

eNews from GAD

Actuarial analysis from the public sector

Issue 24, July 2016



Welcome to eNews – GAD's regular newsletter. Last month saw a hugely significant event: the UK voted leave in the EU Referendum. Precisely what leaving the EU will mean still needs to be worked out and in the short term there is likely to be increased financial uncertainty. However, GAD has a clear role to continue to work with and support our clients throughout the public sector as decisions emerge and priorities evolve.

One area we can particularly help is with managing financial risk over the long term. Following the NAO's recent paper highlighting such risks around the government's pension commitments, in this edition I set out some thoughts on the issues around appraising these particular risks for the public sector.

GAD activities include a wide range of areas, and in this edition Anna Edwards outlines recent work with the World Bank as part of our ongoing engagement with Department for International Development in evaluating financing initiatives and programmes.

The NAO has a critical role in scrutinising government and the public sector. In addition to my thoughts on their recent pension report, Ian Rogers looks at the recommendations in all their reports examining the 2014-15 Whole of Government Accounts.

I hope that you enjoy this issue. As always, previous issues of eNews are available on our website www.gov.uk/gad.

MARTIN CLARKE, GOVERNMENT ACTUARY

NEWS FROM GAD

GAD client survey 2016

GAD provides actuarial analysis for the public sector from the public sector, and we aim to be highly valued. We therefore take our clients' views seriously. Our [client satisfaction survey](#) is very important for us to gauge our clients' views. The results, along with many face to face meetings, will help to shape our client service strategy for 2016-17.

GAD report and accounts

The GAD 2015/16 Annual Report and Accounts will be published on our website on 7 July. Details of GAD's strategy to 2020 are included as well as the financial statements.

DEVELOPMENTS

Queen's Speech

The [Queen's Speech 2016](#) outlined the Government's legislative plans for the next Parliamentary year. Among the [Bills](#) announced, a Pensions Bill is intended to permit further reform to private pensions and includes measures to:

- provide better protections for members in Master Trust pension schemes
- remove barriers to consumers when accessing pension savings flexibly
- restructure the delivery of financial guidance to consumers

British Steel Pensions

DWP has [consulted](#) on various options for potentially helping the British Steel Pension Scheme as a part of a wider package of government support for the steel industry. The consultation considered a number of options, including some that would require legislative change.

GAD actuary president of UK profession

The Institute and Faculty of Actuaries installed [Colin Wilson](#), Deputy Government Actuary, as its president at its June AGM following a year serving the profession as president-elect.

New director of finance and operations

Following Kevin Down's retirement in June, Robert Mackintosh has become our new director of finance and operations. Robert joined GAD earlier this year from the Home Office and ACAS where he was on secondment as Finance Director. We thank Kevin for all he has done in keeping GAD running smoothly during his time here and wish Robert all the best in his new role.

Pensions Dashboard

[Budget 2016](#) announced that the government will ensure the financial services industry designs, funds and launches a pensions dashboard by 2019. This would allow users to see information on all of their retirement savings in one place.

The Association of British Insurers and the Money Advice Service have published a [white paper](#) setting out recommendations for a Pension Finder Dashboard. The white paper reports on progress so far and discusses the key challenges identified, explores some solutions and provides recommendations for the next phase of the project.

Work and Pensions Select Committee: State Pension inquiry

In April, the Government Actuary gave [evidence](#) at the Work and Pensions Select Committee in relation to their [inquiry](#) into the early drawing of state pension. The Committee are exploring the option of permitting a defined group of women who have been affected by state pension age changes to take early retirement, from a specified age, on an 'actuarially neutral basis'.

MANAGING RISKS IN PUBLIC SERVICE PENSION SCHEMES: THOUGHTS ON MEASURES AND CONTROL MECHANISMS

In a series of reports picking out significant elements of the Whole of Government Accounts (WGA), the National Audit Office (NAO) has recently published an illuminating [paper on public service pensions](#). This is to be welcomed as, however one measures them, public service pension liabilities are very large. Whilst the annual cost of benefit outgo from public service pension schemes is around £38 billion a year, more than the departmental budget for the Ministry of Defence, the fact that these obligations continue each year for the foreseeable future amounts to an aggregate commitment that is valued at £1,493bn in the most recent WGA.



Martin Clarke

Putting a value on pension liabilities

One of the questions posed at my interview for the post of Government Actuary concerned the setting of an appropriate discount rate to value future public service pension scheme liabilities. As an actuary with a private sector insurance background I might have been tempted to join with those commentators who consistently apply mark-to-market principles to this sort of question. The fact that I didn't may be one reason I was suitable for the position, but in reality the question is much deeper.

And the answer? Well, like so many things, it depends. It depends on the purpose of the calculation. And, as it is unlikely that Government will ever seek to accumulate sufficient assets to back its public service pension schemes promises, comparison of the liability valuation with a corresponding asset valuation is unlikely to be one of them.

NAO's report makes some observations about how the risk to Government of its public service pension scheme liability is reflected and reported. Placing a single aggregated value on the future liabilities is helpful for context. For example, the WGA show that, on the basis of measurement, the pensions

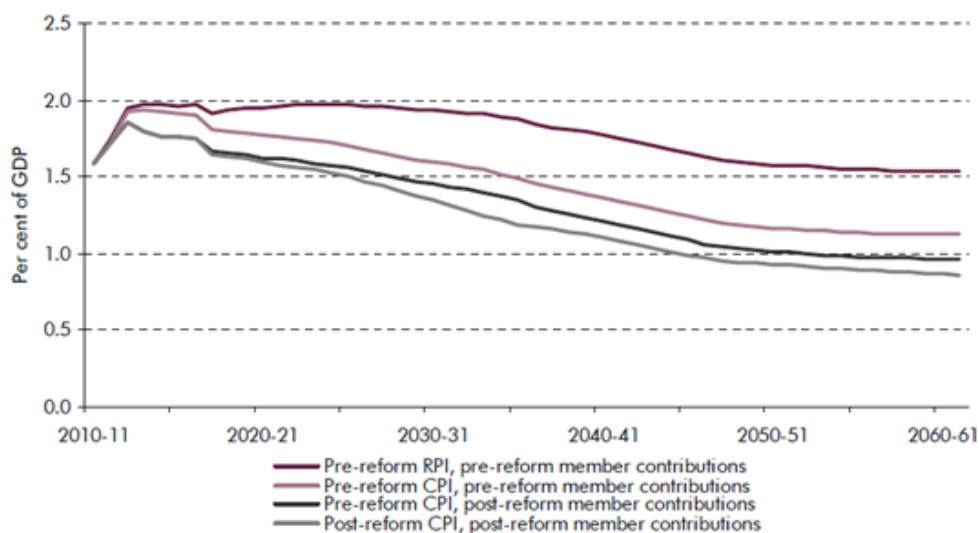
liability is the largest provision that the Government makes and is over a quarter larger than the Government's net borrowings at £1,175 billion. These are relevant comparisons for context, but how important is that absolute value of the liabilities? And does it matter if this value fluctuates according to a market rate of discount?

For sure, the discount rate does not affect the year on year cash flows which represent the Government's pension promise to current and future public servants. These depend on the rules of the pension schemes from time to time which determine an individual's entitlement and the longevity of that individual aggregated many times over for the whole sub population of public servants. There are two implications of this.

First the affordability of public service pensions is dependent on the ability of the country to generate sufficient revenue income through future economic growth. In its Fiscal Sustainability Reports (FSRs), OBR tracks the forecast cash flows of the public service pension schemes (net of member contributions) as a share of GDP and in 2012 the OBR analysed the effect of the recent public service pension scheme reforms playing out:

'a single aggregated value [of] the future liabilities is helpful for context ... but how important is that absolute value?'

Chart: Effect of reforms on net expenditure



Source: OBR, GAD

MANAGING RISKS IN PUBLIC SERVICE PENSIONS: THOUGHTS ON MEASURES AND CONTROL MECHANISMS

Whilst clearly heavily dependent on the underlying assumptions, the 2012 projections show the share of GDP declining from just under 2% in 2015 down to just under 1% by 2060 and subsequent FSRs illustrate a similar trend.

Second, a capitalised number based on any discount rate, let alone one that is susceptible to day-to-day investment market movements, is unlikely to be able to encapsulate the totality of the risks to Government of public service pension schemes.



‘the analysis of risk requires a much more rounded approach than just a single balance sheet entry’

Thinking about the risks

So what are the main risks to the cost to GDP ratio projected by the OBR? Well, both the numerator and denominator are subject to the effect of future outcomes turning out different from the assumptions adopted - but the set of assumptions needed to project each part differ. The benefit cash flows in the numerator depend on assumptions about CPI inflation and the public service workforce (e.g. its size, wage growth and life expectancy). While the GDP denominator will be affected by assumptions on the size and earnings growth of the whole population.

The principal mechanism that Government has established to manage these pension risks and the resulting costs is the “cost cap mechanism” or “cost cap” for short. This involves a regular valuation of public service pension liabilities already accrued and cost of future accrual, and comparison with previous expectations, for the purpose of setting future contributions. These valuations are carried out at a stable discount rate known as the SCAPE rate which is linked to expected future GDP growth (with the advantage of changing infrequently). The first assessment of the schemes against their cost caps for all the public service pension schemes will be undertaken based on the valuations as at March 2016.

Although I am an advocate of the SCAPE rate mechanism, there are aspects that I feel are worth looking at again if the mechanism is reviewed.

First the pension scheme valuations and subsequent contribution setting and deficit recovery payments are based on a future look at costs discounted back to today’s value in a methodology that mimics that applied to private sector funded schemes. However, the implementation of the methodology only allows for direct control of some of the risks described above.

Second, and in relation to the setting of the SCAPE rate itself, Treasury uses a best estimate approach to determining the rate, with an equal chance that the eventual growth in GDP will be higher or lower than that underpinning the discount rate. To some this is an equal sharing of risk between generations but to others the dice are more loaded in favour of the current generation of taxpayers whose outcomes are perhaps more certain.

Conclusions

In summary I am pleased that NAO are shining a light on pensions risk in the context of the Government’s balance sheet. I believe, however, that the analysis of risk requires a much more rounded approach than just a single balance sheet entry. Such an approach is undertaken through the regular analysis of experience, the valuation cycle and the application of the cost cap mechanism. But inevitably there are modifications that might be considered, both to these processes and the choice of discount rate to generate the balance sheet entry.

FINANCING INTERNATIONAL DISASTER RISK: A RESEARCH COLLABORATION WITH THE WORLD BANK

GAD routinely assists the Department for International Development in evaluating financing initiatives and programmes. Recently, we undertook a more detailed research project together with the World Bank Group on Sovereign Disaster Risk Financing. This article outlines the background and research outcomes.



Anna Edwards

What is disaster risk financing?

Extreme natural events can threaten lives, livelihoods, and even entire economies. Disaster risk finance aims to increase the resilience of vulnerable countries to the financial impact of disasters as part of a comprehensive approach to disaster risk management. By increasing resilience, disaster risk finance offers the promise of protecting and promoting development.

Robust methodologies and examples are required to generate the evidence to better guide investments in sovereign disaster risk finance programmes.



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Since 2013 the World Bank Group (WBG) has partnered with the Global Facility for Disaster Reduction and Recovery and the UK Department for International Development (DFID) to address some of these gaps in evidence and methodologies. The Disaster Risk Finance Impact Analytics Project has made significant contributions to the understanding of how to monitor and evaluate existing or potential investments in disaster risk finance from a development perspective, and to the evidence base for where such investments have development impact.

How did GAD get involved?

Through our relationship with DFID, GAD was notified of an opportunity to work with the WBG researching disaster risk financing. GAD won a competitive tender process in 2015 to undertake the work by emphasising our actuarial expertise, relevant disaster financing experience and project management abilities.

Over the course of approximately 6 months, we collaborated with the WBG to perform analysis under an evolving set of criteria and assumptions. To ensure that client needs were addressed and the end result demonstrated quality analysis,

we put our GAD values into practice by partnering with our clients and demonstrating agility through technical innovation and flexible working to meet their needs.

Who are the stakeholders of the research?

The research was aimed at sovereign stakeholders in developing countries, such as the government of Ethiopia, as well as international development organisations such as DFID. The focus was on providing these stakeholders with a methodology to evaluate disaster risk financing instruments (such as a contingent credit facility), along with practical examples.

The research is also relevant for the insurance industry, as they play a role in developing and providing disaster risk financing instruments.

**‘GAD co-authored two papers
... on saving money via disaster
risk finance planning’**

What were the outcomes of the research?

The WBG published a series of 14 [research papers on the topic of disaster risk finance](#) as a tool for international development. GAD co-authored 2 papers, outlined below, both focussed on saving money via disaster risk finance planning.

Evaluating Sovereign Disaster Risk Finance Strategies: Guidance and Case Studies

This paper applies the WBG’s disaster risk financing evaluation framework to five practical case studies, and gives guidance on how the framework can be applied in practice.

In order to perform the analysis, GAD built robust models which were easily adapted as strategies and assumptions evolved, and which can be replicated for additional case studies.

Application of the framework to the five anonymised, simplified, real-world countries involved the following steps:

1. Define the contingent liability. To enable quantitative analysis, a clear set of rules that would trigger expenditures is first defined – for example, an earthquake of a particular magnitude hitting.

FINANCING INTERNATIONAL DISASTER RISK: A RESEARCH COLLABORATION WITH THE WORLD BANK

2. Specify the choice of financing strategy. Each strategy is a combination of financing instruments from the following:

- holding a contingency budget,
- Having access to a contingent credit facility,
- taking out insurance cover,
- reallocating budgets post-disaster, and
- requesting humanitarian aid post-disaster.

3. Set base assumptions. Assumptions were set in reference to the economic and political conditions of the underlying country, eg interest rates. GAD collaborated with experts through the WBG to set reasonable assumptions.

4. Calculate the opportunity cost of each strategy. For each strategy, an analysis was presented for the financing cost both on an average basis and for different shock severities using the assumptions made about the economic environment and the probability and magnitude of the events.

5. Consider sensitivity and scenario testing. Each case study included sensitivity analyses in which assumptions and specifications are varied to illustrate how costs might change.

A Methodology to Assess Indicative Costs of Risk Financing Strategies for Scaling Up Ethiopia's Productive Safety Net Programme

Rural safety nets in low-income countries remain a challenge to develop, yet the government of Ethiopia has developed and implemented the Productive Safety Net Programme (PSNP), providing nearly 8 million Ethiopians with the means to work their way out of chronic poverty.

The paper comparatively analyses potential risk finance structures that support drought response through the PSNP, under the same 5-step methodology outlined in the Guidance and Case Studies paper.

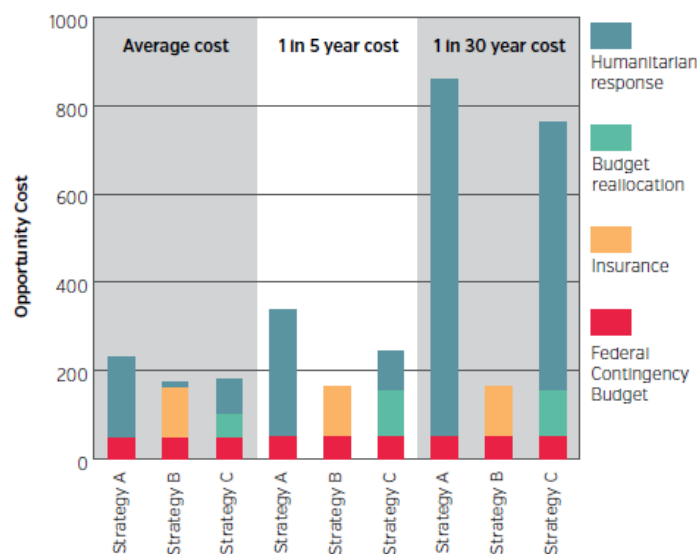
The contingent liability is defined as a hypothetical version of the PSNP in which districts receive automatic financing based on an early warning system that is tied to a water deficit index. Under these hypothetical “rules”, the PSNP scale-up supports annually, on average, 2.9 million transitory poor, requiring an average expenditure of US\$139 million per year.

Three primary hypothetical risk strategies are then considered to finance these expenditures. The initial instrument in all strategies is the federal contingency budget, which must be exhausted before other instruments can be applied. Unlimited humanitarian response is always assumed to be a last resort.

The base case, strategy A, includes only these instruments; strategies B and C consider a layer of insurance and budget reallocation, respectively, between the two (see figure).

Strategies A and C rely on humanitarian response when the federal contingency budget and budget reallocation are depleted. Strategy B is the cheapest on average as insurance effectively costs less than humanitarian response.

The cost savings of insurance also rise for more severe droughts; the results of the costs of a 1-in-5-year and a 1-in-30-year event demonstrate this clearly.



Source: Clark, Coll-Black, Cooney, Edwards 2016

As part of the project, GAD also developed an interactive user-friendly tool for the government of Ethiopia to use when comparing financing options under various economic assumptions.

What else is GAD doing in the area of disaster risk financing?

GAD routinely works with DFID to provide independent financial and actuarial advice in evaluating financing initiatives and programmes in developing countries. Most of these programmes involve disaster risk financing, especially considering insurance and risk pooling to reduce the risk to developing governments and international donors. We use our insurance and risk expertise to perform quantitative and qualitative analysis of the programmes and their risks.

Our [website](#) details the full range of insurance and other services we can offer. If you would like to discuss these further please contact us.

References

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WHOLE OF GOVERNMENT ACCOUNTS: NATIONAL AUDIT OFFICE EXPLORES MAJOR RISKS AND HOW THEY ARE MANAGED

The National Audit Office (NAO) has published three reports on aspects of the government balance sheet in the Whole of Government Accounts: Pensions; Provisions, contingent liabilities and guarantees; and Financial assets and investments. In addition to Martin's thoughts in this edition on issues around pension risks, I outline some of the key points raised in each of these reports.



Ian Rogers

The NAO reports explore the major risks to public finances highlighted in the 2014-15 Whole of Government Accounts (WGA) and how the government is managing these risks.

Pensions

Current and likely future spending on pensions is a significant element of total government expenditure and liabilities. As well as providing social security benefits including the state pension, the government pays pensions to retired public sector employees, and protects the pensions of private sector pension schemes members affected by employer insolvency.

The government has varying degrees of influence and control over different parts of this complex pension landscape. However with an ageing population and despite recent reforms the government has a challenging job in balancing affordability of pension provision with providing for people in retirement.

The report sets out issues for further consideration including:

- An effective assurance and oversight framework for managing all of government's pension commitments.
- Managing specific risks to unfunded and funded schemes.

The NAO notes the importance of transparency and relevant disclosure, and that the valuation of pension schemes in line with generally accepted financial reporting practice may not reflect the unique nature of unfunded pensions.

Provisions, contingent liabilities and guarantees

Provisions, uncertain liabilities which will probably need to be paid sometime in the future, are reported on the WGA balance sheet. Contingent liabilities, possible obligations that may not result in expenditure, are disclosed in the notes to accounts.

In 2014-15, the government estimated its provisions were £175 billion and its contingent liabilities were £76 billion. The NAO highlights that these are substantially higher (by around two-thirds and 85% respectively) than when the WGA was first published in 2009-10. One driver is the increasing use of government guarantees to stimulate growth.

Today's provisions and contingent liabilities are tomorrow's potential cash outflows. They need to be managed alongside other commitments. The NAO observes that the government's long-term risk profile is increasing and could increase pressure on future cash flows especially in the event of economic shocks.

The NAO highlights that measurement of these uncertain liabilities is inherently difficult but should be improved and can be achieved. The report illustrates this using the example of GAD's work to quantify the government's guarantee to Pool Re. Government departments engage GAD to measure both provisions and contingent liabilities.

Financial assets and investments

The 2014-15 WGA values the government's financial assets at £400 billion, representing a significant income stream for the government (£7 billion in 2014-15). The most significant assets considered in the report relate to student loans, the businesses managed by UK Government Investments and assets which are a legacy of the financial crisis.

One of the NAO's findings is that the concentration of these assets (primarily in the banking, housing and student finance sectors) increases the risks to the public finances, as their value is closely related to the wider economic performance of the country. This can also make it hard to sell assets quickly.

Decisions to sell assets are not straightforward, especially where their value requires considerable management judgement in the absence of an active market. GAD can help as we're adept at the modelling techniques used to value such assets.

The NAO notes the tension between short-term incentives (for example, to reduce the government debt) and long-term value from ongoing income. To keep this in check, the NAO recommends considering Parliamentary visibility before a transaction and enhanced accounting disclosures.

GAD contacts

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For details of our management team and office address please visit:

<https://www.gov.uk/government/organisations/government-actuaries-department#people>

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