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eNews from GAD

Centenary deep dive: GAD's work in modelling and investment

To bring GAD's centenary celebrations to a close, eNews ends a series of 'deep dives' into the key areas in which our actuaries have contributed to public life over the last 100 years. In this article we discuss GAD's more recent role in providing investment and modelling advice to the UK government; both increasingly important areas which complement GAD's more traditional work.

Attracting super-models

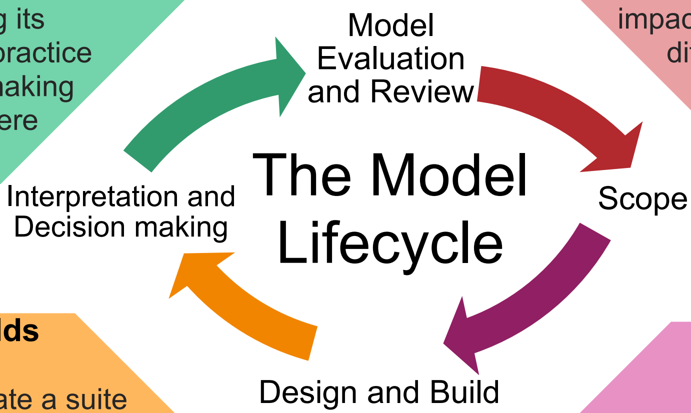
One of the myriad skills that actuaries use to solve problems and think strategically, is the ability to understand mathematical models. This has often placed GAD in a great position to offer a variety of services; supporting others in areas that have become the natural stomping ground of actuaries. While this has been the case for quite some time, the Macpherson review of 2013 detailed best practice in quality assurance. It set out practical advice for departments, to make models robust and trustworthy, resulting in a growth in awareness of the issue. GAD supports a range of clients in each of the various stages of the model lifecycle (below) for many of the numerous business critical models that exist throughout government and the wider business environment.

Model assurance

GAD performed a quality assurance exercise on a model created by Ofgem to assess minimum and maximum payments for an infrastructure incentivisation scheme. The purpose of this review was to ensure the model functioned as intended, assessing its compliance with best practice in model design and making recommendations, where this may be helpful.

Ongoing application

The Pensions Regulator (TPR) asked GAD to create a model to analyse the universe of defined benefit pension schemes in the UK. The aim was to help inform TPR's decision making by assessing the security of schemes and the impact on member benefits under different assumptions. This will help TPR in offering better general support and advice.



Bespoke model builds

GAD was asked to create a suite of tools for the World Bank, helping developing nations more easily build capacity in, and communicate, risk. The modelling tools were developed incrementally with the result allowing for various perils - such as flooding - to be investigated, contingent liabilities to be estimated and cost-effective financing options to be identified and priced more accurately.

When scope evolves

GAD's support on the sale of student loans began as a model review. It evolved into scoping, building and designing a new model to meet the emerging requirements for a loan sale model. The model that was developed in advance of the first sale in December 2018, resulted in a more accurate evaluation of the student loan book.

GAD's work on the student loans sale also used our investments expertise (described on the next page).

Investing in ourselves

Over the last decade, GAD has expanded its offering to provide advice on investment issues to government. This work initially took the form of traditional investment advice to various pension scheme stakeholders, such as scheme sponsors, trustees and even government departments. It has since broadened to include more unique projects that wouldn't normally come under the purview of contemporary actuaries (eg Personal Injury Discount Rate, aspects of the student loans sale). Today, we also provide advice to the likes of The Pensions Regulator, which ties in with our modelling work, (mentioned earlier) and the Pension Protection Fund (PPF).

Our work involves the design of bespoke tools, like asset-liability models, allowing for the assessment of the private pensions market, and understanding the stresses that may occur under various economic scenarios. As a result of this growth in investment advice, GAD's advice now indirectly supports many of the millions of private pension holders, as well as those in the public sphere.

Case study: Personal Injury Discount Rate

The Government Actuary is obliged by statute to advise the Lord Chancellor in their review of the Personal Injury Discount Rate. This rate is used to determine lump sum damage awards to claimants, suffering a personal injury. The rate set has wide ranging implications affecting not just claimants and defendants but also the general public via motor and other insurance premium costs.

At the Lord Chancellor's request, the Government Actuary's advice centred on illustrating the investment risk to claimants of having enough funds to meet their future needs. It was based on:

- evidence about types of claimant, how previous damage awards had been invested, level of expenses and tax and claimant costs
- modelling of future claimants' possible returns when investing awards using assumptions informed by this evidence
- analysis of possible outcomes in terms of claimants being compensated for their loss including sensitivity to alternate assumptions
- providing analysis on the risks emerging from this modelling, to assist the Lord Chancellor in deciding on the rate to be introduced

Following the review of GAD's advice, the Lord Chancellor set the rate for England and Wales in August 2019, to CPI minus 0.25% per year.
A separate process in Scotland concluded that the rate should remain unchanged at RPI minus 0.75% per year.

Looking forward

It's an exciting time to be working at GAD, as the modelling and investment work covers a wide range of interesting areas. Looking ahead to future projects, teams are starting to work on other, new and emerging challenges.

GAD's advice regarding the future funding of nuclear decommissioning provides a good example of applying traditional actuarial principles to new challenges. This includes modelling, from the project outset, how the operator of a nuclear plant would need to set aside and invest funds. This is necessary to ensure liabilities stretching over the next 100 years are met when a power plant comes to the end of its useful life.

When it comes to climate change, we've already started to bring our existing skills to bear. GAD has published papers on disaster risk financing, this included considering financial solutions like catastrophe bonds, in addition to more usual options. Modelling the effects of climate change and issuing advice on how investments can be made to support a greener strategy are both areas into which GAD may expand.