ACTUARIAL SOCIETY OF SOUTH AFRICA

RESEARCH NEWSLETTER

EDITION 1 | 2022

Why should Actuaries do research?

In my inaugural speech[1] as the president of this association I highlighted the need for professions to adapt to a fast-changing world. There is a danger that unless professions seriously consider how they add value they may find themselves replaced by robots or other professions that are able to provide the same service for less. To respond to this challenge, the Actuarial Society of South Africa has set out to become a global leader in context-based solutions. What does this really mean and what will it take to achieve this objective? I quote from the speech:

"By this we mean that we acknowledge that actuaries have done good work in traditional spaces of actuarial involvement - enabling decision-makers to make optimal decisions based on insights of likely future outcomes. We firmly believe that this skillset can be applied more broadly but for this to be done professionally, there is a need for actuaries to understand the new contexts that they enter. This requires a great deal of humility and a recognition that we will need to work with other experts to help us to understand every new context that we encounter" (ASSA Presidential address, 2019)

To achieve this objective, we have to spend lots of time with other experts figuring out new contexts and therefore find new use cases for our skillset. The actuarial skillset has evolved over the years as actuaries have ventured into new fields of application. If we stop developing our skills, we will slowly become irrelevant. Therefore, it is important for actuaries to do research.

In my 2020 speech[2] I developed this theme further and considered several issues that may benefit from actuarial application. The following is an extract from that speech:

"Equity and fairness are fundamental actuarial concepts – insurance premiums should be reflective of the risk posed but only as far as society would allow (the mathematically correct answer at times clashes with public interest views but actuaries have learnt to consider public interest views in their work). It is in the public interest to expand the scope of these fundamental actuarial concepts to address the weaknesses of financial security systems for the poor."

To achieve this objective, we have to spend lots of time with other experts figuring out new contexts and therefore find new use cases for our skillset.

1 https://www.actuarialsociety.org.za/assa-news/presidential-address/
2 https://www.actuarialsociety.org.za/assa-news/presidential-address/

ASSA recently established a working group focusing on addressing the poverty premium. This is a concept that the Institute and Faculty of Actuaries in the UK have been researching. This work has the potential to address what I referred to in my speech as the 'weaknesses of financial security systems for the poor'. In addition to this it was mentioned in the speech that:

"To accept and apply predictive modelling results without asking questions is irresponsible, the context and consequences need to be well understood. Models have serious shortcomings that should always be well communicated to avoid the tyranny of models and algorithms. Secondly, social values and other public interest concerns such as the right to privacy and security should always be considered."

With the increasing adoption of artificial intelligence tools, I see an opportunity for actuaries to be involved in the process of regulating and promoting the use of machine learning and other forms of predictive modelling in financial services and social services such as health, education, and crime prevention.

The conflicts that have arisen in societies around the world are unlikely to be solved fully and they are likely to worsen as many of them can be best described as wicked problems. In my speech I spoke about these types of problems:

'Wicked problems [3] 1) do not have a definitive formulation, 2) they do not have a stopping rule, 3) their solutions are not true or false only good or bad, 4) there is no way to test the solution to a wicked problem, 5) they cannot be studied through trial and error, 6) there is no end to the number of solutions or approaches to a wicked problem, 7) they are essentially unique, a symptom of other problems, 8) framing of the problem determines possible solutions, 9) those who present solutions to these problems have no right to be wrong. Inequality is one such problem in most of the developing world and actuaries should position themselves as designers, adaptors, problem solvers, risk estimators, innovators and technicians in dealing with 'wicked problems' which actually cannot be solved but can be managed. This is not something that can be achieved alone and therefore our focus should be on creating a culture and institutional frameworks for collaboration with policymakers and other experts.'

I made a case for actuaries to step onto the stage and help the world to deal with wicked problems. This however may require us to adjust our disposition somewhat – we may never fully comprehend a wicked problem, may never be able to measure it fully and may never be able to model it fully but our involvement can still add value. Our professionalism promise dictates that we should stay away from matters wherein we are not experts. The fact though is that no other profession can claim to be experts in dealing with wicked problems, by their very nature, wicked problems cannot be mastered and thus no one person can claim to be an expert in dealing with wicked problems in totality. Wicked problems tend to challenge everyone to step away from their comfort zones and move to the edges of their domains and possibly into new domains. However, applying our expertise in new domains may help to advance knowledge in those domains and this can ultimately lead to better management of the wicked problems in our societies.

I therefore believe that the actuarial profession should constantly buffet itself with new perspectives by constantly researching collaboratively with other experts so that it can evolve and become even more relevant in society.

3 Introduced in 1973 by Horst Rittel and Melvin Webber in order to draw attention to the challenges and complexities of addressing planning and social problems. https://www.stonybrook.edu/commcms/wickedproblem/about/What-is-a-wicked-problem

In conversation
with Megan Carswell

I think its much easier to be motivated by topics you are passionate about ...

TO WATCH MEGAN'S INTERVIEW, PLEASE CLICK HERE

1. Tell us more about yourself?

I grew up in Durban and studied at UCT before moving up to Joburg. I qualified as a Life Actuary but have spent most of my corporate career so far in Pensions. I'm currently an adjunct professor at the School of Statistics and Actuarial Science at the University of the Witwatersrand, where I teach and do research. I'm an examiner and volunteer for ASSA as well. I've always had very varied interests. Back when doing six subjects for matric was the norm, I did 8 because I just couldn't decide.

2. Why were you drawn to research?

When I did my honours research, there was still considerable debate about what should be in the Prescribed Minimum Benefits package. My supervisor was Heather McLeod who was really involved in health policy and my research was practically useful in the discussions that were going on at the time. I think my work was ultimately used in a monograph. This was a really formative experience for me as I realized how powerful and practical research is. I still keep in touch with Heather.

3. What motivates you about research or while doing research?

I think its much easier to be motivated by topics you are passionate about so choosing the right topic is important. A lot of my research is done with honours students and I'm really motivated to share my love of research with them.

4. Why don't we see more actuarial research?

I think research starts with curiosity. What if we used this technique in that new way? How much is enough? Are those simplifications really good enough? I think there are lots of curious people in our profession.

The challenge that most people have is a lack of time. Research does take time and it can be really hard to find the time to sit and think deeply about these topics.

I think the next hurdle that people have is a lack of resources, either a lack of literature or a lack of data. There are ways to resolve both relatively easily.

But honestly, I think the biggest challenge people face is imposter syndrome. People seem to think that to do research you need to do something really cutting edge and original whereas all that's really required is that you add to the existing knowledge on the topic. Plenty of my students have had their honours research published. The standard required for publication should be attainable by most actuaries but people need convincing they are good enough.

5. What do you think is the professionals role in research?

I think most actuaries are fairly comfortable asking uncomfortable questions like why things are done a certain way. Identifying topics that require research, even if you can't research them yourself is important. However, being an actuary also means a commitment to lifelong learning and research is a really flexible way of doing that.

6. What do you think is the professions role in public interest focus areas and why you should we get involved pro-actively in these topics?

I do believe that we do have an obligation as a profession to serve the greater good and some people have a passion for public interest work.

We've all heard the quote that "The actuary who is only an actuary is not an actuary". In one sense, this is a great attitude. It encourages curiosity and creativity. It allows people to find their niche interests which includes public interest topics.

However, we also need to be aware of our limitations. We are not policymakers, or education specialists or social workers or public health specialists. We can and should still contribute in a meaningful way to the public interest but we are unlikely to get very far without meaningful collaborations with other experts. From a personal perspective, I have found most public interest work to be an exercise in understanding that there is more than one valid way to view the world and trying to see things through a non-actuarial world view.

7. What advice would you give to people who are keen to get involved in news topics but haven't carried out research previously ?

- Don't be intimidated. All you are doing is asking questions and finding the answers to these questions. It's easier than the actuarial exams as in research you can tweak the question to match up with what you have actually done.
- A little structure goes a long way. Start with headings and fill in the blanks.
- If someone reads your work, could they ask "says who?" If they can it means you are not referencing enough or making it clear that these are your results or making it clear that this is your opinion.
- Team up. Don't be shy to approach someone to partner with you on the research.
- I've never taken this literally but "Write drunk, edit sober". It's much easier to edit something than it is to write it. So just write. It doesn't need to be perfect the first time and you will have plenty of time to polish it.
- If you decide to publish, don't take the criticism, or rejection, personally. Most academics I know have had papers rejected and this is our day job!

8. What do you do for fun or in your spare time outside your career?

I have two young children so spare time is a rare commodity! I enjoy running and walking. I love reading, podcasts and audiobooks and you probably wouldn't know it if you swung by on a weeknight, but I love cooking and baking.

9. If you could be a cartoon character who would you be and why

Helen Parr. That's the mom from the Incredibles or Elastigirl. I really am quite envious of the way she can do so many things at the same time. Doing colouring in with one child while feeding the baby? No problem.

Contingent Liabilities

The research on State Contingent Liabilities focused on how the South African Government recognises and reports on its contingent liabilities in its Consolidated Financial Statements.

Over the past 15 years we have faced a range of economic and social crises that have highlighted the complex and fragile system in which we live. The financial crisis of 2008 and the Covid pandemic of 2020 have both illustrated the interconnected and centralised nature of global finance and trade. The South African Government plays a crucial role in fostering a framework that supports private business – a framework upon which every one of us relies. The South African government is tasked with identifying, monitoring, and managing the systemic risks that we face as a country. Therefore, the performance of State Owned Entities (SOE) deemed essential for economic development in South Africa should be at the forefront of our focus. It is in this context that we explore the balance sheet of South Africa and how contingent liabilities are recognised.

A contingent liability is a specific accounting term used to refer to liabilities that are dependent on the outcome of specific events (eg default on debt repayment). These liabilities are often not recognised on the balance sheet of an entity. These off-balance-sheet items expose the fiscus to large risks but are not always considered from the perspective of the reader of the financial statements. In many cases, these liabilities are only shown in the notes to the financial statements.

When looking at a balance sheet, an actuary would expect to see liabilities listed that relate to coverage already provided as well as coverage to be provided in the future. The concept of a contingent liability might seem odd to many actuaries as insurance is essentially founded on contingent liabilities. The claims that insurers expect to pay, whether reported or not, are surely "contingent"? These liabilities are estimated based on expected claims and recognised on the balance sheet of insurers. It is for this reason that actuaries can add significant value in the discussions around contingent liabilities in the public sector.

The research on State Contingent Liabilities focused on how the South African Government recognises and reports on its contingent liabilities in its Consolidated Financial Statements. The outstanding payments (such as debt repayments or claims against the entity), whether explicit or implicit from a government perspective, are typically seen as contingent liabilities as they will only need to be repaid if the SOE defaults on its payments. For example, the Road Accident Fund liability of R424bn is not formally recognised on the balance sheet of the SA Government but rather as part of the other contingent liabilities in the notes.

From an accounting perspective, the South African Government reports separately for Government Departments and Public Entities as these two spheres of government have different accounting policies. Contingent liabilities represent between 13% and 20% of the recognised liabilities for these two spheres of government.

The working paper starts by discussion different types of liabilities, introducing a framework which can be used to conceptualise explicit, implicit, direct, and contingent liabilities. The next section dives into accounting for contingent liabilities in the South African context. This is followed by an overview of the South African Government's contingent liabilities at a consolidated level. The research then delves into the liabilities of

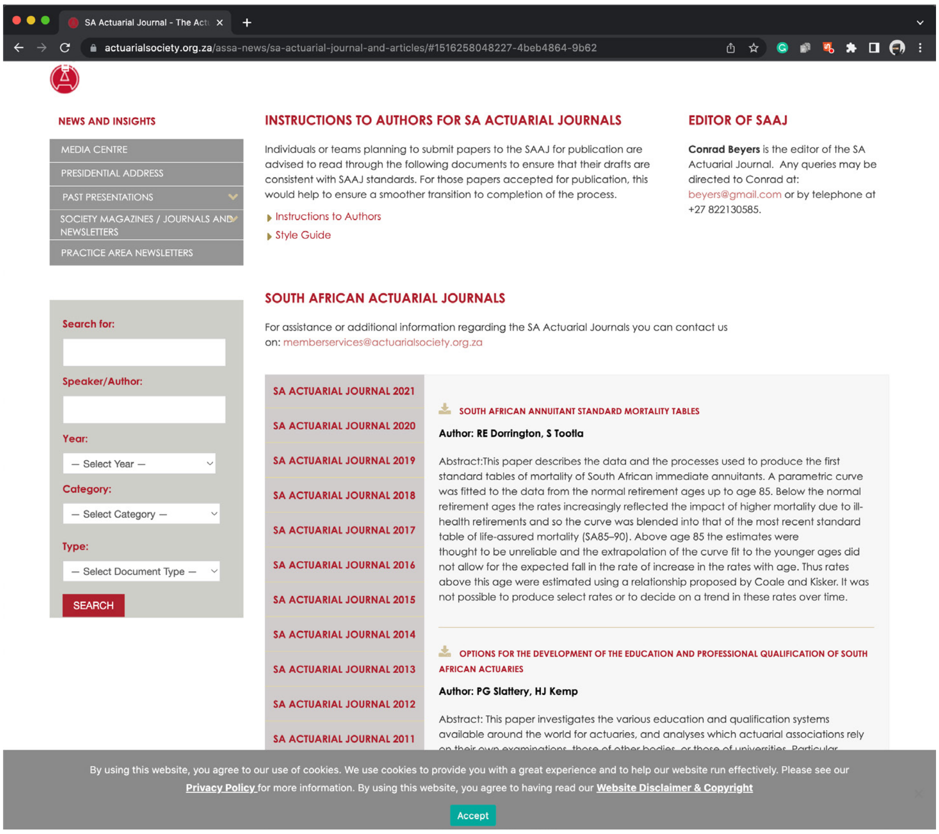
five South African SOEs. For each SOE, a brief summary is provided of the liabilities, methodology and risk management approaches followed. Actuaries interested in ERM would find Chapter 6 of the research interesting as it touches on risk management frameworks, processes, and risk management tools.

Residents of South Africa are dependent on the South African Government to provide the necessary services and enabling infrastructure. The private sector is critically reliant on the State to maintain the enabling framework for business and economic development. Given that less than 2% of actuaries currently work in the public sector, the question arises as to what extent the broader actuarial community understands how the public sector reports on its risks. The research into State Contingent Liabilities is an introduction to South African Government accounting for the various SOEs under its purview. In order for us as actuaries to be proactive and work towards a sustainable South Africa, we need to start by understanding the risks and challenges in the public sector. This working paper is intended to provide the groundwork for actuaries to start understanding contingent liabilities in the public sector.

The South African Actuarial Journal

The journal's historical focus is on research pertinent to actuaries and those in related disciplines

The South African Actuarial Journal (SAAJ) is an academic journal that was established in 2000 under the editorship of Prof Rob Thomson. The journal's historical focus is on research pertinent to actuaries and those in related disciplines working in South Africa, although the journal does not limit its authors or readership to the country. There is a general trend for academic journals to take steps to be relevant to an international audience and the SAAJ is no exception. In keeping with the growing scope of actuarial work, the journal welcomes submissions from a range of areas that may have an impact on actuaries, even if not directly actuarial in nature or content.



The SAAJ is naturally focused on actuarial work but articles in a wide range of related fields can be considered for publication.

The SAAJ as an academic journal

A key aspect for an academic journal is to be a reliable source where research, or research related work is documented, scrutinized and discussed. Research articles published in the SAAJ should contribute to the relevant area of research and contain sufficient originality. In addition, the quality of presentation of the article should be of a high standard.

In line with international practice, independent scrutineers consider article submissions and provide feedback on the submitted work. Scrutineers also make recommendations about whether the article should be published (with or without alterations) or not. Scrutineers, who are typically academics or actuaries with knowledge in the relevant research area, act on a voluntary basis and are identified by the journal's editor, in collaboration with journal's Advisory Board, the various ASSA's committees and the Research Committee. In order to ensure independent scrutiny, the SAAJ follows a "double-blind" approach where authors do not know who the scrutineers are and scrutineers do not know the identity of the authors.

The SAAJ is accredited by the South African Department of Higher Education and Training (DHET). This implies that academics from South African universities, as well as the respective universities, benefit directly from publication in the form of career or postgraduate study advancement as well as significant subsidy funding from government.

The DHET accreditation unfortunately does not benefit researchers from outside South Africa in the same way. There are similar international accreditation platforms internationally, such as SCOPUS or the Web of Science, which provide such benefits to international researchers (including South African researchers). Publications that are accredited on these platforms are more likely to be noticed and cited by other researchers, which can contribute towards measures of the journal's importance relative to others (e.g. Impact Factors). Due to the prestige attached to the international platforms, researchers typically first attempt to publish their work in those accredited journals before submitting to the SAAJ. It hence becomes an important strategic imperative for the SAAJ to work towards accreditation on such international platforms.

As mentioned, the SAAJ is naturally focused on actuarial work but articles in a wide range of related fields can be considered for publication. Research published in the journal are from areas including demography, economics, financial markets, insurance and insurance law, education, banking as well as machine learning applications in finance.

Being a scrutineer for the SAAJ

After appointment as a scrutineer, a fairly standard process follows. The full article is sent to the scrutineer, together with a questionnaire that can be useful in the feedback process. The scrutineer considers the work and basically makes a recommendation to the author about whether the manuscript is worthy of publication in the SAAJ.

... an important strategic imperative for the SAAJ to work towards accreditation on such international platforms.

There are some more details to consider and some guidelines for scrutineers are summarized below.

Scrutineers are not required to edit the text of the paper (i.e. its spelling, grammar and style), but to consider the paper's contents and suitability for publication. Scrutineers are broadly requested to:

- scrutinise the methods and results used;
- identify gaps in the research;
- suggest how the paper can be improved in general;

- assess the originality of the work; and
- contest conclusions not justified by the results or arguments presented.

Authors should not rely on the scrutineers to check the accuracy of technical calculations in the work. Authors remain solely responsible for the accuracy of the contents of their papers. However, scrutineers could provide feedback if they find material errors and might consider that as part of their recommendation to publish the work.

The SAAJ provides scrutineers with a scrutineer's questionnaire. This constitutes the scrutineer's report (although some scrutineers prefer to use their own format for reporting). Scrutineers are generally asked to provide feedback within an agreed period - authors might find such feedback very useful.

Scrutineers are asked to make one of the following recommendations:

- The paper is suitable for publication, subject to certain amendments required or suggested by the scrutineer;
- The paper needs major revision (as included in the feedback) before it can be reconsidered;
- The paper is unsuitable for the Journal, and should be submitted to an alternative publication;
- Publication of the paper should be declined.

In cases where major revisions are recommended by the scrutineer, the authors' response will be sent to the scrutineer to consider whether issues were adequately addressed.

Scrutineers are central to the operations of the journal. To evaluate research in one's field of interest can be a very rewarding experience and a tangible way to contribute towards ASSA's drive to enhance research within the actuarial community. There is however a general scarcity of scrutineers – a general challenge for most journals. Members who would be interested to act as scrutineers are invited to inform ASSA's Research Committee of their availability.

Recent research carried out in the public interest space

TOPIC	RESEARCHER/S	LINK
Non-Communicable Diseases	Percept	https://www.actuarialsociety.org.za/?s=ncd&author=&-year=&cat=&doctype=&post_type=wpdmpro&test_mode=true
Medical Negligence claims	Gregory Whitaker	**PLEASE CLICK HERE**
State Contingent Liabilities	Edward Alant	**PLEASE CLICK HERE**

Unallocated Research topics

A component of ASSA's role in research is to marry researchers to people who have a problem statement or area of interest they would like researched. The table below shows a list of topics ASSA has collated within its membership that still requires a researcher.

Topic
1. In the context of pension fund valuations - investigate if there should be provisions for the possibility of default on government bonds versus continuing with that as the base, risk free asset class?
2. Assessing the suitability of illiquid alternative assets for institutional investors
3. The uses and impact of Artificial Intelligence of pricing of General Insurance Products
4. General Insurers and the impact of Cyber risk as a line of business.
5. IFRS17 for General Insurers
6. Calibration of SAM model (SCR calculation, especially market risk)
7. Model legislative frameworks for handling medical negligence*
8. Amicus propositions to affect common law*
9. Affordable benefit package for universal health cover in South Africa*
10. Unpacking Eskom's Liability : Past, Present and Future *
11. South Africa's role in the world's supply chain – optimising outcomes as the world diversifies commodity and labour to mitigate risks from geopolitics/pandemics*

*ASSA sponsored research

Do let us know if you are keen on pursuing any of these topics and we will put you in touch with the relevant parties. Contact Sandy Govender **sgovender@actuarialsociety.org.za.**

Where to find Job Adverts

ASSA's Job Board: http://www.actuarialsociety.org.za/assa-jobs/