU (China)

Man SUN (China)

Jason Yiliang TAN (Singapore)

Yizhou WU (China)

Cheng ZHU (China)

Ringing the bells of climate change

By Sharanjit Paddam

Sharanjit Paddam looks at the different ways climate change can affect insurers and their financial stability in light of a notable Bank of England report.

On 29 September 2015, Mark Carney, Governor of the Bank of England and Chairman of the Financial Stability Board stood in front of the historic Lutine Bell at Lloyd's of London – the spiritual home of the insurance industry – and announced to the gathered captains of the industry that the risks of climate change were real.

He noted three broad channels through which climate change can affect insurers and their financial stability:

- **Physical risks** – the impacts today on insurance liabilities and the value of financial assets that arise from climate and weather related events, such as floods and storms that damage property or disrupt trade;
- **Liability risks** – the impacts that could arise tomorrow if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible. Such claims could come decades in the future, but have the potential to hit carbon extractors and emitters – and, if they have liability cover, their insurers – the hardest; and
- **Transition risks** – the financial risks which could result from the process of adjustment towards a lower-carbon economy. Changes in policy, technology and physical risks could prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent.

Carney's views came from an extended period of consultation with the insurance industry in the UK, which were summarised in a Bank of England Prudential Regulation Authority report "The impact of climate change on the UK insurance sector".

Physical risks

Notable conclusions of the report include:

- There is growing evidence that the insurance losses arising from global natural catastrophes are increasing;
- While increasing exposure is the primary factor driving these increases, there are indications that climate change is also having an impact. For example, Lloyd's of London estimates that the 20cm of sea-level rise since the 1950s increased Superstorm Sandy's surge losses by 30% in New York alone;
- Climate change is likely to drive reassessments of prudential capital requirements for insurers;
- The increasing globalisation of the supply chain increases the systemic risk. For example, the 2011 Thai floods resulted in US$12b of insurance payments including claims arising from the interruption of the supply chain for global manufacturing firms.

Australia is not immune to these conclusions. Indeed Australia ranks as the most exposed developed nation to natural perils, and so is highly exposed to physical risks. The recent increase in premium rates for property insurance in northern Australia reflects the growing realisation of the industry that the risk can no longer be cross-subsidised across Australia in the presence of a competitive market.

Liability risks

The Bank of England, cognisant of the impact of historical latent liabilities such as asbestos and pollution losses, sees the potential for increased claims in general liability classes of business (such as public liability, directors and officers and professional indemnity) due to a failure to mitigate, a failure to adapt or a failure to disclose.

Whilst litigation has generally been unsuccessful to date, the Bank notes that there is a risk that just one successful action will open the flood gates for other actions. Of note is the recent investigation by the New York State Attorney General into whether or not Exxon Mobil mislead the public about the risks of climate change, or mislead investors about how such risks might hurt the oil business.

Transition risks

Not only does Australia have the largest exposure to natural perils of any developed nation, its economy is more reliant on coal than any other developed nation.

At the recent COP21 meeting in Paris, nations around the world reaffirmed their commitment to reduce greenhouse gas emissions. Such actions in the longer term are likely to lead to a reduction in demand for fossil fuels, and there are risks of a sudden revaluation of such assets. Where insurers are exposed, directly or indirectly, to the fossil fuel industry, this leaves an exposure to the risk of a sudden reduction in asset values.

More broadly, the transition to a low-carbon economy will see a fundamental shift in areas of production, leading industries, infrastructure demands and population centres in Australia. These will have a long-term impact on the demand for different types of insurance, and associated risk management, underwriting, and claims expertise.

This transition also brings opportunities for insurers. Swiss Re released a report in 2015 "Profiling the risks in solar and wind", which identified new risk management approaches in the renewable energy sector, including the opportunity to use weather derivatives to manage the variability in revenue from renewable energy sources due to variability in output. They noted that "*By the end of this decade, a 50% increase in renewable energy investment is likely to produce more than a doubling of insurance spending*."

How can Australian insurers respond?

While insurers have the option to walk away when physical risks increase, this is by no means a long term solution. Walking away can mean:

- **Loss of revenue -** insurers need to grow their business, and the more risks that become uninsurable, or premiums unaffordable, the smaller the potential market for insurers to operate in. From this perspective, the long term reduction in premium income is the greatest threat to the industry.
- **Adverse publicity** - unaffordable premiums increase the risk of adverse publicity and the risk of government interventions in the market, which are generally not in the interests of insurers.
- **Capital requirements** - the potential increase in capital requirements to support larger variability in losses, will act to reduce returns on equity, or increase the affordability problem.

Insurers need to

- **engage governments and policy makers** into adapting for climate change – e.g. through better protections from flood, stronger building standards to reduce cyclone losses, and better planning controls to reduce development in high-risk areas.
- **identify and measure their exposure to transition risks** – through existing investments in carbon-intensive assets. Where material exposures are identified, insurers will need to consider the best approach to reduce their risk.
- **examine their exposure to liability risks** - considering both potential losses from historical policies, and changes in underwriting standards for future business.

A version of this article was first published in the JP Morgan Taylor Fry General Insurance Barometer 2015.

My Presidential Message

By Lindsay Smartt

It's both an honour and pleasure for me to be the President of the Actuaries Institute for 2016.

You have my commitment to lead the profession and serve the interests of the Institute and you, our Members, with diligence and insight. This year I will work on:

- the standing of the profession – *its Relevance, Sustainability and Place in* business and society;
- the quality and relevance of Institute services to Members;
- leading an effective Council; and
- engaging with you, our Members, while representing the profession.

I invite you to watch my Presidential Message, where I expand on the points above and also welcome you to provide feedback via actuaries@actuaries.asn.au

View the video here:
https://youtu.be/rDTI-K2ocrM

I am looking forward to the year ahead, as we work together to meet the challenges facing our profession. It's up to each one of us to grasp the opportunities we see, and to be involved in our actuarial community.

Numbers will force social change

By Alan Greenfield

Actuarial skills have an important role to play in building a game-changing long-term evidence base in the social sector, writes Alan Greenfield.

**The following article is a digest of Alan's acceptance speech for the 2015 Actuary of the Year Award delivered at the Institute's Injury Schemes Seminar in Adelaide in November 2015.*

I firmly believe the increasing polarisation of income and wealth is one of the greatest threats to human happiness and the health of our civilisation. I think it will be one of the issues that most defines the 21st century[1] . That's why I'm honoured that the citation for my 2015 Actuary of the Year Award primarily focused on the work that I have led at Taylor Fry that brings actuarial skills to the world of Government social policy.

"Two of the greatest threats to human happiness and the health of our civilisation come from 1. climate change and 2. increasing wealth and income inequality. And as actuaries we can play a part in shedding light on both of these issues, and by doing so, influence their direction."

I'm particularly proud of Taylor Fry's innovative partnership with New Zealand's Ministry of Social Development on the investment approach to welfare – where our role has been to help design the initial framework, and to value the future cost of New Zealand's working-age benefit system.

Design and innovation in the social sector requires hard financial and outcome evidence. The actuarial skill set introduces a long-term view; providing better visibility of lifetime pathways, costs and trends that can help governments design, innovate and manage their operations to the benefit of society's most vulnerable.

One of the principal features of income inequality in Australia and other Western countries is the high number of people reliant on low levels of Government income support. In round numbers in Australia and NZ 10-15% of the population is on welfare – that's 3-4 *million* people. These enormous numbers counter stereotypical notions of 'dole bludgers' who just don't want to work.

Our valuations show that 75% of the estimated future cost of the NZ welfare system (the lifetime cost of current clients) derives from those who entered the system prior to age 20. A third comes from those who started before they reached age 18. The most recent valuation shows that nearly two-thirds of beneficiaries had a history with Child, Youth and Family – an indicator of abuse, neglect, and/or youth offending.

So we're talking about very young people who have likely grown up in families without the life supports which many of us take for granted: without love, security, three hearty meals a day, a roof, home stability, health, education, warmth, motivated working parents. They have instead likely lived in families with one or more of: generational welfare dependence, substance abuse, crime, poverty, limited education, and mental and physical abuse. So it's no wonder they might lack the confidence, the opportunities, and the skills to get employment and find themselves perpetuating the cycle.

They can become stuck in a system that is often too focused on efficiency and quick wins to invest the large amounts of money it would take to get them back on track. In some cases, it may take tens of thousands of dollars to turn things around for one individual. But with the right financial and evidence-based framework, it becomes clear that for some high-risk individuals, it costs far more money in the long-run *not* to make these investments.

As an example, I'd like to tell you a bit about the Triple Care Farm which is largely funded by the Sir David Martin Foundation. I think their work really embodies what we are all trying to achieve with the investment approach. That is, investing up front to improve long-term outcomes.

I was so impressed by the Triple Care Farm that I've helped them fundraise by abseiling off some Sydney skyscrapers – once in a tiger onesie, and most recently face forward in a pink tutu.

"But to build the case for these sorts of game-changing interventions, we need hard financial and outcome evidence that brings in a long-term perspective."

The Triple Care Farm takes in disadvantaged youths with drug and alcohol abuse problems – kids from some of the most difficult circumstances that you can imagine. Students of their program spend 12 weeks in residence on the outskirts of

Sydney. It costs about $30,000 for each individual and the Farm can only take less than 100 youths each year.

If you ask the man in the street should we be spending $3 million per year on less than 100 kids to get their lives on track, most would probably think the idea crazy. But if we can prove that the $2,500 per week per person is a sound investment – saving years on welfare or in jail and the associated costs (of hundreds of thousands of dollars) and ultimately increasing the size of the economy and the tax take through their participation in the workforce – then the conclusion is obvious. Just listen to Amy who's been through the program.

In 2013 the Triple Care Farm took 98 young people through their program, each of whom had a history of chronic substance abuse; 71% had attempted suicide, 52% had been recently homeless. Six months after the program only 23% had further substance abuse issues, none had attempted suicide, and only 7% were homeless.

"Through evidence-based frameworks, the technological possibilities of analytics and data capture makes the 21st century look very exciting indeed."

But to build the case for these sorts of game-changing interventions, we need hard financial and outcome evidence that brings in a long-term perspective. We need monitoring and evaluation frameworks – to show what's actually making a difference. This will give Commonwealth and State governments, NGOs, the private sector and the community the motivation to invest in our most disadvantaged people – whether through government programs and services, corporate and NGO programs, community generosity or social impact bonds. Through an evidence-based framework, the technological possibilities of analytics and data capture makes the 21st century look very exciting indeed.

I believe as actuaries, we are well placed to contribute our skills to build evidence-based frameworks to aid design and innovation in the social sector – innovation that ultimately improves outcomes for the most disadvantaged members of our society.

[1] *In his acceptance speech Alan also considered climate change as 'the other great threat in the 21st century'.*

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