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BRINGING *BLACK BOX THINKING* TO THE PENSIONS INDUSTRY

A Pensions Institute report for pension scheme trustees, consultants, asset managers, policymakers, and regulators

David Blake

Matthew Roy

February 2018

"It's only through failure do you learn to win"
Dr Fahim Patel, *Confessions of a Junior Doctor*, Channel 4, 3 May 2017

"There are no secrets to success. It is the result of preparation, hard work, and learning from failure,"
Colin Powell, former US Secretary of State

Bringing *Black Box Thinking* to the Pensions Industry

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The report is available at: http://www.pensions-institute.org/reports/BBT.pdf

Contents

About the authors 1
Executive summary 2
Introduction 4
What mistakes are being made by trustee boards today? 6
    What quantitative measures reveal errors in decision making? 6
    What sort of mistakes are trustee boards making that lessons could be learned from? 8
How are mistakes evaluated and learned from? 10
    Measuring results: Do boards make measurements that will signal mistakes? 10
    Culture of introspection: What is the attitude towards raising mistakes? 11
    Feedback and processes to combat human biases: Are boards able to learn from mistakes? 14
Ways to improve 17
    Why more bottom-up change is needed 17
    Reflections on ways to open the loop 18
Conclusion 21
Acknowledgements 22
Sponsor statement 23
About the Pensions Institute 24

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The Pensions Institute (www.pensions-institute.org) is the first and only UK academic research centre focused on pensions issues. The views expressed in this report are those of the authors and not the Pensions Institute which takes no policy positions.

Executive Summary

Based on interviews with pension scheme CEOs, senior trustees, senior policy advisers, actuaries and industry association leaders, our research applies *Black Box Thinking* to the UK defined benefit pensions sector and finds strong evidence that many schemes have a closed loop mindset towards failure.

The *Black Box Thinking* framework, developed by Matthew Syed, can be used to analyse which industry sectors have an open loop[1] mindset towards failure which leads in time to low failure rates – a classic example being civil aviation. By contrast, sectors with closed loop[2] thinking tend to be characterised by high error rates – as the healthcare sector demonstrates.

The UK pension industry is more like the healthcare industry than the civil aviation sector. Although some DB schemes follow many of the best practices outlined in *Black Box Thinking*, by systematically attempting to identify and evaluate mistakes, interviewees report a wide divergence in the ability of boards to learn from past mistakes – because it depends so much on a particular scheme's good fortune in forming the right constellation of board members and advisers.

Less fortunate schemes exhibit the typical behaviour of a closed loop mindset, including not setting strong measurable targets, inertia in decision making, herding behaviour, shifting goal posts, failing to take ownership of mistakes and blaming others. Such schemes do not enjoy *Black Box Thinking*'s virtuous cycle whereby errors are reported and measured, the scheme's culture allows introspection about mistakes, feedback loops are applied and processes to combat human biases are established – leading over time to better outcomes involving fewer errors.

We find that by adopting *Black Box Thinking*, the strategic decision making by boards of trustees in the UK's DB sector could be markedly improved. There are many actions that individual boards can take for themselves from the bottom-up. These include the regular appointment of new board members and advisers, improving diversity, sympathetic advisers sharing best practice, conferences and forums, away days, administrative pooling arrangements and consolidation.

But *Black Box Thinking* analysis of civil aviation also finds that it is necessary to have a central clearing house where actors can learn about the failings of others and this is something that the DB sector lacks. The Pensions Regulator could take up this top-down role by performing post-mortems of failed schemes and making these available to all schemes.

The *Black Box Thinking* framework could help solve the dilemma of the UK pensions industry encapsulated neatly by the CEO of one scheme who said "Well if I were you, I wouldn't start from here", pointing out that the best opportunity we had for building a better DB system, perhaps along the lines

[1] An open loop is where "a strategy is put into action, then tested to see if it is working. By seeing what is going wrong, you can then improve the strategy" (pp. 193-4).

[2] A closed loop is where "failure does not lead to progress, because information on errors and weaknesses is misinterpreted or ignored" (p. 15).

of the Dutch collective defined contribution system, was probably 20 or 30 years ago before the barriers to radical change were raised so high.

Both *Black Box Thinking* and the experts we interviewed suggest that trustees do still have the power to make substantial improvements to the system, scheme-by-scheme from the bottom-up. It is a matter of improved board governance and appointing a group of trustees with the capability, expertise, resources and time to look at issues from a different perspective. Boards need to spend more time on strategic thinking and move away from the practice of lurching from one short-term problem to another. This approach of helping boards to improve organically is a markedly different approach from the regulatory-driven top-down approaches of the past. So this is the place we should start from.

Introduction

Is there a crisis in the defined benefit (DB) occupational pensions system? Are schemes under stress? The debate has intensified since the high profile failure of BHS.[3] The trustees and regulators of the UK's 6,000 remaining DB schemes face huge uncertainties concerning asset returns, interest rates, inflation, life expectancy and the strength of the sponsor covenant.

But what if there's a way to reframe the debate in a way that anticipates rather than reacts to problems? Instead of looking for top-down collective solutions imposed by regulators – a necessarily slow and imperfect process – why not seek to improve the performance of schemes individually and change the system more rapidly from the bottom-up?

For the trustees of DB occupational pensions, *Black Box Thinking: The Surprising Truth about Success* could be an idea whose time has come. The framework developed in Matthew Syed's book is designed to help the people in organisations and systems to produce better outcomes by learning from failures.[4] Regardless of one's view of the DB sector, it's hard to disagree with the framework's idea that DB schemes should admit their errors and to seek to learn from them.

Black Box Thinking contrasts the commercial aviation industry where around 300 people die per year in the US and the healthcare sector where medical errors cause 120,000 US deaths annually. Doctors and nurses are driven individuals committed to saving people's lives. Airline directors are business oriented, focused on cutting costs, systematically overbook flights and knowingly leave passengers behind. Yet there are few deaths in aviation accidents and many from medical errors. The book finds this is due to major differences in how aviation and healthcare approach failure.

The key message from the aviation industry is to learn from the series of events leading up to a specific accident and broadly share these lessons throughout the sector, making it possible to identify similar patterns that can be addressed to avoid accidents in the future. *Black Box Thinking*[5] endorses the findings of Nobel laureate Daniel Kahneman that, as individuals, we find it difficult to deal with our human cognitive biases, but, as organisations, we can create structures that mitigate them. With its positive "open loop" mindset towards identifying and acting on failure, the aviation industry is a good example of applying this in practice.

The mindset towards failure in the health care sector is remarkably different. It is a decentralised industry where the experts – the doctors – must make instantaneous judgement calls when attending to patients who are in a critical condition. But the sector is not set up to encourage doctors to admit their contribution to the events

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[3] BHS, the high street chain formerly owned by Sir Philip Green, became insolvent in April 2016 with the loss of 11,000 jobs and the risk that 19,000 members of the BHS pension scheme would end up in the Pension Protection Fund and lose up to 10% of their pension entitlements. Following intense pressure from the parliamentary Work and Pensions Select Committee chaired by Frank Field, Green was forced to bail out the scheme with a £363m payment in February 2017.

[4] We use the terms "mistake", "failure", and "error" interchangeably as synonyms throughout the report.

[5] The term "black box" comes from the flight recorder that is so critical in identifying why planes crash.

that lead to mistakes nor to share them across their decentralised network, making it more difficult to identify patterns and prevent future errors. *Black Box Thinking* describes this as a "closed loop" mindset.

Do the unique features of the DB sector pose a challenge for *Black Box Thinking*? Many papers have been written about the issues facing UK DB schemes. DB participants confront competing regulatory and economic incentives. They face a very long time lag between errors occurring and their effects being felt. There is a similar long time lag between any changes to scheme strategy being made and the impact being observed. DB scheme "customers" – the members – are disengaged and have little influence over the "product" they have "purchased", not least because they have little real understanding of that "product".

Contrast all this with the airline and health sectors: both have very engaged customers who know very quickly when errors have occurred, often with fatal effects. Other contrasts appear where *Black Box Thinking* calls for making incremental changes that lead to marginal improvements in the product or service offered. Classic examples of this are the thousands of small improvements in the design of Formula 1 cars and the 5,127 prototypes that James Dyson needed to build before he could launch his first vacuum cleaner. Are the same sort of incremental changes even possible in DB?

But this perhaps misses the point of *Black Box Thinking* – which is that it is the *mindset* of the participants towards failure which leads to improvement. This mindset encourages participants to constantly challenge the status quo – even if this includes apparently successful business practices – and to experiment with minor changes. So the question we're actually interested in asking is whether the *mindset* of the DB occupational pension sector is more like that of commercial aviation or healthcare.

In view of this, we apply *Black Box Thinking* to the strategy setting process of the trustee boards in DB occupational pension schemes. The paper seeks to find out the degree to which DB pensions schemes are open loop – able and willing to learn from their mistakes – or closed loop – unable or unwilling to learn from their mistakes because they don't measure errors, have a culture where errors are not recognised or are unable to turn errors into learning that feeds back to improve the system. In the past, trustees have tended to rely heavily on top-down diktats from The Pensions Regulator. We're looking for ways boards can improve bottom-up decision making, not to indict the trustees or any other actors in the sector.

The findings in this paper are based on interviews with eight experts who are pension scheme CEOs, senior trustees, senior policy advisers, actuaries and industry association leads. We've agreed not to name the experts as they hold senior positions in the sector and could be identified by the views they offered, so anonymity allows them to be more candid. The paper is organised into three parts:

1. What mistakes are being made by DB trustee boards today? What are the errors that emerge in strategy setting that *Black Box Thinking* can be applied to?

2. How do boards evaluate errors? Do boards have a culture of recognising and measuring errors and are they able to learn from their mistakes to improve future decision making?

3. Ways to improve. Based on our analysis, what can schemes do to individually improve their decision-making and become open loop thinkers?

What mistakes are being made by trustee boards today?

The first step in our analysis was to ask interviewees whether boards were currently making appropriate strategic decisions. We asked what information could be used to identify errors when they occur in DB pension schemes and to show if there were underlying issues or mistakes with board strategy setting.

We prompted interviewees to identify failings according to their own definitions of "mistake" and this led to considerable debate which we summarise as the distinction between the "content of decisions" and the "process of decision making". The need for the interviewees to define "mistake" is in itself an indication that there is no common industry-wide approach, unlike the civil aviation industry – where it is pretty clear when a mistake has been made.

All agreed that the content of trustee decision-making is inevitably error prone. Trustees are making strategic decisions in the face of uncertainty relating to issues such as investment performance, the strength of the sponsor covenant and member circumstances. Furthermore, the classification of the outcome of these decisions as a mistake or not also depends on who is viewing the decision, for example, the board or the regulator.

As these kind of "mistakes" are an unavoidable part of the job, it is the "process of decision making" that is our main interest. Trustees must make strategic decisions under uncertainty, so they need a framework to support their decisions.

All interviewees also agreed that the strength of the sponsor covenant is the main indicator of the health of a pension scheme in deficit, and something which interviewees say should be used in decision making. But a weak sponsor covenant is not evidence of failure in trustee decision making per se. Indeed, several trustees told us that the industry needed a common standard to measure sponsor risk.

All this is the territory of *Black Box Thinking* which looks at ways to get better outcomes by measuring results, applying feedback loops and establishing processes to combat human biases.

What quantitative measures reveal errors in decision making?

Are there quantitative measures that will show up errors when they occur in DB scheme strategy setting? One trustee responded, "There's a lack of measurement – I'm not sure we have the data to make an informed judgement".

A common response was that interviewees felt trustees were doing a good job, but had been dealt a very difficult hand with the current regulatory and economic environment and, given this, it was difficult to tell the sector's story in numbers. Nevertheless, most believed there were wide differences in the performance of schemes that could be addressed by improving the effectiveness of boards themselves. "The DB landscape is very varied… some good schemes, some less good," one trustee said.

Several interviewees pointed to the huge sponsor contributions into schemes over the past decade, but without any noticeable effect on the size of fund deficits, as evidence of a mistake where decision making could be improved:

"The sector's outlook has worsened if you take into account the money that's gone in", was one example.

Current deficits were frequently described as a consequence of poor decision making about interest-rates. "I don't think strategies have generally been that bad except for the failure to hedge interest rates. This has had huge consequences and impacted on everything. Boards made a mistake on interest-rate hedging, some have learned from that, some are waiting for interest rates to rise, the rest are making interest rate bets and don't want to acknowledge the issue."

Notwithstanding this, all interviewees felt that decision making had improved in the past decade. Several said new regulations had improved the performance of boards including The Pension Regulator's work on fees and costs and the promotion of integrated risk management. Low interest rates; sinking levels of solvency; the increasing maturity of schemes; the option of buyout; and the shock of BHS had also helped trustees "up their game".

"It used to be that the end game was so far away, it could almost be ignored. But now we have to plan to be bought out on a gilts plus basis in just five years, it tends to concentrate the mind," one trustee said. Another noted: "Trustees are much more aware than three, four or five years ago. Seeing trustees and advisers in front of Frank Field's parliamentary committee caused a number of trustees to resign, they weren't aware of their responsibilities and thought, 'there but for the grace of God go I'". A third said "Trustees are less comfortable than a few years ago about going along with what they are advised to do; they're questioning more and are less certain about things presented as 'facts'".

Applying *Black Box Thinking*

In *Black Box Thinking*, comparison of "error rates" between entities such as airlines and hospitals helps drive improvements.

With the exception of quantitative information on fund deficits, our experts said there were no yardsticks that could be used to measure mistakes in DB pension schemes in the same way that mortality is used in healthcare or aviation. In other words, the pensions industry is characterised by a lack of measurement and hence an absence of the data to make an informed judgement.

A striking illustration of a mistake is the huge sponsor contributions into schemes over the past decade, without any noticeable effect on the size of fund deficits. This is now recognised as a consequence of poor decision making about interest-rates and the failure to hedge interest rates.

While decision making has improved in the past decade, this is mainly for top-down reasons, such as new regulations on fees and costs and the promotion by the regulator of integrated risk management.

What sort of mistakes are trustee boards making that lessons could be learned from?

Black Box Thinking looks at the process of decision making rather than the content of decisions in order to get better outcomes by measuring results,

applying feedback loops and establishing processes to combat human biases. One trustee summarised the mistakes they believed trustees needed help with in just these terms: “Like all people, as trustees, we unintentionally tend to focus on the parts of the job we find easier to understand, and believe we can influence, and less on the things we don’t.”

This is an example of cognitive bias, and biases like these proved to be typical drivers leading to the mistakes interviewees described as most frequently occurring in board strategy setting. Most interviewees thought that trustees spent too much time focusing on investment performance and not enough attention on sponsor funding. For instance, trustees “look in microscopic detail on how a fund has performed over the past 12 months”, but they were far less likely to challenge a sponsor on their recovery plan or dividend policy when a fund was in deficit. One trustee said that the separation of investment and funding into different board subcommittees exacerbated this problem, leading to a disconnect and an “investment strategy at odds with the long-term funding target”.

Sometimes trustees would take sponsor funding levels as a given and not something which could be challenged, leading them to take a narrow view of what was in members’ best interests. As one trustee put it: “You have to be very hard-nosed and confident in your expertise to challenge company sponsors. Every single pension scheme I’ve worked at has said it has a strong covenant, but in reality some are weak and some are strong.”

Biases among sponsor-appointed trustees could lead to mistakes in investment decisions. Trustees and policy experts saw instances of finance director trustees encouraging investment decisions that improved short-term, mark-to-market company balance sheet valuations of schemes to the detriment of long-term performance, leading to a worse outcome for the sponsor. One trustee suggested the problem was approaching mark-to-market as a binary decision: “Mark-to-market has failed because of conflict in the way these judgments are made, the mistake is a standard rationality that sticks rigidly to either end of a continuum, instead of being prepared to ask more difficult questions that look at the intervening positions and triangulate different valuation methods.”[6]

Another trustee noted: “Mostly it has been finance directors that have pushed back on increasing hedging because they lose some chance of upside and feel yields on government bonds [which influence the the discount rate on liabilities] have to increase. There’s something emotional going on, a lack of desire to lock in. Where there is a fiduciary mandate, hedging has been much higher, why is that?”

The last two paragraphs reflect the career concerns of the finance directors who need to show that the company is doing well on their watch, even if this involves passing the buck to future finance directors. A similar issue was seen with the role of advisers, where partly the issue was boards failing to recognise or address the biases of advisers. Interviewees described an “overreliance on advisors to support decision making because board capability doesn’t exist” and said boards were too reluctant to question advice, even though trustees recognise that advisory business models, or even advice given by executives from the sponsoring company (such as finance directors), can reflect different priorities from those of the scheme.

[6] With mark-to-market, both assets and liabilities are valued on a market-consistent basis. This contrasts with valuation methods that allow some smoothing of assets and liabilities, as happens when "matching adjustments" are permitted (e.g., under Solvency II).

"Advisors are incentivised to float advice on the same basis to different boards because it is in their commercial interest and provides them with a safety net: they won't take the risk of going outside house models because, if challenged by the regulator, they want something to fall back on," an actuary noted. "One scheme we recently took on actually had a buyout surplus that it wasn't aware of. The board didn't take action because of poor advice, possibly because the consulting actuary didn't want to lose the client," a professional trustee said.

Trustees reported that they could also be drawn into executive decision-making or resolving operating issues. Resolving disputes over benefit payments or implementing risk management systems were cited as examples. In small schemes, this was sometimes due to lack of executive support. Interviewees said this could draw trustees into domains beyond their expertise or became a distraction from implementing the scheme strategy. Trustees might become responsible for implementing adviser recommendations, when ideally this should have been an executive task handled by a project manager. "Advisers say 'here's an issue', but do not normally explain how to resolve it,' another trustee noted. "Boards don't know how to deal with the issue and turn into a project where they can measure the results. There is a mismatch between the board's subject matter expertise and the need for project planning capability.'

Applying *Black Box Thinking*

In decision making, *Black Box Thinking* suggests mistakes occur when processes that mitigate cognitive bias are absent. The mistakes interviewees identified seem to fall into this category and they are mainly related to governance:

(1) Focusing on what trustees know and failing to focus on areas where trustees had little expertise or understanding.

(2) The separation of investment and funding decisions, and the failure to challenge the sponsor's recovery plan or dividend policy.

(3) A short-termist attitude, especially by sponsor-appointed trustees, e.g., in respect of investment performance and hedging strategies.

(4) Failing to recognise biases in others, such as the career concerns of finance directors who need to show that the company is doing well on their watch, or of advisers who temper their advice to clients to avoid losing the contract.

(5) Being distracted from their main focus, e.g., by being drawn into making decisions that are really outside their remit, such as resolving disputes over benefit payment or implementing adviser recommendations, when this should be an executive task handled by a project manager.

In the next section, we examine whether boards have a culture of recognising and measuring the kind of mistakes identified above and are able to learn from their mistakes to improve future decision making at the margin.

How are mistakes evaluated and learned from?

In *Black Box Thinking*, it is not the mistakes themselves that are the issue, it is how they are identified, analysed and acted upon. Measuring results, having a culture that allows introspection about mistakes, applying feedback loops and establishing processes to combat human biases leads to better outcomes. So how well are trustee boards doing?

Measuring results: Do boards make measurements that will signal mistakes?

Interviewees said there were pockets of excellence where boards set measureable objectives and targets which enabled outcomes to be evaluated and mistakes identified, but it appears that these were not widespread and more a product of a fortunate set of circumstances (which we discuss later in this paper). Instead of being a discussion about which metrics to use, interviewees wanted to talk more about the presence or absence of goals and about measurement as a whole.

"As schemes close and mature, many become clearer about goals, such as buyout by a particular date or self-sufficiency over a certain period of time. Most have a pro-forma flight path," said one trustee. Another noted, "In many schemes, long-term strategy is vaguely defined and depends on good fortune to get there, there aren't any agreed hard-edged plans. If markets are like the tide, they're hoping that the tide will bring them in."

A third said, "It varies from scheme to scheme and is generally improving. But even where the actual goal is fairly clear, the timescale by necessity is fairly flexible, so it is easy to push it out to the right."

Although all schemes viewed changes in the size of the deficit as a red flag that should be a call for action, interviewees said there were few other commonly agreed metrics that boards could monitor that would help to detect mistakes being made.

"There is a lack of transparency, and risk isn't really being measured," said one actuary. "It's hard to do and not done very well… It leads boards to the conclusion that they can't tolerate risks, but de-risking will require the employer to put in more money, so they can't afford to de-risk either".

Some boards had agreed a narrow and clearly defined set of indicators they would monitor, but this was not universal practice. Other boards, interviewees suggested, had so much information potentially available they had trouble identifying signals from noise. Some boards were unclear about the values the metrics had to indicate before it became clear that there was a problem that needed addressing and several interviewees thought guidelines would help some boards decide if they were "in the red zone".

A lack of benchmarks and indicators sometimes led to poor spending decisions, particularly on consultants fees. One trustee said. "I saw an example where the board was advised to do something involving £100m of expenses, it was quite complex, needed the company and advisers to be as one. I asked how many members it involved, the response was 12. It would be cheaper to pay these dozen members £1m each and save £88m than go through the exercise".

One trustee encouraged boards to ask advisers to set measureable targets for each piece of analysis produced for the board. "A new person from the in-house team did an analysis of the risk characteristics of the portfolio as it exists today. It failed the 'so what' test and we asked for targets so we could look again in 12 months to see if the portfolio was better balanced. It's a scientific approach and we should set out experiments like this and test them. But this process is often absent."

Applying *Black Box Thinking*

Interviewees suggest that schemes do not systematically measure mistakes, although there are individual examples of best practice. Issues raised include:

(1) An absence of clear goals and instead a vaguely defined long-term strategy which cascades down into poor measurement of errors in decision making.

(2) Even in schemes with clearer goals, the timescale is often so flexible that the problem can be repeatedly kicked down the road.

(3) While all boards paid attention when the size of the deficit changed, there were few other commonly agreed metrics that boards could monitor that would help to detect mistakes being made.

(4) In the absence of a narrow and clearly defined set of indicators, there was the danger that trustees had so much information potentially available they had trouble identifying signals from noise.

(5) There were two issues in particular that emerged as a result of a lack of benchmarks and indicators: risk not being measured and poor spending decisions, particularly on consultants fees.

Black Box Thinking made similar findings for the healthcare system. For example, medical professionals also set the goal-posts in a way that meant errors weren't revealed.

Culture of introspection: What is the attitude towards raising mistakes?

Trustees felt that many schemes had a culture where it was possible to report mistakes without fear of censure. They also felt they could speak up when they saw something troubling, one trustee highlighting the "any other business" agenda item as means of raising such issues. However, trustees felt that frequently there were ingrained cultural reasons why mistakes might not come to light or be dealt with.

No ownership of mistakes

Interviewees said they commonly encountered trustee boards that did not feel that they "owned" or were responsible for mistakes. One told us: "Boards are not willing to admit mistakes because it would show they are responsible. The result is that it isn't reported. There isn't much of a culture of going back and analysing past decision making." Another said: "As trustees, we need to play the devil's advocate, but people aren't able to predict markets, so when deficits

have deteriorated on their watch, I'm not sure that trustees hold themselves accountable for previous decisions, since they don't look back to see whether the decision made sense."

"The big issue is not an unwillingness to learn from mistakes, but a general tendency not to take responsibility at all. Everyone seems to say 'there we are, never mind', pretty much brushing it straight under the carpet. People do shift strategies with the benefit of hindsight, but I don't think there's a general tendency to say 'hang on, should we really have done this?' So board members are not worried about mistakes, because they're not accountable: there's a lack of clarity about whose mistake it is. Where hedging hasn't happened, I don't think people looked for who is responsible, because it was a joint decision, and there has not been that much analysis as to it having been a mistake."

Another expert pointed to cases where mistakes were not even recognised as such: "We discussed implementing liability-driven investing (LDI) three years ago and actually implemented it one year ago. There was a lot of self-congratulation because we saved £1m, but if we'd done it earlier we would have saved multiple millions."

Executives not pointing out mistakes

The experience of executives bringing mistakes to the attention of the boards varied. Some executives "were keen to recast mistakes in a good light, so that the board didn't feel they had made a bad decision". One interviewee pointed out that very few schemes offered "incentives" or rewarded executives for being forthcoming about mistakes.

Inertia and herding

One interviewee pointed to a culture of inertia in dealing with mistakes: "The consequences of decisions to do nothing and take no action – like not hedging liabilities – aren't as carefully monitored or managed as decisions to take action." Another noted: "The general theme for trustees as a whole is inertia, not taking a decision. It's the most powerful force of all. The 'stop loss' mindset doesn't exist among trustees. Traders set stop losses and when they reach them they must cut losses, they don't double up. It's a hard discipline, but it would be a beneficial way for trustees to think about exposures."

So there is a strong bias against taking action and this is reinforced if the action is new and unconventional, such as introducing LDI. One expert told us that there were plenty of boards "jam packed with experts", but LDI was not implemented because it was not "conventional wisdom". Of course, once something does become "conventional wisdom", everyone tends to jump in, whether it is the right thing to do or not.[7] A recent survey of trustees found that: "Some 60% of respondents expect to seriously consider liability-driven investment for their scheme, with 41% considering income-focused strategies as a potential solution for their cash flow dilemma". So herding behaviour (not wanting to be different from the rest of the crowd) is another powerful behavioural bias that needs to be recognised and overcome.

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[7] Newton Investment Management and Pensions Insight (2107), Independent Trustees Research Report 2017

Blaming others

"I see trustees being more critical of advisers and investment managers than themselves, it's a natural human characteristic," a trustee told us.

Another expert summed it up as follows: "As humans, we need to accept that we're not always rational. Although we should take emotion out and make decisions more rational, that's close to impossible. All decisions are emotional, so we need to accept that they are and work around that."

These reactions are consistent with what psychologists call "cognitive dissonance". This features prominently in *Black Box Thinking*, as Matthew Syed explains (p. 81): "[It] describes the inner tension we feel when…our beliefs are challenged by evidence. Most of us like to think of ourselves as rational and smart. We reckon we are pretty good at reaching sound judgements. …That is why when we mess up, …our self-esteem is threatened. ...In these circumstances we have two choices. The first is to accept that our original judgements may have been at fault. …The difficulty with this option is simple: it is threatening. It requires us to accept that we are not as smart as we like to think. …So here's the second option: denial. We reframe the evidence. We filter it, we spin it, or ignore it altogether." And then we go on to blame others.

But this is classic closed loop thinking and can have very negative consequences as Syed points out elsewhere in his book: "It is when a culture has an unhealthy attitude to mistakes, that blame is common, cover-ups are normal, and people fear to take sensible risks" (p. 81). "This is why blame should not be apportioned for reasons of corporate or political expediency, but only after a proper investigation by experts with a ground-level understanding of the complexity in which professionals operate" (p.263). Otherwise, there is a weakening of "forward looking accountability", the accountability to "learn from adverse events" and so reduce the risk of future avoidable mistakes (p.245).

Applying *Black Box Thinking*

Again like the findings of *Black Box Thinking* for the medical profession, interviewees suggest that many boards do not have a culture of seeking out and revealing mistakes – consistent with a closed loop mindset. Examples raised include:

(1) No ownership of mistakes. The most frequently reported illustration of this was an increase in the scheme deficit being blamed on unforeseeably low interest rates rather than seeing this, with the benefit of introspection and hindsight, as an error in decision making about hedging interest rates.

(2) Executives not pointing out mistakes. The lack of ownership of mistakes is reinforced in schemes that have a culture where the executive tries to massage the ego of the trustees, so they do not feel that they made a bad decision.

(3) Inertia and herding. Inertia is the most powerful force of all: there is a strong behavioural bias against taking action, particularly if the action is new, such as liability-driven investing. Herding, as in the rush to adopt LDI once it has become "conventional wisdom", is another powerful behavioural bias that needs to be recognised and overcome.

(4) Blaming others is classic closed loop thinking consistent with cognitive dissonance – where our minds are in a state of denial about a mistake and so we reframe the evidence and look elsewhere for scapegoats.

Black Box Thinking suggests that trustees feeling they will not face fear of censure for reporting mistakes is right, but only if there is accountability for outcomes; currently, trustees do not declare themselves accountable for financial outcomes and this may be why they do not feel any ownership of mistakes. So no lessons are learned. Just as damaging is the situation where mistakes are covered up and then, if they are exposed, there is an attempt to immediately allocate blame. But blame should not be apportioned for reasons of corporate or political expediency, only after a proper investigation by experts. Otherwise, there is a weakening of forward looking accountability and people will be afraid to take sensible risks that are in the long-term financial interests of the scheme.

Feedback and processes to combat human biases: Are boards able to learn from mistakes?

"Good decision-making starts at the top with appointments to the trustee board and advisers. My thesis is that if you get the right people appointed for their experience, knowledge and intelligence they will then make sure they have resources to do the job or introduce cost-saving measures, such as administrative pooling arrangements and consolidation," one trustee said.

This quote explains why interviewees report a wide divergence in the ability of boards to learn from past mistakes because it depends on a particular scheme's good fortune in forming the right constellation of board members and advisers.

Some schemes systematically attempt to identify and evaluate mistakes, similar to a post-mortem, following many of the best practices outlined in *Black Box Thinking*. For example, two of our trustee interviewees reported that "At each board meeting, we routinely ask each member one thing we could do better" and "On many boards, where things go wrong, there are quite formalised lessons-learnt processes."

Another good example was the use of decision pre-mortems which also feature prominently in *Black Box Thinking* as mechanisms for avoiding future mistakes.[8] Interviewees said these varied widely in usage. "On big ticket items, we do, and bigger schemes tend to do them as standard." External events could trigger pre-mortems: "People are naturally risk averse, so pre-mortems work well when there's a new investment idea, a move in LDI, or a forthcoming valuation or enhanced transfer value exercise. A one pager on a change in valuation that can be shared with the sponsor can be a useful basis for a valuation discussion at the next board meeting." Value-at-risk exercises were regarded as useful pre-mortems "if we also have the narrative around them and are not just presented with a range of different scenarios with no further explanation". Others suggested boards needed to go further with their pre-mortem exercises and ask "What if in five years' time, we entered the Pension Protection Fund (PPF) as the result of this decision, so what went wrong?"

Where boards were not working effectively, this was often due to governance problems arising from classic principal-agent gamesmanship: "Some of the worst outcomes come about because of poor communications between parties – trustee and sponsor – with both sides holding on to information to protect their power. I've seen trustees who don't want the sponsor to see the investment strategy as they fear the sponsor will unduly try to influence it: it becomes a power play." Then there are the schemes that don't even attempt to identify mistakes for a variety of reasons, including the skills of the boards, sponsor domination of boards, a particular board chair, poor advice, poor resourcing and low exposure to the workings of peer schemes.

"It depends on the bunch of people you have around the table to pull things together. It's often down to the quality of the chair. I've seen the outsourced provider model work well, but it's a delicate model. It can appear to be working, you have the right people, the right secretariat – and then whole thing crumbles. Open the trap door and in five years it's a mess," one trustee said.

Said another: "Scheme governance is a cocktail for a system not designed to find 'truth'. There are many trustee boards that don't have the capability, expertise, resources and time to look at issues from a different perspective, and don't have the capability to challenge advisers outside the framework."

And "Governance in many schemes is constrained because too little time is spent on strategic thinking. There is scope in many schemes to improve strategic support and make it more full time, something that is looked at quarterly, rather than annually," one trustee said.

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[8] In a pre-mortem, a team is invited to consider plausible reasons why a plan has gone wrong (not why it might go wrong) even before it has been put into practice. It is also known as "prospective hindsight" and can increase the ability to identify reasons for future outcomes by up to 30% according to supporters of the concept.

There are boards which are "lurching from valuation to valuation, it becomes a bit of a treadmill. With constraints on time and resources, personnel turnover, they don't have the ability or luxury to say, 'Let's try a different way, or let's work through couple of routes to this'. Many are crossing their fingers that they will get through the next valuation cycle."

Applying *Black Box Thinking*

Black Box analysis reveals examples of good schemes which learn from mistakes, but like the medical profession this is localised rather than industry wide as seen in aviation.

Examples of good practice include:

(1) Routinely asking each board member one thing we could do better.

(2) Using post-mortems with lessons learned where things go wrong.

(3) Using pre-mortems as mechanisms for avoiding future mistakes, such as considering a new investment idea, a move in LDI, or a forthcoming valuation or enhanced transfer value exercise.

Examples of poor practice include:

(1) Principal-agent gamesmanship between the trustee and sponsor – with both sides holding on to information to protect their power, e.g, trustees who don't want the sponsor to see the investment strategy as they fear the sponsor will unduly try to influence it.

(2) Failing even to attempt to identify mistakes for a variety of reasons, including the skills of the boards, sponsor domination of boards, a particular board chair, poor advice, poor resourcing and low exposure to the workings of peer schemes.

(3) Boards spending too little time on strategic thinking, and instead lurching from one short term problem to another.

Even though some schemes have an open loop mindset, lessons from mistakes in one scheme are not transferred in a systematic way to other schemes. The sector as a whole is a closed loop.

Ways to improve

Can schemes use *Black Box Thinking* to improve strategic decision making? Although some of the framework's prescriptions – such as making frequent small incremental changes to drive innovation – are problematic for DB pension schemes,[9] the core idea that change can be "bottom-up" has a certain currency among our interviewees. At the same time, several interviewees saw the need for a "top down" organisation to enable information sharing between trustees. *Black Box Thinking* argues that the constellation of board members and advisers in the better governed schemes should be studied for their lessons, rather than being viewed as the result of good fortune which can't be replicated.

Why more bottom-up change is needed

Interviewees largely agreed that the sector tended to rely on top-down change driven by the regulator, but that schemes could also decide to act – both individually and collectively – to make changes from the bottom up.

As one trustee said: "Those of us at the coal face have lots of authority and influence to do things better, yet I don't think we can wait for politicians to make new laws and for regulators to act. Someone said 'trustees can't challenge investment advice' – but the truth is that we can challenge all advice. Trustees decide what to do, trustees have enormous power and scope to make changes – if only they recognised this better."

A policy expert noted that, although regulation could support *Black Box Thinking* and had already been used to make nudges aimed at helping boards identify and learn from mistakes, it was too blunt an instrument to help individual schemes. "As a policy person, I can see we're demanding an awful lot, and people can struggle to rise to the challenge. Trustees rightly should be looking outside to find support and guidance for their decision making, but if they're looking to the civil servants at the regulator, then they're in trouble."

This is because, the policy expert noted, the regulator was anticipating the failure of some schemes and their entry into the PPF. A recent report from the Pensions Institute predicted that up to 1,000 schemes were at risk.[10] These schemes have weak sponsors that are likely to become insolvent over the next 10 years and end up in the PPF. However, it is estimated that 400 of these schemes could be saved if they take decisive action. *Black Box Thinking* provides a potentially useful framework for doing this.

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[9] In contrast with the world of Formula 1 cars and Dyson vacuum cleaners, marginal or incremental changes are neither common nor generally feasible in the pensions world, given that it takes up to 70 years for any change to fully work its way through the system. However, a recent example is auto-enrolment introduced in October 2012. Individuals are automatically enrolled into an authorised pension scheme whenever they start a job. Prior to 6 April 2018, the employee and employer contribution rates are 2% and 1% p.a., respectively. However, these rates will be automatically increased to 3% and 2% p.a., respectively, on 6 April 2018, and to 5% and 3% p.a., respectively, on 6 April 2019. Another example is the gradual increase in the state pension age for women from 60 to 65 between 2010 and 2018.

[10] *Greatest Good for the Greatest Number: An examination of early intervention strategies for trustees and sponsoring employers of stressed defined benefit schemes* released in December 2015. http://www.pensions-institute.org/reports/GreatestGood.pdf

Reflections on ways to open the loop

Our research suggests that some schemes have a constellation of board members and advisers who between them have an "open loop" attitude and are able to identify and learn from mistakes. How can other schemes follow their example?

One trustee neatly summarised two ways: "There's the kind of best practice you pay expensive consultants for, namely, process-type advice and those processes do help. For example, the focus on integrated risk management. But the danger is that it becomes too much about process and just another excuse for consultants to charge money."

"The other type involves individual trustees developing their relationships, networks and communications channels. Having professional trustees helps, having access to information helps. How you arrange that I'm not sure."

Black Box Thinking provides a framework for building on the second type of approach. It encourages trustees to acquire and share best practices themselves, from the bottom-up, while recognising the need for a top-down body like The Pensions Regulator to collect and share information about mistakes.

Interviewees suggested several avenues that boards could use to get access to best practice:

Regular appointment of new board members and advisers

"New blood" was cited as the most powerful catalyst for change and learning to do things differently by several interviewees: "The most dramatic change in learning I see is putting in new professional trustees, particularly where the board's problem is the relative dynamic between trustees and sponsors. Sometimes the existing professional trustee relationship is just not working."

Also, "In the absence of new people, it's common for boards to get stuck in a rut. Often a review of strategy is prompted by a change in the board, the chair, the composition of the investment committee, key advisers or the arrival of a new director of pensions on the corporate side."

Several interviewees suggested schemes could look to the corporate governance code for the boards of public listed companies overseen by the Financial Reporting Council for ideas on best practice. Corporate board members, for instance, are far more accountable for financial outcomes than trustees of pension schemes.[11]

Improving diversity

Interviewees thought improving the diversity of boards and their advisers would help by both exposing boards to new ideas and reducing the risk of groupthink in decision making. "It's improving. There's momentum and recognition of the issue, but there's still not a lot of diversity on boards at the moment," said one trustee. Said another, "When I go to pensions conferences, it's 95% 65-year-old middle class men, the same type of people making the same decisions, we need a spread in age, gender and ethnic background." Although not the most obvious

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[11] Proposed new rules state that the chairs of company boards should step down after nine years, including time spent in previous non-executive director roles (Madison Marriage "UK corporate governance code changes to hit dozens of chairmen," *Financial Times*, 11 December 2017)

example of diversity, several trustees said one benefit of member trustees was that they were not experts and they asked "naïve" questions in board meetings that were actually challenging for advisers and board chairs to answer.

Sympathetic advisers

One trustee suggested that boards should look for advisers "who bring best practice/ expertise in and share their experiences" as opposed to those who "never contribute anything beyond their immediate advice". Boards should "ask their actuarial and investment advisers to list on one page what other clients are doing to increase awareness and so they can discuss why these ideas might work for their scheme."

Conferences and forums

Interviewees noted that large schemes had access to international conferences and networks to share practices, but these were normally organised by advisers and trustees felt it difficult to speak openly at them. One said "mistakes are never discussed, we're always banging on about what we're doing right."

Several interviewees suggested that the trustees didn't have a place to turn to where they could share "war stories" or learn from the mistakes of others and it would be desirable if there were a neutral forum in which they could do this.

Interviewees would also like to collectively discuss key performance indicators that would help boards monitor their performance and make detailed comparisons of fund investment allocations, the corporate debt spreads of their sponsors and differences in scheme risk profiles.

Some interviewees would likely to develop common key performance indicators that boards would voluntarily share with the regulator and members: "Nothing dramatically original – just sending a report to members and regulators will force boards' attention on the issues. Members are very rarely told when things are on target or off target. There might be commentary on dramatic market movements, but it's not quantified."

As no universal forum exists at present, several interviewees suggested the regulator could play a role. However, nothing is preventing trustees banding together to set up a body of their own. A forum exists for member nominated trustees – The Association of Member Nominated Trustees – which describes its conferences as a place that "trustees can let their hair down".

Away days

"Most schemes have an annual training day…it's either the highlight or the lowlight of the trustee year. Some schemes have self-imposed rules on who presents. You're not allowed to hear from existing advisers in order to get fresh thinking – someone externally from a large scheme, not a consultant. All talk is under Chatham House rules. I've done it a few times, it can be very interesting. Even if it results in no change at all to the existing framework, you have the reassurance that not doing something was the right decision, since others had looked into it already."

Administrative pooling arrangements and consolidation

Several interviewees pointed out that administrative pooling arrangements and consolidation could bring new best practice to schemes. As noted by one trustee,

"We work with several hundred schemes and have pooled support for a number which lets us share our experience widely."

A central clearing house for post-mortems of scheme failures

All interviewees thought it would be useful if trustees could learn from the mistakes and best practices of other schemes. Several called for a clearing house of information. While it would be possible for a member association or other organisation to provide this role, it is likely that only The Pensions Regulator would have sufficient access to information to provide post-mortems of failed schemes. This role would dovetail well with the regulator's remit to "improve the way that workplace pension schemes are run" and existing work on improving scheme governance standards.

"It would be interesting to have access to case studies to look at what went wrong in schemes and five actions that might have helped. It would be interesting to know what metrics might have helped boards make better analysis in hindsight."

Applying *Black Box Thinking*

Our interviewees indicate that there are schemes that have an open loop mindset and are able to identify and learn from mistakes. But for many, perhaps the majority of schemes, the loop functions incompletely and, for some, it is closed entirely. It is a big step to turn the *Black Box Thinking* philosophy into action that shapes the day-to-day activities of trustees.

Black Box Thinking suggests that information sharing is an effective means of addressing this problem: opening up routes that trustees can acquire and share best practices themselves. There are a number of different ways of achieving this from the bottom up:

(1) "New blood" board members and advisers appointed on a regular basis.

(2) Improving diversity – one benefit of member trustees was that were not experts and they asked "naïve" questions in board meetings that were actually challenging for advisers and board chairs to answer.

(3) Sympathetic advisers sharing best practice experience.

(4) Conferences and forums, although since these were normally organised by advisers and trustees felt it difficult to speak openly at them: "mistakes are never discussed, we're always banging on about what we're doing right". They could also be used to discuss key performance indicators that would help boards monitor their performance and make detailed comparisons of fund investment allocations.

(5) Away days with presentations from other larger schemes, but not from existing advisers.

(6) Administrative pooling arrangements and consolidation. As noted by one trustee, "We work with several hundred schemes and have pooled support for a number which lets us share our experience widely."

From the top down, there is a role for the regulator to play as a clearing house for post-mortems of failed schemes.

Conclusion

Our research indicates that the DB pension industry is more like the healthcare industry than the civil aviation sector: a decentralised system that is not set up to help decision-makers admit mistakes nor to share them, making it more difficult to identify patterns that are common between schemes and prevent future errors.

Better governed schemes have a constellation of board members and advisers in an "open loop" and are able to identify and learn from mistakes. But many schemes are in a "closed loop" without: measurement systems that record mistakes; a culture of discussing mistakes; nor mechanisms for learning or improving practices. Most schemes with a closed loop mindset are probably unaware that this is the case. That is likely to be the biggest challenge for the industry and indicates a role for the regulator to help share post-mortems of schemes via a central clearing house.

Good governance is known to have a significant impact on the performance of pension schemes and in a system administering £1.5 trillion in assets even minor improvements could lead to billions of pounds in improvements overall. Keith Ambachtsheer, director of the Rotman International Centre for Pension Management, has estimated that effectively governed schemes outperform poorly governed schemes by 1–2% annually.[12]

The question therefore becomes what to do about it? One trustee answered this by saying "Well if I were you, I wouldn't start from here", pointing out that the best opportunity we had for building a better DB system, perhaps along the lines of the Dutch collective defined contribution system – which was favourably mentioned by many trustees – was probably 20 or 30 years ago before the barriers to radical change were raised so high.

Despite this, both *Black Box Thinking* and our interviewees themselves indicate that trustees do still have the power to make substantial changes to the system, improving the decision-making capabilities of boards, scheme-by-scheme from the bottom-up. What's needed to help them in this view of the world are the means for boards to become exposed to best practices in decision making processes which can open the loop. As Matthew Syed argues: "[All] strong, resilient [systems] share an essential pattern: an adaptive [and cumulative] process driven by detection and response to failure" (pp. 138-9). So this is the place we should start from.

[12] Keith Ambachtsheer (2007) The Pension Revolution, Wiley ('How Much is Good Governance Worth', Chapter 19)

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We are most grateful for the candid discussions we had with our anonymous interviewees. We hope that they will recognise how useful and constructive their comments were in helping to frame this report. We are also grateful for the useful comments from Stefan Lundbergh and Michael De Lathauwer of Cardano.

Cardano and Lincoln Pensions, now a Cardano company, are excited to sponsor the Pensions Institute Report "Bringing *Black Box Thinking* to the Pensions Industry". We believe a systematic approach to learning from mistakes will help the pensions industry deliver better and more secure financial outcomes for beneficiaries, sponsoring employers and society.

We agree with the authors that we, as an industry, can learn from the civil aviation sector about how to analyse mistakes and share findings without pointing fingers or assigning blame. As many schemes become cashflow negative and uncertainty over sponsors' ability to fund deficits increases, the industry cannot afford to repeat mistakes of the past.

As pension challenges become more urgent, all industry participants need to work together to better protect the beneficiaries we serve. This report highlights that there is a demand in our industry for a post-mortem analysis of schemes that have entered the lifeboat – the PPF. An objective analysis of the chain of events that led to schemes entering the lifeboat, and sharing the lessons learned, is a crucial step in better dealing with pension problems.

We encourage the industry to systematically adopt 'Integrated Risk Management' (IRM), which holistically considers investment, funding and covenant risks. As underwriters of all these risks, sponsors can use this framework to view their pension exposures in the context of the company's overall risk budget, and report the position to company boards. Trustees can use this framework to better identify vulnerabilities before they turn into insurmountable problems. Importantly, sponsors and trustees will have to eschew "tick-box" approaches to IRM and move beyond rhetoric, turning the theory into practices deeply embedded in governance, decision-making and management information systems.

We are especially passionate about this topic. The Cardano Group's mission is to help pension funds, their sponsors and the people they serve achieve their financial goals in a more resilient, realistic and responsible way. Our deep understanding of the causes and impact of risk enables us to deliver planned and controlled performance for our clients, irrespective of economic conditions. The certainty over outcomes we provide is of significant value for trustees, sponsoring employers and members.

In 2016, Lincoln Pensions, the sponsor covenant adviser, joined forces with Cardano, the risk and investment specialist, to offer clients innovative, tailored integrated risk management services, including fiduciary management and investment advice.

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The objectives of the Pensions Institute are:

- to undertake high quality research in all fields related to pensions.
- to communicate the results of that research to the academic and practitioner communities.
- to establish an international network of pensions researchers from a variety of disciplines.
- to provide expert independent advice to the pensions industry and Government.

We take a fully multidisciplinary approach. For the first time, disciplines such as economics, finance, insurance and actuarial science through to accounting, corporate governance, law and regulation have been brought together in order to enhance strategic thinking, research and teaching in pensions. As the first and only UK academic research centre focused entirely on pensions, the Pensions Institute unites some of the world's leading experts in these fields in order to offer an integrated approach to solving the complex problems that arise in this field.

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The operational aspects of running pension schemes.

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The practice and ethics of selling group and individual pension products.

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