Thinking Ahead Institute

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Here be dragons 2017

A compendium of investment insights published on the Thinking Ahead Institute's member discussion forum.

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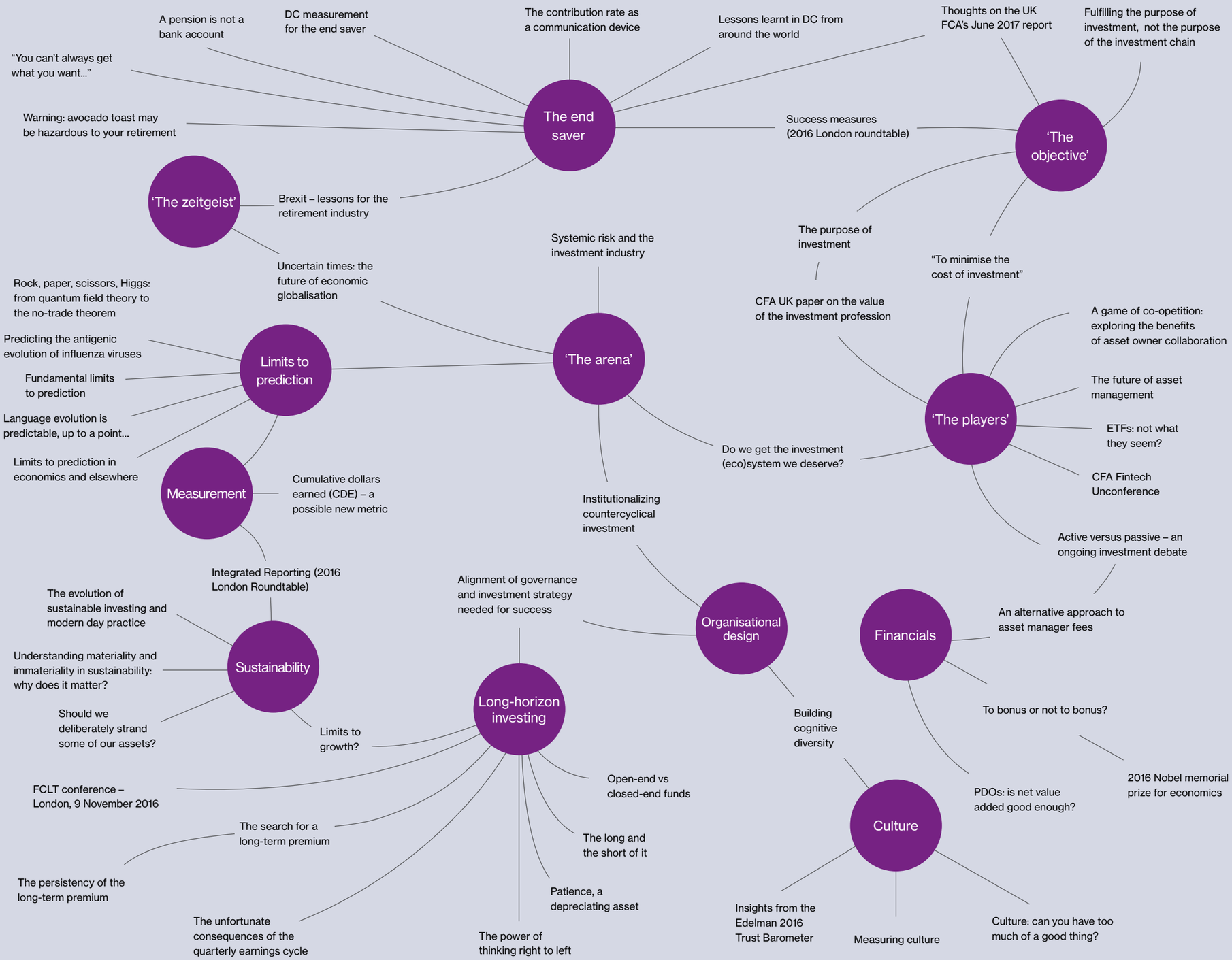
The phrase 'here (there) be dragons' is the title of at least four books, one film and a Welsh comedy sketch show (obviously). It originates from the medieval practice of putting illustrations of dragons and sea monsters on uncharted areas of maps. To improve our collective investment map it is necessary for us to venture into the uncharted territories – even if not all of those voyages are successful, spectacular or even comfortable. And, in truth, not all of the voyages documented here get that far from known shores. However, collectively, we believe these short thought pieces have something useful and interesting to say.

The map is our preferred representation of these thought pieces, and so the exploration of an electronic document as the reader desires should be the most satisfying way to engage with the material. The alternative is for us to choose the route and guide the reader through in a linear fashion – for a printed document this is the only viable approach. The theory geeks among us may be tempted to start in 'The arena' – what does this dragon-infested space look like? However we anticipate that the majority would prefer to start with 'The objective'.



The objective

We start with a post from a Thinking Ahead Institute member (the others in this compilation come from Thinking Ahead Group team members), which argues that we need to reframe our objective:

Fulfilling the purpose of investment, not the purpose of the investment chain

The purpose of investment is sustainable wealth creation. The output of which is long-term absolute returns for the providers of capital. But it also creates more and better jobs, innovation and better supply chains. It protects the environment and generates the productivity growth and tax revenues that underpin education, infrastructure and the welfare state.

The only way to create a society that works for the many, not just the few is to make the cake bigger and share it more fairly. And the only way that will ever be achieved is through long-term investment and hard work.

Set against these vital goals the financial services industry could hardly have set about creating a more dysfunctional model had it tried.

The investment chain, from the moment it leaves the pockets, pay packets and bank accounts of individuals to enter the capital markets, is travelling through a sausage machine where the primary driver of success is measured by short-term relative return.

Capital passes from individuals who are hard-wired with a propensity to be short-term and risk averse. It passes through an array of advisers and consultants, life companies and pension funds, investment managers and investment bankers, investment analysts and financial media.

Eventually, it is deployed by Boards and Chief Executives, hugely incentivised and massively pressurised to hit short-term targets and prioritise the short-term balance sheet over the optimisation of long-term cumulative returns derived from the sustainable success of the business.

In their February 2017 report, "Measuring the economic impact of short-termism" McKinsey & Co. found that:

87%

of executives and directors feel most **pressured to demonstrate strong financial performance** within two years or less.

65%

of executives and directors **say short-term pressure has increased** over the past five years.

55%

of executives and directors at companies without a strong long-term culture say **their company would delay a new project to hit quarterly targets** even if it sacrificed some value.

Ultimately, the aggregate impact of the capital market chain is leading companies to chop down the trees in their orchard because the value of the wood is greater than the value of this year's apple harvest.

Many commentators point the finger of blame at asset owners. For example, McKinsey's focusing capital on the long-term, says: "Until large asset owners radically change their approach, other key players (such as asset managers, corporate boards, and company executives) will probably remain trapped in value-destroying short-termism."

This is true, but McKinsey is also wrong. Capital is transmitted through the markets via a chain of intermediaries and agents where no individual link has agency to change the chain on their own and where the chain is too strong to be reformed from the inside. The individual links are doing very nicely for themselves, there is plenty of long-term wealth creation for market participants and the chain is both wealthy and effective at lobbying against disruption.

The purpose of investment is not being fulfilled by the investment industry because focus on short-term relative returns damages long-term absolute returns. The consequences for beneficiaries and society are severe.

The tensile strength of the chain is why we need a revolution from the roots up.

1. We need new investment funds that can operate outside the conventional capital market chain to be catalysts for change.
2. We need funds whose managers have no external shareholders pressurising them for higher dividends every year.
3. We need investors who have agreed to set time horizons well beyond three years and who will stick to it.
4. We need investment managers who are relieved of the pressure to beat an index or a peer group over three years or less.
5. And we need those managers to support, exhort or, if necessary, require Companies to act in ways that optimise long-term, sustainable wealth creation, even at the expense of maximising short-term returns.

The People's Trust, which intends to list on the London Stock Exchange in October, aims to ensure that it can preserve the integrity of the purpose of investment. It intends to do this by creating its own chain, outside the conventional chain, that is impervious to short-term pressures from any source.

This clean chain incorporates:

- A bespoke structure for the vehicle, which owes no commercial entity its existence.
- A clear seven-year performance measurement mandate focused on high-conviction investment with the object of sustainable wealth creation.
- Seven-year contracts for outstanding investment managers.
- Support for long-term strategies at investee companies to stand up to short-term pressure from other investors and capital market participants.

There is no more important task than the reform of this chain, and there is no more direct way of making the world a better place than repurposing $100 trillion of investment capital globally towards sustainable wealth creation.

The purpose of investment

In a recent article, the Wall Street Journal stated that Alphabet (Google's parent company), Amazon and Microsoft had collectively spent $31.5bn on capital expenditure and capital leasing in 2016 – up by 22% on the equivalent figure from 2015. The bulk of this was directed towards so-called hyperscale computing, which enables rapid access to heavy duty processing power on demand, and is vital to the tech behemoths' pursuit of dominance of the cloud. From a financial point of view, the remarkable aspect of this vignette is that the firms were able to deploy this amount without tapping equity markets.

The above seems to be an extreme case of a clear global trend in developed economies: new share issuance to fund capital expenditure is on the wane. Bond markets appear more buoyant, with new issuance hitting record levels in 2016 – although much of this has been used to fund takeovers as industries such as pharma, retailers, consumer staples and airlines look to consolidate – consistent with the dramatic reduction in the number of listed US entities over the past 20 years. Companies are also using surplus cash to fund share buy-backs.

So what exactly is going on? There was a time where the purpose of the investment industry was acknowledged to be the efficient allocation of capital. Financial courses teach how capital projects are assessed in terms of expected internal rates of return, and are funded in descending order of profitability. This may still be true. The big difference now is that these decisions are happening at a corporate level, most notably by industry 'winners' to whom capital has gravitated, rather than by asset managers. Money directed to an equity portfolio is predominantly applied to buy ownership rights in the secondary market – we've talked about this before. (As a brief aside, the accumulation of large pools of internal capital seems to be an evolutionary phenomenon, and is far more noticeable in developed than emerging markets, where equity is still a major source of financing for new capital projects.)

If equity investors are no longer performing the role of capital allocation directly, does the investment industry still have a de facto purpose? I would argue that, rather than becoming irrelevant, the investment industry should now be assessed as fulfilling a different function (or range of functions) on behalf of its clients and society. The obvious candidate for this would be stewardship and engagement with management on behalf of shareholders. Again, though, with ownership being so fragmented much of this potential influence has been diluted. It appears then that the principal value proposition to end clients is in providing exposure to the multiple facets of economic activity. End investors, through the actions of the investment industry, are able to participate in the listed parts of the economy, and hence harvest returns on account of owning rights to a share of profits. Gaining diversified exposure to the 'private economy' is harder.

This reorientation of the ultimate purpose of investment has several implications for the intermediaries acting on behalf of investors. For one thing, if exposure to the economy is paramount, this would seem to be inconsistent with the pursuit of quarterly alpha, which is more a reflection of short-term market sentiment.

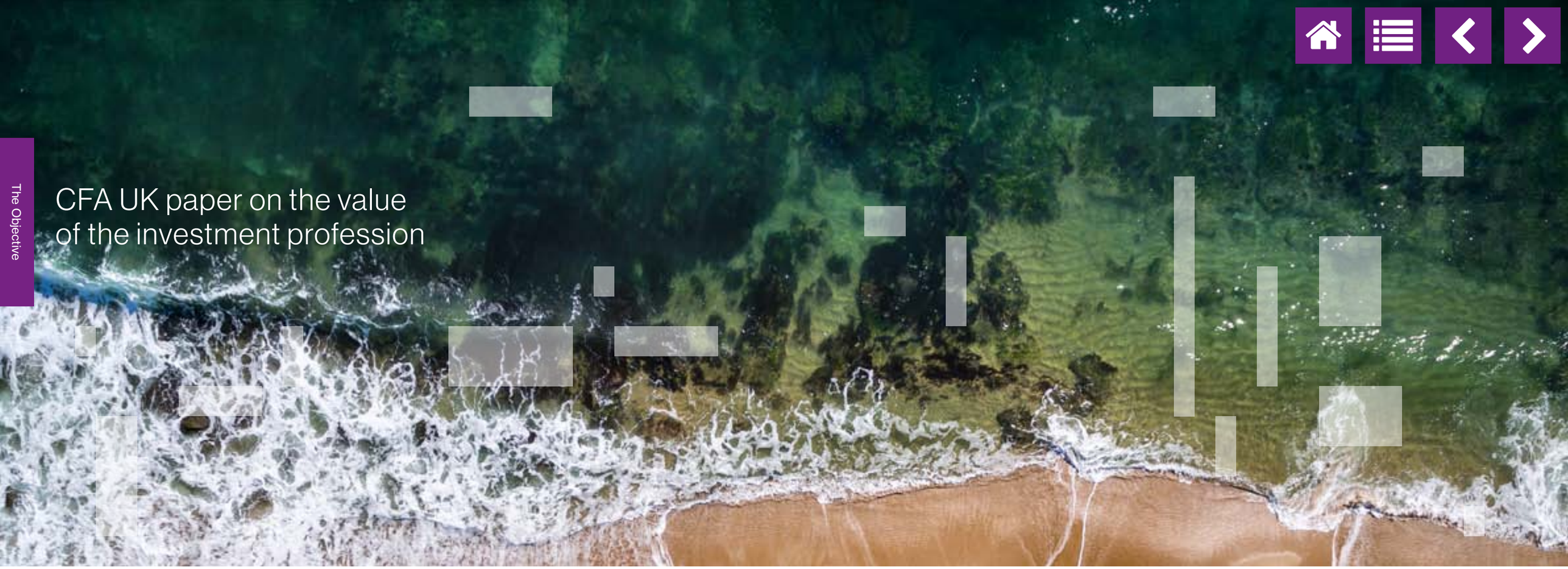
Instead, investors are best served by a focus on the following activities:

Engaging with management on the best ways to generate sustainable long-term growth, and manage the risks that might impair a company's prospects (so stewardship and engagement do have a fundamental prominence).

Allocating investors' assets in a way that provides them long-term exposure to those sectors and companies that are best-placed to benefit from the evolution of society's needs – the ones most likely to capture a growing share of overall consumption. With this reframing, it is reasonable to expect new investment solutions to emerge and existing ones to evolve.

This would seem to be a worthwhile purpose for an industry – facilitating participation in prosperity, thereby ensuring that the average investor, whose income might not be growing at the same speed as the return to capital, is at least able to deploy their personal savings in such a way that they are not left behind.

If the purpose of the investment industry needs reframing, what is the stance of the investment profession currently?



CFA UK paper on the value of the investment profession

CFA UK have recently published a paper entitled The value of the investment profession, in which they report the results of their discussions with 200 people across 100 organisations (10 of which are members of TAI).

The paper says many good things, and is comprehensive – but, be warned, it is long. Being written by a CFA society it is open to the accusation that it is written by intermediaries in defence of intermediaries. For example, the paper talks throughout about the 'profession' of investment and I do not recall a single reference to the 'business' of investment. I understand why CFA UK would want to emphasise 'profession' – its members are individuals, and those individuals act in a professional manner in the vast majority of cases. At the same time, however, the vast majority of those individuals are also employed by for-profit businesses, and I don't think we can afford to overlook that aspect.

The paper suggests that the value provided by the 'profession' lies in meeting client needs and in capital allocation.

With respect to the latter it identifies:

1. investing in new capital
2. pricing existing capital
3. stewardship of clients' capital

There is clearly truth in all of these points, but... product proliferation is not meeting client needs:

- The TMT bubble would suggest that the profession's skill in investing in new capital could do with some honing, and
- The GFC and behaviour of banks would suggest that the profession has also not yet completely mastered stewardship.

That said, picking holes is easier than being constructive – so CFA UK should be commended for taking on this difficult topic. For those that are time-poor the report is usefully summarised in 26 bullets on page four. While my personal view would be a preference for CFA UK to have taken a less-hedged stance, there are three bullets that call directly for change – and which I believe should be non-contentious for the majority:

- The investment profession's value proposition is not well understood and should be communicated more effectively.
- The cost of investment is not easy to discern and there should be improved transparency and disclosures in relation to fees and charges.
- The profession should do more to make sure that it is recruiting and maintaining diverse teams.

The last of these clearly gels well with one of the research streams that TAI has been pursuing.

We could link from here to 'The players' but, instead move to another thought piece that links 'The players' and 'The objective'.

To minimise the cost of investment

On 18 November 2016 the UK's Financial Conduct Authority (FCA) released the interim findings of its asset management market study. There is plenty of good stuff in the report and, for consultants, one potential action of seismic proportion – a possible referral to the Competition and Markets Authority. Much has been written, and will be written in reaction to this document. Here, I choose to dwell on one particular phrase that actually comes from the FCA's press release that accompanied the interim report. I was struck by it on first read and, a month later, it won't go away. The phrase is the last six words of this sentence from the FCA:

"In today's world of persistently low interest rates, it is vital that we do everything possible to enable people to accumulate and earn a return on their savings which can meet their lifetime needs. To achieve this, we need to ensure that competition in asset management works effectively to minimise the cost of investment." [emphasis mine]

This is where my reflections have got me:

1. This is a poor objective function. To quote Warren Buffett "Price is what you pay. Value is what you get". While I agree that, starting from current levels, lowering cost (the price to the end saver) is likely to yield better value (for end savers), this will not be true for all cost reductions. A better objective function would be to maximise the value of investment.
2. Our industry has a composition problem. Alpha is subject to diseconomies of scale – so it is prudent / rational / required to constrain capacity. But, at the aggregate level, there is no alpha – only beta less costs. So society in aggregate has no need for capacity discipline, just a harvesting of economies and passing them on to consumers.
3. For those asset owners skilled or lucky enough to find asset managers that are skilled or lucky enough to produce consistent alpha, this has phenomenal value. But we know, on an expectations basis, that securing consistent alpha over the long term is an odds-against activity. So why do so many asset owners play this bad-odds game? There must be some expectation of value, even if it isn't financial value. This list will be incomplete, but I can think of the following:
   - Comparative advantage: the asset owner believes, reasonably or unreasonably, that they are better able to identify the skilled managers than other asset owners.
   - Lottery-like value: the asset owners know the game (most of the managers they hire will underperform after costs), but finding the one with consistent alpha would add so much value that it is worth buying an entry ticket (or several) because someone has to win.
   - Long-horizon value: a variation on the above which argues for net financial value. The asset owner hires multiple managers and uses a disciplined process to cut the losers and run the winners with a view to adding money-weighted value over long horizons.
   - Entertainment value: no asset owner would admit to this source of value (nor should they, for legal reasons), but index-tracking and asset allocation is rather dull in comparison to an active manager telling stories about portfolio positions.

I have previously argued that the shuffling of ownership rights adds no value for society (here, if interested). With respect to the existing stock of securities in issue, society needs two things: (1) for the securities to be held and administered securely and cheaply (passive, or buy-and-hold), and (2) for there to be sufficient price discovery so the prices are 'efficient enough' (active). We could add a third 'thing', namely stewardship, if you don't feel it will be adequately done under (1) or (2) above.

My problem with the FCA statement is that the logical consequence is to assign all securities to (1), and thereby we lose all price discovery. Instead, I would argue that the end saver is best served by optimising the mix of (1) and (2). In the paper hyperlinked above I suggested 70% passive and 30% active, noting that this is a judgement on my part as the optimal proportion cannot be known, and may not even be constant through time.

Is there another way? This is what I have been mulling – but it would require me to give up my long-standing prejudice against performance fees. My objective is to deliver to end savers (society) both cheapness and price discovery (which is expensive) – so the deal for active managers is to receive an 'index-like' base fee and a share of the value they create. To throw some numbers around, let's say it is reasonable for an active manager to keep 30% of the value they create. If they create a 1% excess return, they make 30bps – which could be 5bps of base fee and a 25% share, or 10bps and a 20% share etc. Clearly, if they produce a 3% excess return then they should have gone for a 0bps base and a 30% share, in order to earn 90bps – under 10bps plus 20% they would only make 70bps in total.

For those managers not earning a positive excess return, they will be running at a loss – the cost of the in-depth research will be greater than the 'index-like' base fee – and so they would need to be sufficiently capitalised to survive until they started to collect the performance share. The issue of noise vs signal doesn't go away of course, so there couldn't be a full, immediate payout of performance fee, further increasing the importance for an asset manager to have sufficient working capital.

Such a change would bring both intended and unintended consequences. The intended consequence would be more value for the end savers, which would likely be accompanied by far fewer active management businesses as assets accumulated with the active managers able to create value over the longer term.

Presumably the business models of active managers would change fairly substantially – more diversification, more technology, fewer employees? Beyond that, I have less clarity. Is this an idea worth debating?

The interim report was followed, in June 2017, by the FCA's final report – and the following is our take on that document.

Thoughts on the UK FCA's June 2017 report

At the end of June the UK's Financial Conduct Authority published its final report on the asset management market study. This is a significant milestone on a journey that is already over 18 months in duration – comprising terms of reference, extensive data gathering, an interim report and consultation period. However, the journey is far from over – particularly for asset consultants.

What do regulators want?

OK, so the FCA doesn't speak for all regulators – but the title works better in the abstract. First, the FCA wants market forces (competition) to be the primary source of discipline on investment firms, in that it wants "to make competition work better in this market". Second, it wants to "protect those least able to actively engage with their asset manager". It is hard to argue with either of these points, and both point to the purpose of the Institute – to make the investment industry work better for the end saver.

However, it is worth adding that the FCA believes there will be follow-on benefits from achieving these two aims, namely they "will increase efficiency, lead to the UK asset management industry being a more attractive place for investors and so improve the relative competitiveness of the UK market". If true, it will be incumbent on regulators in other markets to follow quickly so (1) the 'global end saver' similarly benefits, and (2) the UK's improved relative competiveness is short-lived.

What did the FCA conclude?

1. **Price competition is weak, particularly within retail.** There was clearly an attempt during the consultation period to overturn this conclusion, but the FCA uses a 36% average profit margin to conclude that "price competition is not working as effectively as it could be".
2. **On average, neither active nor passive funds outperform their benchmark after fees.** This finding applies for both retail and institutional investors.
3. **There is some evidence of a negative relationship between net returns and charges.** Paying higher charges for funds leads, on average, to worse results.
4. **It is difficult for investors to identify outperforming funds.** Partly because it is difficult to interpret and compare past performance, and partly because past performance is not a good indicator of future performance (good performance is not persistent).
5. **There is some evidence of persistent poor performance of funds.** However poorly performing funds are more likely to be merged or closed. If merged, subsequent performance tends to improve, but the performance of the recipient fund tends to deteriorate.
6. **The FCA has concerns about how asset managers communicate their objectives.** It estimates that there is around £109bn in 'active' funds that closely mirror the market, at significantly higher cost. The (unstated) implication is that these 'active' managers should be communicating their intention to match the market return – but charge an active fee for it.
7. **Investors' awareness and focus on charges is mixed and often poor.**
8. **The FCA has concerns about investment consulting.** These include the relatively high and stable market shares for the three largest providers, a weak demand side, relatively low switching levels and conflicts of interest.
9. **Retail investors do not appear to benefit from economies of scale when pooling their money together.** The FCA doesn't like this, which leads us to...

What to do?

The resulting actions, or 'remedies' in FCA-speak, can be grouped a number of ways – according to the objective they are targeting, or how final they are (some are final now, some are being consulted on now, and some will be subject to future detailed consultation). This explains why this particular journey will continue for quite some time yet.

Improving investor protection

A. Strengthened duty on asset managers to act in the best interests of investors, which may include value-for-money considerations, and will include some level of independence in governance structures.

B. Requirement to return 'risk-free box profits' to the fund. Why was this not happening anyway?

C. FCA to make it easier to switch investors to cheaper share classes.

Increase competitive pressure

D. A single, all-in fee for investors. For an industry that makes its living from predicting the indefinite future, predicting transaction costs over the next 12 months shouldn't be too difficult.

E. Standardised disclosure of costs and charges to institutional investors. This one is for the industry to develop, under the care of an 'independent person'.

F. The FCA will chair a working group to make objectives clearer (and how benchmarks and past performance are used).

G. Recommendation that the Department for Work and Pensions (DWP) remove barriers to pension scheme consolidation (economies of scale and greater bargaining power).

Improve the effectiveness of intermediaries

H. Make a final decision in Sep 2017 on referring investment consultants to the Competition and Markets Authority. So, from September, the big three asset consultants in the UK will either need to abide by their voluntarily offered 'undertakings in lieu' of a referral – or will face a likely two further years of investigation.

I. Recommendation that the Treasury place asset consultants under the regulation of the FCA. Again, why are consultants not already regulated?

J. The FCA will launch a new market study into investment platforms, to assess the state of competition in that market.

What to make of all this?

We could be kind and conclude that being a regulator is a really tough job, and a thankless one at that. Which would be true. We could also conclude the FCA's motives are good and the changes are in the right direction (but I am somewhat underwhelmed by the strength of the bite of the proposed changes). My own priors also lead me to the conclusion that there is considerable scope for investment organisations to take a principled leadership position and go beyond the letter of these remedies to really reshape our industry for the benefit of the end saver. For example, am I the only person who finds it shameful that we need to be instructed to return risk-free box profits to the owners? If we wish to become a trusted and respected industry I think there is further to go than suggested by the FCA. These changes should be the minimum required of us.

However, from reviewing this final report, my dominant impression is how little the regulator understands parts of the industry under its regulation. What I can't decide is whether a lack of understanding on the part of a regulator is shocking and inexcusable – or predictable and understandable as nobody possesses a complete understanding of all the moving parts. I don't know the first thing about pay levels within regulators, but in the US the transition from regulatory body to high-paid Wall St position is a well-documented career path. I imagine the situation must be broadly comparable in other countries. In my opinion, a strong economy needs a well-functioning investment industry, and a well-functioning investment industry needs strong and thoughtful regulation. It could be in our best interests to wish for more, and higher-paid staff at regulators that understand the industry better and enforce stricter standards of behaviour.

So far we have journeyed from the fairly abstract (the industry does have it's core purpose correct), through the views of the industry body and regulator on the high-level functioning of the industry, and we now move to focus for a while on the end saver. To get from 'The objective' to The end saver we consider success measures...

Success measures (2016 London roundtable)

(This is a post describing a session at the 2016 Thinking Ahead Institute global roundtable, held in London on 2 and 3 November. The theme of the event was "Fuller measurement, broader integration, better decisions")

Tim Hodgson proposed that investment success is about compounding wealth, through time, exploiting and controlling for risk. However, within this conception, the investment industry:

- Tends to over-measure risk and under-emphasise uncertainty.
- Is more concerned with objective than material measures.
- Does not pay proper heed to the benefits of diversification across time.

Sequencing risk, too, is in general poorly managed in a DC context: depending on the sequence of returns experienced, two cohorts, that over their accumulation phase experienced the same time-weighted return, might end up with very different outcomes in retirement.

On a related point, Tim compared the role of objective and material measures in guiding DC members towards their goals. Although objective measures may be universal (eg time-weighted fund return) they are difficult to control and have little direct relevance to the member's mission. While such measures have their place in reporting and analytics, there is a need to balance these with more material measures. The latter are typically more subjective and more open to influence by organisational actions.

Tim therefore proposed that a balanced scorecard for monitoring progress should incorporate both objective and material measures. For example, for the principal target measures, an objective measure might be return-to-date per cohort, while a material measure might be projected retirement income. Material measures add complexity to the scorecard, but (arguably?) increase its relevance and usefulness.

Attendees considered the criteria of a successful DC system. Compounding wealth and the conversion of wealth into consumption are key. Financial planning – in particular consideration of a member's DC assets within the context of their overall wealth – is also critical as a means of engaging members. There may well be ways to make it more cost-effective and accessible, eg robo-advice, but successful engagement depends heavily on the provider having accurate and relevant member data – which is often not the case.

The extent to which schemes should engage with their members was hotly debated: views ranged from educating members and encouraging them to take control of their retirement planning, to creating better default arrangements and limiting members' involvement to a few, simple decisions. The latter point of view goes hand-in-hand with the investment/pensions industry taking greater responsibility for members' outcomes. Investment expertise resides with industry experts, and in order to justify their remuneration pension providers should be more paternalistic in providing appropriate guidance/ recommendations. This includes protecting members from the risk of making bad decisions, and obstructing value-destructive member behaviour (eg evidence showing that c.10% of the DC population in the UK are systematically gambling with their DC assets). Countering this, it was suggested that the industry (pensions/investment) was only responsible for the provision of information that could be used to make decisions, and not for the decisions themselves.

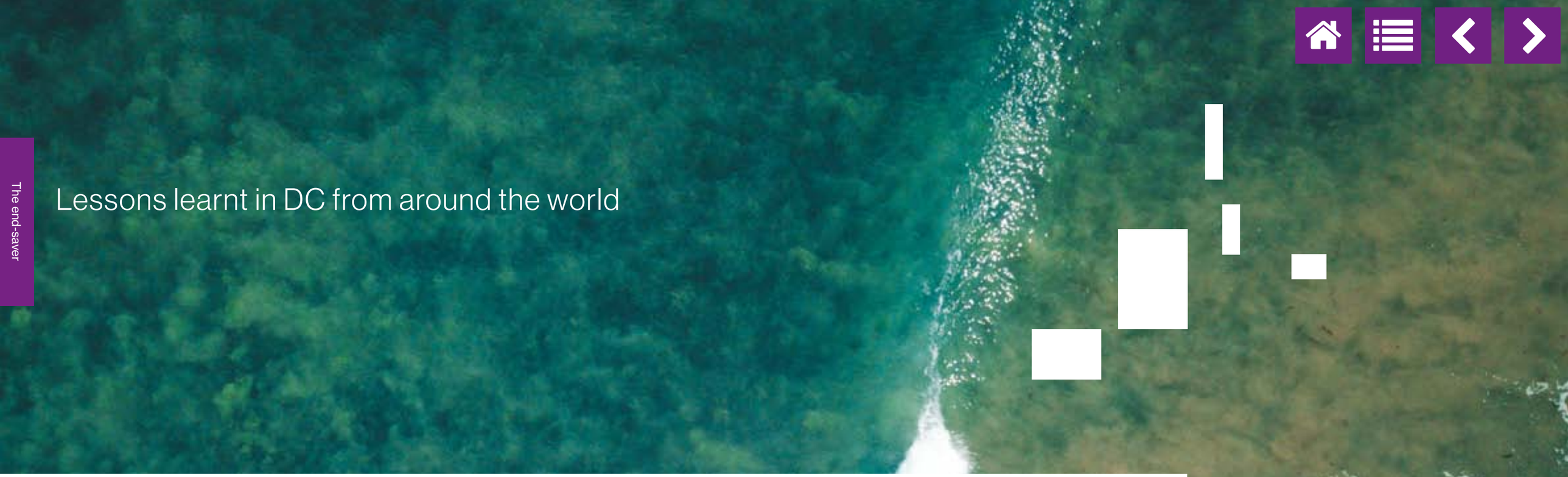
The quality of a member's journey through the DC system was discussed: in order for the journey to be worthwhile, the system should incorporate incentives and generate the return necessary to encourage members to save, and develop measures to shield members from excessive volatility (eg reduced equity exposure early on). Eighty percent of attendees agreed on the importance of improving the quality of the journey for DC members, even if this meant sacrificing some potential upside. In order for this to happen, trust in the DC system needs to be built up from the current low levels.

Attendees agreed that there was more mileage in this subject and proposed that the DC research stream be carried into 2017. As part of this stream, the Institute would convene an asset owner-only project team to look at the application of whole-of-life money-weighted return in meeting the DC challenge. There is also potential to apply the integrated reporting framework to analyse how pension providers (asset owners or commercial platforms) create value for their members, and how they could do this more effectively.

The end-saver

The purpose of the Thinking Ahead Institute is to change the investment industry for the benefit of the end saver. In dealing with institutional matters (there is a section on organisational design below) it is possible to occasionally lose focus on the individuals ultimately affected. We have therefore chosen our route through the map to give the end saver appropriate early prominence. We start with a single high-level piece on defined contribution systems around the world, before running through a series of posts more relevant to individuals.

Lessons learnt in DC from around the world



As part of the 2016 DC research stream we have been reviewing various papers written by members and academics. Our first summary is a paper written by Schroders, in which they looked at various aspects of DC plan design from an investment perspective and they identified a number of key lessons that can be learnt:

- A 'high-enough' (however defined) contribution is paramount to achieving DC investment success. Schroders' simple illustrative model suggests that for a 40-year career, contributions of at least 15% of salary and real investment returns of 3% pa are the minimum for an adequate standard of living in retirement. In theory, at least, the contribution rate is something that DC members can control and therefore can potentially be influenced by the pension delivery organisation. Lessons learnt from behavioural economics: auto-enrolment is a must; auto-escalation of contributions is also recommended in certain situations.
- In terms of the design of the default funds, the paper points out that many funds (particularly target date funds in the US) can benefit from a diversified line-up of risky assets as opposed to relying purely on equities in the growth phase. In markets where members do not have to purchase an annuity at retirement, the glidepath design should encompass both accumulation and decumulation stages, striking the right balance between investment risk and longevity risk particularly when members are deep into the decumulation stage. Innovations in default design can be powerful in keeping members invested in the DC plan. For example, the National Employment Savings Trust (NEST) in the UK has developed an unusual lifecycle approach where members start in lower (not low) risk assets for around 5 years to mitigate the likelihood of an individual ceasing contributions if faced with a significant loss in their early stage of DC investing.
- Explicit guarantees in downside protection can be very costly (the rare exception is a guarantee protecting the nominal value of the contributions, provided that the contribution period is long enough). As a result, the recommendation of the paper is a combination of good diversification, active management of downside risk (that inevitably introduces the challenge of assessing manager skill) and some sort of "back-stop" protection, provided either by another active manager or in the form of sponsor support.
- Daily liquidity and daily pricing are provided at the expense of the illiquidity premium and the fact is that few use this flexibility anyway. The paper argues that in markets where the majority of contributions are invested in default funds and few change this selection, there is little requirement for anything more than monthly liquidity. When daily pricing is strongly preferred, liquid proxies for illiquid assets can serve as access points.

Today's DC members are facing a very challenging environment: increasing life expectancy, a low growth environment and very low or even negative bond yields in many markets. The paper calls for contribution rates to be increased significantly although we in TAG have previously suggested (see our paper here) that it might not be possible for society to collectively save significantly more without significantly pushing down the rate of return on investments – the paradox of thrift at play in the investment world.

Despite supporting auto-enrolment and a fit-for-purpose default fund, the paper concludes that fiduciaries should not give up on trying to get members to engage with their DC plan. In order to do that, fiduciaries should be protected from legal action (eg safe-harbour protection in the US) from unhappy DC members when the outcome is not as expected.

The contribution rate as a communication device

I start from a belief that the contribution rate is one of, if not the, most meaningful pieces of information for a DC saver. It reminds them how much current pay they are giving up month in, month out, and how generous or otherwise their employer is. It is certainly more meaningful than an annual statement of the accumulated account balance. However, the thought here is whether we could convey even more meaning through the contribution rate, perhaps via a set standard, akin to performance reporting following GIPS.

The thought was triggered by a comparison between the Dutch and Canadian DB markets. In essence the Dutch system is run on a solvency basis, so the accrued liabilities should be fully funded at all times in case the sponsor suddenly goes bankrupt. The liabilities are therefore discounted at a government bond rate – say 2.5% for indicative purposes. All safe and secure, but the contribution rate needs to do most of the heavy lifting as any mismatch between the assets and liabilities is very risky and can get closed down quickly if things start to go wrong. The Canadian system is run on a going concern basis, where the sponsor is assumed to continue into the future making contributions, and discount rates tend to be around 5.5-6%. Here the heavy lifting of future provision is split between the contribution rate and investment returns. There is much that could be debated between the two systems, but let us instead lift this thought back into a DC context.

A DC saver could smooth their lifetime consumption needs the 'Dutch way' or the 'Canadian way'. For the time being, let's keep the 'pension' the same in both cases. We could therefore offer a choice to our DC saver between a 'zero-risk' pension outcome albeit at a contribution rate of, say, 45% of pay per annum (Dutch) and a contribution rate of, say, 20% (Canadian) but with a higher level of risk associated with disappointing investment returns and sponsor failure (albeit hard to quantify).

While observers may have a strong belief in which is 'better' we have actually set these up to produce the same result. What differs is the risk. And my question is, are we doing a good-enough job in communicate risk to the end saver in terms they can understand? Now I admit, quoting a 45% contribution rate in a DC context may not be the best way to go – in fact it could have the unintended consequence of lowering pension saving ("what's the point!"). But a 45% contribution rate buys you the DB gold standard: retire at 65 on 67% replacement ratio, likely inflation indexed, and payable no matter how long you live. Perhaps we define the DC gold standard at a lower level.

In Australia the industry body, ASFA, publish income levels associated with a 'moderate' or 'comfortable' retirement. We could re-label these as we liked – 'bronze' and 'silver', say – but we could agree a set of parameters that were consistent with a number of retirement outcomes – so 'moderate / bronze' requires a (say) 15% contribution rate, while a 20% rate 'gets you silver'. I am not under-estimating the difficulty of agreeing the necessary parameters / assumptions (mortality, inflation, returns, age of retirement etc) but that would only be necessary if the idea has any merit.

This framework could be developed further. Ongoing member engagement would now be centred on the contribution rate.

Imagine the following possible communications:

- "Investment markets have been weaker than expected, so we calculate that you will need to **raise your contribution rate from the current**

  15% to 15.25%

  to maintain your target of 'moderate / bronze' outcome.

  Alternatively, you could raise the level of your investment risk and leave your contribution rate at 15% - but this is highly likely to increase the future variability of your contribution rate. If you leave the investment risk at the current level and do not raise your contribution rate by 0.25% now, we calculate that you will need to raise it by 1% in 5 years' time to stay on track."

- "Investment markets have been stronger than expected, so we calculate that you have built a small buffer relative to your target of 'moderate / bronze' outcome. **We would advise that you take no action as the buffer is small, but the following options are available to you…"** *Where the options would include lowering the contribution rate, lowering investment risk (to lock in gains), raising investment risk (buffer), or raising the target outcome (with accompanying contribution rate / investment choices).*

To recap: the point of this thought piece is to consider one way to improve member engagement and better empower the end saver, by offering them choices in terms that are meaningful and understandable to them. The underlying belief is that the contribution rate is very meaningful to the end saver. The idea proposed is that we should make more of the contribution rate, and the associated risks it brings or addresses.

DC measurement for the end saver

At the investment value chain topical day (June 2016), one of the more concrete ideas discussed was the need to provide more meaningful information to the DC member. There was rapid agreement that an annual statement showing the current account balance was not helpful for members. Some even labelled this practice "positively misleading" (an increase in the account balance can be associated with a decrease in wealth if the cost of a future income stream goes up). The proposed improvement was to show members their projected income in retirement (in the UK there is statutory requirement to provide this). There was both enthusiastic support for the idea, on the grounds that this was meaningful information for individuals, as well as significant caution (how far out are we comfortable making projections? How accurate do we think this will be? Does this stray into advice territory?).

This post documents how our thinking has evolved since then, and should be considered as a strawman for knocking around and improving.

We start by assuming that the end game is to fund consumption when employment income has stopped. The individual should be able to adjust their target consumption depending on their circumstances and time preferences. We then proxy that consumption with income, which is subtly different. In rough terms we could categorise consumption as akin to DB cash flow matching, whereas providing an income is perhaps more like DB interest rate hedging. Ignoring all practicality for a moment, surely the ultimate flexibility for an individual would be for them to be able to specify their future cash flow requirements. They would then be able to tailor their different savings vehicles as they wished, perhaps using their DC pension to fund an annual holiday for the first 10 years of retirement.

The levers available to an individual are well understood, and already reflected in most DC modellers. The individual can adjust the target level of income (and potentially whether real or nominal, stable or increasing), and the preferred date of retirement. This generates the 'DC liability'. We then turn to the asset side, where the individual can adjust the contribution rate and the level of investment risk. We plough through the devil-in-the-detail considerations, and agree on a method for producing projections of future income. DC delivery is then about asset-liability management for the individual.

This brings us to measurement for DC. Essentially the individual needs to know whether they are on target to achieve their desired future withdrawals, and at their desired time/age. The purpose of the measurement is to allow the individual to make changes to their journey as soon as possible, in order to reduce the size of the required change if it is delayed. The measure will therefore involve us in choosing which levers to hold fixed, in order to communicate progress through the variability of the remaining lever. To illustrate, we could assume the target income and contribution rate are fixed in which case the balancing item would be the age at which the individual is expected to achieved a 'fully funded' status. Or we could show the required contribution rate if income and age were held constant. Or show changes in the future income. In all cases a range of uncertainty should be shown around the central estimate.

Alternatively, individuals could be shown their 'success-relative-to-target' score (aka funded ratio – projected asset value, over projected liability value). This removes the necessity to frame the decision making in a particular way, but carries a couple of disadvantages. The first is technical in that a second number, their elapsed journey time, is necessary for informed decision making. If showing the expected age of retirement, the individual automatically knows the journey time remaining. The second is a question relating to how intuitive the measure would be. And this is likely to depend on whether an intuitive transition can be made from health and fitness apps, where the idea of taking action to hit targets is straightforward.

Whichever route is taken, we believe there is scope to increase the user-friendliness and simplicity of DC measurement, even over the modelling tools already in existence. However, there is considerable intellectual property that needs to be developed and hidden under the bonnet. Is this what we, the investment value chain, should be applying ourselves to?

A pension is not a bank account

What is the purpose of a pension? I would argue that, while a pension is a vehicle for saving, it is saving with a particular objective – namely to help members meet their consumption needs in retirement. And too often these days this objective is overlooked.

Any individual who plans to retire faces a fundamental discontinuity between their income (which is earned over their working life) and their consumption (which occurs over their entire lifetime). A pension scheme helps to overcome this mismatch. In a DB regime, the ultimate responsibility to provide members' accrued incomes in retirement rests with the sponsor (or guarantee fund or, potentially, the member if the sponsor is unable to meet its commitments). In a DC context, this responsibility sits squarely with the members. If they fail to spread their wealth effectively, individuals face the prospect of a lean retirement. So, in much the same way that a DB scheme focuses on managing risk for the sponsor, for DC the focus should be on helping the members manage risk, largely through pooling mechanisms. And it is in this respect that DC in many countries appears to be heading in the wrong direction.

Most DC systems (and hence the plans operating within them) concentrate on getting individual members to the point of retirement. For sponsors (employers), there is little incentive to continue to assist employees with their financial planning after retirement. The introduction of pension freedoms in the UK, as one example, has helped cement the disconnect between accumulation and drawdown, so that most DC members, to the extent that they are engaged with their scheme, aren't provided with the structure or tools to see beyond their retirement date. They regard their pension as a bank account. What's more, they reach retirement with little idea of how best to meet their complex needs.

There are three further problems. DC schemes have only part of a member's assets, are only 'partnered' with the member for part of their journey, and have only partial information on a member's risk affinity and post-retirement plans.

So what can be done? For starters, the long-touted solution of pot-follows-member could be more diligently enforced. However, this solution is clunky, in that any information about a member's future intentions and other assets gleaned by one scheme is likely to be lost in a transfer. A system of unaffiliated schemes which offer a lifetime membership (extending beyond retirement) is likely to be more effective, provided the appropriate governance and accountability arrangements are instituted. But to be truly effective, a credible, low cost post-retirement 'core option' that satisfactorily serves the needs of the majority of retirees is critical – ideally coupled with some kind of soft compulsion that steers unengaged members in this direction.

Such an arrangement would be in the national interest, in that it is geared towards post-retirement, whole of life income provision (and hence will limit the number of pensioners who become wards of the state). It is in a PDO's interests, in that they are now able to fund for a commonly understood post-retirement outcome. And it would be in members' interests, in that:

- A national solution could realise economies of scale and offer pooling mechanisms (mortality, investment pools) that are either profit-loaded or don't exist in many individual options.
- Continuity between pre and post-retirement could potentially (depending on the structure of the post-retirement solution) allow members to remain invested in growth assets for longer.
- Members would come to view their pension as serving the need for which it was intended – to smooth their consumption over their entire lifetime.

Warning: avocado toast may be hazardous to your retirement

"When I was trying to buy my first home, I wasn't buying smashed avocado for $19 and four coffees at $4 each" – Australian property mogul Tim Gurner on TV news show *60 Minutes.*

When Gurner compared the consumption choice of buying a serving of avocado toast with a down-payment on a house, his comments drew scorn and derision from millennials. Anyone who understands what motivates today's youngsters knows (surely) that they prize life experiences over providing for their future security. And besides, critics added, one would have to forego between 10,000 and 21,000 plates of avocado toast to save enough for a decent down-payment on a first home.

Ultimately though, Gurner's comments allude to some timeless (and often-overlooked) truths that we would do well to revisit. For starters (and we all know this), for every dollar we have, we can choose to either consume it (spend) or defer consumption to some future date (save). Implicit in the decision to save is an ethos of delayed gratification: that I may need to restrain myself from my desired level of consumption right now in order to provide for my future needs.

Secondly (reframing the long-term objective as pension saving instead of house purchase) those of us who are fortunate enough to be able to contemplate the concept of retirement have an expectation that there will be a time in the future when we will no longer earn, or will earn less, but will still have consumption needs. The problem is that it is difficult for people to consider today's consumption choices from the point of view of their retired selves. While rationally they may accept that saving is a good and necessary discipline, emotionally they apply some heavy mental discounting to their future state, which pales in comparison to a desire to live in the present – to drink alcohol (perhaps), to eat avocado toast, etc. Essentially, what they are doing is trading off their future financial comfort in order to optimise the here and now.

So where does that leave us? Are millennials' desires for instant gratification harming their future financial prospects? Well, maybe. But is the investment industry missing a trick? Faced with a society that facilitates, encourages and needs consumption to stimulate economic growth, the investment industry appears to be adopting an attitude that says to the younger generation in particular "we're here when (if) you need us". I believe this message could be strengthened, and that doing so would genuinely help millennials.

Here is a stripped-down illustration of what the consume/save definition amounts to, in terms of percentage of earnings. Let's make a few rough assumptions:

Average working life is 45 years, from 20 to 65.

Earnings roughly keep pace with inflation over one's working life.

Over that same period, savings (wisely managed) can earn a real return of 3% per annum.

Under these assumptions, the cost of providing for an income of $1 per annum costs x% of salary at age 20 (where x varies depending on one's income). Providing for that same amount of income at age 65 costs 3.78*x%. In other words, one would need to sacrifice 3.78 times more as a percentage of salary at age 65 in order to compensate for not saving enough at age 20. The difference arises from the years of accumulation foregone by funding that $1 of income at age 65 instead of age 20.

While this is somewhat compelling, it's probably not enough to get a 20-year old, caught up in the euphoria of having some real disposable income and with other more immediate priorities, to make a commitment to long-term saving. So we need some other devices to help them along. The first – one that is gaining traction in DC pension schemes – is the concept of auto escalation. This "nudge" principle is based on the idea that people are more willing to give up future income than present income. So they may begin contributing at a paltry rate (say 1% of earnings) but be willing to commit a large chunk (say 33%) of future salary increases to augmenting this contribution rate. If we assume that salary increases average 3% pa, then within 10 years the person who begins saving at 1% of salary will have increased their contribution rate to 11% of salary. They still forego some of the potential accumulation early on, but are approaching a respectable rate by their early 30's.

A further safeguard to the recklessness of youth is to restrict the circumstances under which individuals may access their long-term savings. Clearly there is some discretion involved here, but I would submit that accessing retirement savings to buy more avocado toast, or even to take that trip that had been on one's university bucket-list, should be proscribed. As someone who blew his first six years' pension accumulation on a (fantastic) backpacking trip across South America, I would have been grateful for some words of wisdom from my older self. By all means take that trip, I would have told the younger me, but don't confuse your savings for a life experience with your savings for retirement. Meeting the costs of the former requires sacrifices which I would have been happy to make, given the immediacy of and strong desire for the end goal. Meeting the latter demands some persuasive (non-condescending) messaging and integrated self-protective devices.

When the UK government introduced pension freedom in its April 2014 budget, it was the latest milestone on a global trend towards offering DC members ultimate choice regarding how to deploy their accumulated savings at the point of retirement. In many ways, providing this choice to members is consistent with the way that most DC plans are set up – namely to serve as vehicles for members to accumulate assets up to their retirement date. In A pension is not a bank account (see above), I argued that this orientation is inappropriate given our beliefs in the true purpose of a retirement scheme. Looking beyond this shortcoming, however, there are two broad questions that we need to address relating to members’ post-retirement situations:

1 What are the implications of providing members with freedom of choice at retirement?

2 How could the retirement industry help guide them to better outcomes?

Responses to the first of these questions will probably vary depending on where one sits on the spectrum between paternalism and liberalism. My personal view is that, when what consumers think they want differs from what they truly need, they are as likely as not to make sub-optimal choices. Furthermore, there is a well-documented tendency for people to prioritise immediate considerations over those that are far off in the future, and a widespread lack of understanding of the comparative benefits offered by the vast range of available products. A survey of attitudes by The People’s Pension and SSgA found that retirees recognise the need for a combination of flexibility and security from their pension, but at the same time are uncertain how best to achieve the appropriate (to them) balance between the two.

A comprehensive research paper produced by Schroders (*Global lessons in developing post-retirement solutions*) approached the problem of post-retirement solutions design by contrasting what people need from their retirement savings, with what they claim to want. The ultimate risk faced by pensioners is of running out of money in retirement. Extrapolating from this, Schroders identify the top needs as protection against longevity (outliving one’s savings), sufficient investment growth net of fees, inflation protection and the ability to scale one’s retirement income to varying consumption demands.

In contrast, the Australian government’s 2014 review of retirement products produced a wish-list of the criteria most valued by members. Topping this list were: flexibility (including control over access to capital and underlying investments), the desire to leave a bequest to dependants on death, consistency with pre-retirement products, transparency into the pricing of products, and the assurance of knowing that assets are ring-fenced in the member’s name.

Schroders rightly argue that it is the member’s needs (not wants) that should inform the design of a post-retirement solution, and go on to propose the components that together might do a good job of meeting these needs. Their preferred strategy combines a deferred annuity (purchased at age 65 with payments beginning from age 80) with an account from which withdrawals can be made based on a member’s consumption needs, but also factoring in the amount remaining in the account.

As it happens, Schroders’ solution has a lot in common with a blueprint for post-retirement design (The future of retirement) proposed by NEST, the workplace pension set up by the UK government. NEST went through a similar process of identifying member needs. Their list combines a stable, real income for life, providing access to lump sums where necessary, the ability to pass on savings in the event of early death (post-retirement), and a requirement for simplicity and low cost. Although on first glance the criteria appear different from Schroders’, they are effectively targeting the same outcomes (NEST gives greater prominence to passing on savings to dependents). The components of NEST’s solution also differ slightly:

- They defer the purchase of the deferred annuity to age 75 (subtle variation in the management of mortality credits relative to investment returns).
- NEST set up a designated cash lump sum account to provide for ad hoc lump sum withdrawals.

In totality, however, the two proposals are broadly similar, and suggest a common set of objectives that are appropriate to the majority of people approaching retirement. Which brings us back to the second question above: how might the retirement industry help guide members to a better post-retirement solution? Here are a few suggestions:

- The government (yes, they are an actor in the retirement industry) could endorse a set of requirements that a high-quality solution should deliver.
- Products should have a kite-marking scheme that identifies which of the above requirements they satisfy. The kite-marking should be smart enough to enable members to evaluate a combination of different products.
- Pension plans should design or adopt a post-retirement ‘core’ option (run by approved outsourced providers) that they recommend as appropriate to most members, and combine this with an at-retirement filtering process to identify those members for whom it is not likely to be suitable.

The above steps are not onerous. And they allow members to retain freedom of choice. But continuing with the status quo leaves DC members confused and exposed to commercial providers who don’t necessarily have members’ interests as their top priority. Our industry can do better than that.

The zeitgeist

We refer to 'The zeitgeist' (the spirit of the time) as evolving an industry or a retirement system doesn't happen in a vacuum: it happens within an environment of ideas that are shaped by, and that shape, the individuals who are also the end savers. We therefore consider a couple of more philosophical pieces as we seek to chart the uncertain waters.

Brexit – lessons for the retirement industry

Whether you're delighted or dismayed with the Brexit outcome, the election process has thrown light on some interesting aspects of the current state of the UK, and the world. Clearly globalisation has not worked for all, national identity remains strong in an increasingly inter-connected world, and there is a general distrust of political authority. How the UK and Europe move forward from here is uncertain. Rather than speculate on the future, I'd like to consider the process by which this issue was decided.

For starters, who should have been entrusted with this decision? Elected, full-time members of parliament who are, to use a highly charged term, experts in understanding the implications of multi-faceted issues on the lives of their constituents? Or voters who, assuming independence of decision making, can deliver a 'wisdom of crowds' verdict?

Secondly, analysts are in general agreement that both sides ran a very negative campaign. Is fear the best motivator for decision-making, or would a positive stance delivered a superior process?

Applying these points to investment, and particularly DC:

1. who is best placed to make decisions about individuals' futures – the individuals themselves, or full-time experts?
2. what communication tone is best – using fear to constrain decisions, or a more positive slant to nudge or guide?

There are options available (or that could be developed with not too much effort) that can generate "suggestions" for members in a cost-effective way, by considering members' financial objectives and desired outcomes. However, in the absence of safe harbour for offering this "advice", retirement professionals fear the possible comeback from trustees or scheme members if the advice they are given turns out to be less than optimal. If we want to restore public trust in our professional duties, I suggest some possible courses of action:

- Take some responsibility for the process of making financial decisions. Not doing so threatens the relevance and legitimacy of our professional status.
- At the same time, emphasise the unpredictability of outcomes, and propose ways for mitigating the risks associated with this uncertainty.
- Engage with regulators to enshrine the necessary protections for the consequences of a diligently run advisory process. Without this, current and future generations of DC members will be saddled with financial decisions they are ill-equipped to make.

Uncertain times: the future of economic globalisation

The recent speeches by Chinese President Xi Jinping at the 47th World Economic Forum Annual Meeting in Davos and Donald Trump at his inauguration as the 45th president of the United States of America, provided seemingly opposing views on the future of the global economy.

Xi Jinping's keynote address acknowledged the 'double-edged sword' of economic globalisation: on one hand powering global growth through facilitating the movement of capital, goods and people, and on the other increasing inequality between the 'poor and the rich, the North and the South'. However, Xi suggested that many of today's problems (citing current regional conflicts and the global financial crisis) were not caused by economic globalisation but by more systemic reasons such as poverty, inequality and poor regulation. As such there is a strong case to maintain open co-operation between nation states, guided by a focus on innovation-driven growth models and greater representation of emerging markets and developing countries in global governance bodies.

Donald Trump's inauguration speech three days later struck a significantly more nationalist and protectionist tone, perhaps unsurprising given the nature of his campaign for the presidency, which focused on 'America First'. This declaration of overt protectionism by the world's largest economic power on areas such as manufacturing, jobs, defence and foreign policy is worrying to global markets already shaken by Brexit and rising European nationalism. The heightened economic uncertainty requires investors rethink their coping strategies in complex financial markets (see page 16 of Thinking Ahead Institute (2015), "State of the industry – part III" paper on the TAI website, for coping strategies in VUCA environments - (member login required).

There is no definitive solution to this potential schism between the status quo (globalisation and free trade, with an established political class) and protectionist, post-truth politics (those who feel let down by the current system and want a restoration of protective nationalism). We only have educated guesses as to what President Trump's policies will be and the consequences (both intended and unintended) are even less clear. Likewise, we don't know how China will respond or in fact whether they will take a leadership position in defining economic globalisation. Polarised media and skewed messaging, depending on what one is reading or watching, makes a unified world view even more elusive and so it is essential for investors to continue to observe the undercurrents that reformulate a new economic reality, and be ever vigilant for the potential for "extreme" outcomes. Resilience in portfolio construction is key. Reprising the eternal truth of Heraclitus, "the only constant is change".

The arena

And so we arrive at the centre, 'The arena', our best understanding of the space, or the environment, in which we pursue the investment business. It will be here if anywhere, surely, that we will find our dragons. Well, maybe not, as most of the arena's thought pieces link to other sections and are to be found there instead. In addition, five of the thought pieces that perhaps best describe the arena are found within 'Limits to prediction' – the last stop on our journey before we return to the arena. So if the theory geeks were not permitted a racing start, they can at least look forward to a big finish. For now though, a couple of interim pieces.

Systemic risk and the investment industry

In 2014, the US Office of Financial Research (OFR) suggested that asset management firms, on account of the enormous capital flows they facilitate, should be designated as systemically important financial institutions (SIFIs). Although the focus of regulators seems to have shifted away from investment firms and towards better understanding market liquidity risks, the question of the investment industry's association with financial stability, or lack thereof, remains relevant.

In an address to the CFA Society, Bob Jenkins (Adjunct Professor of Finance at the London Business School) argued that, in order to safeguard the stability and sustainability of our industry, investment managers need to act against financial practices that they consider to be destabilising. He points to three compelling reasons why the investment industry should adopt an active stance on this matter, namely:

1. It is in the investment industry's interest (certain speculators aside) to maintain a stable financial system.
2. Financial instability erodes trust in the financial services industry as a whole.
3. The investment industry is next on the list as a target for regulatory attention.

Jenkins singles out persistently high levels of leverage in the banking sector as the biggest potential contributor to another financial meltdown. Banks have, he contends, successfully either diluted or delayed regulation that seeks to limit their capital margins (Basel III and Dodd-Frank). There has so far been no coordinated response to counter the banks' position – ie to insist on reduced potential to engage in leverage as a means of improving financial stability. Jenkins encourages investment organisations to speak out against this and support tighter constraints on permitted leverage. To do nothing, he suggests, is a failing in the investment industry's responsibilities to the people who entrust it with managing their money.

Jenkins stops short of saying what form the industry's stance on this issue might take, but his argument raises some questions regarding responsibilities associated with ownership. For starters, we might ask whether asset managers/owners should have been more aware and/or vocal regarding financial practice that led to the GFC. And, given what we have learnt about the dangers of leverage, what action might a responsible owner take? Should they disinvest, in which case ownership would revert to less engaged, less scrupulous investors? And what are the consequences of investors staying invested but upping their stewardship standards? What scope is there for owners to collaborate to make a difference?

There is another unanswered question implicit in this address: what has stopped investment organisations from taking action to date? Clearly, there are some conflicts in the case of bank-owned asset managers, but this doesn't explain the silence of the rest of the industry. Is there a general reluctance to take on the responsibilities of engagement as owners? And if so, what needs to change for investors to become more involved?

Do we get the investment (eco)system we deserve?

The first research produced within the Thinking Ahead Institute, State of the industry, concluded by contrasting five likely futures with more desirable versions of them – the argument being that 'we' the organisations within the system could, if we wished, create a different and better future. One of these was the likely future of 'modified market fundamentalism' contrasted with the more desirable (our view at least) 'inclusive capitalism'. Standing on stages and trying to convince asset owners of $1bn or so that they had the power to shape the future of capitalism was a tough sell. To attempt it, I argued that the economy was akin to an evolutionary search engine – in this case business models were being selected rather than genetic traits. When a buyer chooses between competing business models, one is rewarded and gets access to more resources, making its future selection more likely. Roll forward through enough iterations and the makeup of the economy reflects our multiple selection decisions. I therefore argued that no matter how small an asset owner's portfolio, their selection of agents still mattered – and therefore they should choose wisely, mindful of long-term consequences.

Moving this thought piece to the present, we have recently hosted a topical day during which we explored whether the investment industry was an ecosystem. In essence we were testing whether my above intuitive argument had any substance. While we have no definitive proof, my assessment is that the attendees finished the day more convinced of the 'ecosystem hypothesis' than they started. What we can say definitively is that there was overwhelming support for continuing this line of research.

A couple of lines from the day seem worth pondering. The first was the statement that the number of listed equities in the USA had fallen from over 7,000 to under 4,000 (see The Incredible Shrinking Universe of Stocks, Credit Suisse, March 22, 2017 PDF widely available on the internet). The second related to the possible growth in allocation to private assets given the return imperative many asset owners are under. Is it a co-incidence that the USA has the most developed private equity industry in the world, and appears to be the only market in the world with a shrinking number of listed equities? Is it possible that asset owners of the past (say 30 years ago), by selecting '2 and 20' private equity business models, have shaped the current ecosystem – where current asset owners are faced with a listed equities market where the industries are more concentrated and the average listed company is bigger, older, more profitable and more likely to return cash? [Aside: '2 and 20' is in quotes to refer to the whole business model, not just the fee rate – a separate debate could be had on whether the fee model implicitly selected has delivered net value.] Are the prospective returns on such a listed market lower than for one comprising smaller, younger, less profitable, higher retention of earnings companies? And, if yes, is this understood intuitively and does it act as a reinforcing mechanism to increase the size of the private bet? But if asset owners continue to allocate more to private equity, shouldn't we expect the number of listed equities to continue to fall? This doesn't have to be a bad outcome – however, the fact that a security is listed communicates a lot of information to an investor regarding transparency, controls and governance. Which suggests that when selecting private equity business models, asset owners should opt for those that offer the transparency, controls and governance that they would like to see as the 'status quo' five or 10 years hence.

The players

The piece immediately above called out asset owners as a key group of players, and their role in selecting asset managers, which come in different forms. Much earlier were pieces commenting on CFA UK's view of the investment profession and FCA's take (FCA is the UK regulator) – so these too link to 'The players'. The pieces which follow could be seen as eclectic – or, more kindly, as highlighting the rich depths that are available here for exploration. We cover product, new entrants and the active vs passive 'thing' – but we start with asset owner collaboration.

A game of co-opetition: exploring the benefits of asset owner collaboration

It may seem like a hidden truth but the reality is that asset owners are in competition with each other. They are in competition for the best alpha ideas, the best manager products and the best research – all with the aim of improving risk-return trade-offs to increase the likelihood of meeting their liabilities. As a result, many asset owners find it difficult to collaborate, even in initiatives that may prove mutually beneficial. At the Thinking Ahead Institute's recent Sydney roundtable event, asset owner attendees highlighted the top three barriers to successful peer collaboration: (1) difficulties being transparent; (2) lack of time and resources available; and (3) difficulties in aligning interests. At the same time, attendees agreed on the value to funds of collaborating productively on industry structure and regulation, and on a universal owner / alignment of interest agenda.

The word 'co-opetition' was described in Brandenburger and Nalebuff's 1997 book of the same title and refers to the ability of competing businesses to cooperate with each other with the aim of generating mutually beneficial outcomes, taking insights directly from game theory. Game theory can also be seen to apply to the myriad of investment decisions needed to be made by pension fund boards who aim to fulfil the requirements of several potentially misaligned stakeholders. The pursuit of rational but non-collaborative strategies generally produces poorer outcomes (prisoners' dilemma) whereas better payoffs can often be produced through effective methods of collaboration or government influence. There are numerous academic articles and research projects that prove this assertion and I point to just three examples:

In their 2009 paper titled *Improving pension management and delivery: an (im)modest and likey (un)popular proposal*, Bird and Gray argue that excessive competition among retirement savings providers has undermined their key objective of maximising net returns to members in three main ways, namely:

1. **Inefficient pricing:** the race to outperform each other (largely but not exclusively through listed equities), forces asset managers to often rely heavily on momentum and other non-information-based strategies. This causes significant mispricing away from fundamental values, leading to sub-optimal capital allocation, which lowers long-term returns.
2. **Agency costs:** the growth of intermediaries and other agents has led to increased complexity, uncertainty and substantial increases in costs. And given that active management is effectively a negative-sum game after fees, aggregate returns are reduced.
3. **Excessive choice:** Bird and Gray refer to Fear and Pace's 2009 article *Australia's 'choice of fund' legislation: success or failure?* to argue that despite the plethora of investment strategies available, a large portion of Australian institutional retirement savings funds were essentially identical with little investment choice exercised. Therefore members bear the direct and indirect costs of competition-induced excessive choice. Additionally the average fund size was seen to be well below that needed to benefit from economies of scale[1] (including lower fees). Better outcomes would have been achieved if there was better default design for workers who 'choose not to choose'.

Bird and Gray suggest that these leakages can be plugged by rationalising the retirement savings industry and its agents and by greater cooperation (such as through joint research efforts) while retaining the genuine benefits of productive competition.

In his 2011 paper, Pension funds as universal owners: opportunity beckons and leadership calls, Urwin argues that it is in the interest of universal owners (who, through their portfolios own a slice of the whole economy and the market) to collaborate with other asset owners to ensure the health of the investment ecosystem as a whole. In a nutshell, while universal owners adapt their actions to try to directly enhance the value of their portfolios they indirectly help the whole economy to secure a more prosperous and sustainable future.

And finally, in its recent (2017) survey of 15 best-practice asset owners carried out on behalf of the Future Fund, Willis Towers Watson observed the following trends:

4. Some participants had developed more strategic partnerships and have seen benefits in sharing information in areas like operations, human resources and technology. All participants agreed that peer collaboration had proved valuable to some extent, but noted that further work needed to be done to crystallise these opportunities.
5. The group was very cognisant of their external profiles, and greater success was aligned to where their profiles had been very deliberately and carefully cultivated, often through proactive and highly visible strategies. Willis Towers Watson noted that there were growing expectations on leading asset owners in cooperation with others to exercise positive influences in pursuit of their financial goals, and to consider environmental, social and governance issues through their ownership interests. Peer relationships and collaborations are particularly helpful in this regard.
6. Many participants outlined explicit goals to enhance collaboration, whilst some described instances of co-investment success, although most saw this as more limited in reality than they had initially hoped. Several are now looking to be more discerning and targeted in their collaboration activities, making one or two relationships much richer and deeper. The limits to senior time and bandwidth are clear constraints.

Effective collaboration, without sacrificing the genuine benefits of competition, requires clearly-defined objectives and goals. Moreover though, at the very base level it also requires a mindset shift among asset owners which recognises that these strategic partnerships have the potential to be mutually beneficial.

Regrettably collaboration is hard. The Thinking Ahead Institute is a form of collaboration, and we are very aware that even the best-meaning individuals and organisations bring constraints (commercial or otherwise) along with their goodwill. The next piece shifts the focus more towards the asset manager players, but concludes with considering the 'value chain' and the necessity for all links to be strengthened in order for value to flow to the end savers. You don't have to peer too hard at the subtext to find 'collaboration' again.

[1]There is a trade-off involved here, between economies of scale enjoyed by larger funds, and the ability of smaller funds to express conviction and flexibly alter their positions.

The future of asset management

I have been invited to contribute thoughts on the future of asset management to CFA UK's Professional Investor magazine. I thought I would use this forum as a dry run. I propose to use the 'rule of three', three times: three lenses, three issues, and three choices.

Three lenses

I believe the Thinking Ahead Institute is trying to promote improvements in (a) investment strategies, (b) organisational effectiveness and (c) societal legitimacy. The first is a logical starting point, and where most debate occurs – the growth of index-tracking, smart beta, factors, active ownership etc. Organisational effectiveness is about converting inputs into outputs. A quick scan of the horizon shows the approach of digitisation / roboadvice, the retailisation of pensions, the insourcing / professionalisation of asset owners, and regulatory change. Throw in softer considerations such as culture, and we believe organisational change will be inevitable. And then there is societal legitimacy, or the licence to operate. We suggest that any industry that loses its licence to operate eventually suffers.

Three issues

Issue 1 – adoption of complexity frameworks, models and coping strategies

TAI papers such as State of the industry and Stronger investment theory and practice have made the case that the world is a complex, fast-changing, inter-connected place. However, grappling with complexity is hard work, and somewhat humbling and depressing; first, there are no easy answers; and second, we must give up the pretence that we get to control the outcomes. Nevertheless, the prize – improved outcomes – is worth shooting for.

Issue 2 – sustainability of...

This flows directly from issue 1, and you can pick your topic: DB delivering on its liabilities, DC in its current form providing meaningful retirement income, capitalism in its current form, climate etc. Many of the necessary changes are beyond the investment industry's direct control, but there are things we can do, such as better governance, longer horizons and choices which shore up trust.

Issue 3 – the next financial crisis

While certain measures have been taken to reduce the likelihood and severity of any future system-wide crisis, it remains arguable what level of risk the system continues to run. So what should the investment industry be doing in terms of investment strategies, organisational effectiveness and societal legitimacy? This leads us to the three choices.

Three choices

Choice 1 – how will we define success?

We would contend that the current investment industry defines success as producing single-period, short-horizon, cross-sectionally-diversified, time-weighted relative returns. There are two problems with this. First, in aggregate, the industry cannot produce a positive relative return – so we are setting ourselves up to fail. Second, and more importantly, our clients need multiple-period, long-horizon, time-diversified, money-weighted returns. We believe that if the industry chooses to re-align with the needs of the end saver we will see significantly different investment strategies, differently organised firms, and vastly improved societal legitimacy.

Choice 2 – do we want to be a business or a profession?

CFA UK recently published a paper entitled The value of the investment profession. The paper is an excellent review of the status quo, but it repeatedly refers to the 'profession' of investment and makes no reference to the 'business' of investment. The vast majority of individuals in the industry are employed by for-profit businesses, and we cannot afford to overlook that aspect in an assessment of our collective future. At the risk of being too contentious, we suggest that businesses are run for owners (shorter-term profits) and professions for clients (longer-term profits).

Choice 3 – how should we structure the value chain?

This was the subject of the recent TAI topical day. The biggest learning point for me was that we should lift of our focus from our own small sphere of operation (whether we add value), and engage more with the health of the entire investment value chain. After all, the whole chain must hold for value to flow through to the end savers. Less immediately practical, is to consider the changing environment (eg the rise of DC) and to recognise that we may need to re-work the value chain to meet changing client needs.

ETFs are a vehicle rather than a true player. However, the rapid recent growth in assets invested via ETFs has led them to be considered a powerful force within the industry. The piece below considers some of the potential dangers but concludes that, as with any tool, the dangers and the usefulness both come down to how they are used.

ETFs: not what they seem?

Since their introduction in 1990 as a cost-effective means of index replication, exchange-traded funds (ETFs) have grown exponentially in number, variety and asset value. At the end of 2007, before the main market impact of the global financial crisis, there were 1,170 distinct ETFs with a total market value of $851bn. Nine years on, at the end of 2016, the comparable numbers were 6,625 funds valued at $3.546trn (according to sector researcher ETFGI) – an increase in assets of 317% over the period. ETFs' rising popularity stems from several benefits they offer investors: they are cheap (the total expense ratio on State Street's $139bn SPDR fund is 9 bps), they provide exposure to numerous asset classes, industries, geographies, factors and indeed combinations of these, and (in theory, because they are listed on exchanges) they offer a liquid means of building, hedging or shorting a position.

However, ETFs are not without their risks.

Liquidity issues have emerged in the past, in periods of market stress, and remain contentious. ETFs are structured to provide liquidity at two levels, namely the trading of the ETF on the secondary market (investors trade shares in the ETF like a normal listed share) and primary market liquidity, when ETFs are liquidated or created from their underlying components. Here, it is instructive to distinguish between "plain vanilla" and exotic ETFs.

In the former grouping, the instrument is closely matched by its underlying components, both in terms of composition and liquidity. Provided the ETF is not so large that its dealings (for example, in response to changes in index constituents) have a market impact, these ETFs have proved to be largely robust in the past. Capacity management (the market impact point) is the main issue to watch. Despite some temporary divergences from their underlying indices, these ETFs have for the most part been true to their stated objective of providing exposure to their underlying holdings.

In contrast, exotic ETFs are characterised by liquidity mismatches, leverage or both – and it is on these products that concerns tend to focus. In the event of a sell-off in a high yield ETF, for example, where liquidity in the underlying bonds has all but disappeared, gaps may emerge between the price of the ETF and that of the index it is trying to replicate. In theory, the action of authorised participants (APs) in the marketplace should prevent this. APs are incentivised, but are not obligated, to make a market in ETF shares and exploit arbitrage opportunities when the price of an ETF diverges from its underlying. However, given that this involves a parallel trade in the underlying securities, APs may withdraw from the market under conditions where the liquidity of the underlying holdings dries up, or there is significant market volatility in the price of the ETF's components. Under these circumstances, the price of the ETF may diverge significantly from the stated index price due to supply of and demand for the ETF in the secondary market.

Synthetic ETFs, where the ETFs are not backed by physical securities but by derivatives with investment banks as counterparties, also present some issues. In many cases the collateral posted by the counterparties to the derivative arrangements bears no relation to the assets of the underlying index being tracked. At times of stress this mismatch exposes the ETF to credit risk from its counterparties. Now, aversion to holding the collateral basket or dealing with the counterparty bank may cause APs to stop providing primary market liquidity - again giving rise to potential price discrepancies between the ETF and its components.

There are also market structural reasons why the performance of the ETF may not replicate its target index. For example, in the case of the VIX, the ETF will replicate its exposures using forward contracts on the index. Owing to the usual state of contango (upward slope) on the VIX futures curve, long-term holders of the ETF will gradually have their capital eroded (relative to the performance of the index) by paying away the roll yield of the futures.

Leveraged ETFs present other difficulties. Due to the requirement to rebalance leverage daily, investors using a leveraged ETF to match their exposure to an index may find that after three days of market volatility they have not had the gains or losses they expected based on the performance of the index.

Then there are issues relating to ETF operational structures. Given the predictability of ETFs trading in the market when indices are rebalanced or future contracts are rolled over, there is some concern that they are easy targets for speculators, particularly in times of financial stress.

Ultimately, the outcomes from ETFs come down to how they are deployed. Here we invoke our strategies for coping in a complex investment environment. Investors need to be clear on their investment objective (self-understanding), have a clear understanding of the strategy they are deploying to achieve this (adaptability), and be mindful of the other market participants trading in ETFs and how they might be looking to exploit structural features of the products (meta-understanding).

The next piece is a brief look at the rapidly developing fintech scene. The growth of technology within investment isn't really up for debate. The shape that eventually emerges absolutely is up for debate.

CFA Fintech Unconference

On 8 November, I attended this CFA-organised unconference (defined as "a loosely structured conference emphasising the informal exchange of information and ideas between participants, rather than following a conventionally structured programme of events"). The event was structured as an introduction, followed by a series of "pitches" of business concepts by a number of small firms with innovative, fintech-related ideas. The pitching organisations were all start-ups – indicative of the opportunities for new business models that fintech offers. While some of the business propositions were interesting, none seemed likely to revolutionise or significantly disrupt financial services (although I stand to be proved wrong on this).

In introducing the event, Marco Jean Aboav (fintech entrepreneur and head of asset allocation at MoneyFarm), gave an overview of how fintech has developed to date. He described three waves in the evolutionary process, namely:

1.0: Pre-2008, mainly in the areas of online and mobile banking

2.0: 2008-2011, which saw a proliferation of online products and platforms in wealth management and asset management

3.0: Happening now, in which companies are forming networks to essentially replicate the functions of a full-service bank

The fintech business environment is highly competitive. There has been significant investment by incumbents, but their legacy cost base makes them inflexible. Aboav estimated that they incur costs of roughly twice that of new entrants for similar offerings. It was not clear whether established financial firms are better able to leverage their existing client base, or whether they are concentrating their fintech marketing on new customer segments.

Five major sub-sectors to the fintech "industry" have been identified, which together cover the entire consumer life-cycle:

- Payments (including emerging market payment solutions).
- Insurance – currently the fastest growing sector, attracting the bulk of new investment.
- Deposits and lending (including peer-to-peer, crowd-funding).
- Analytics.
- Asset and wealth management – Marco observed that wealth managers are becoming the "new asset managers".

The sector is spawning numerous new entrants, who are typically legacy-free, consumer-centric entities, with simple, scalable business models and propositions. Profitability for new entrants is less of a concern than penetration (measured by active users, hits, etc) – the primary priority appears to be building a customer base, with the understanding that profitability will follow.

Offerings are differentiated by whether they are B2B or B2C – firms in the former category deal in large contract sizes and hence depend on an established track record, whereas those in the latter deliver a mass market offering and are typically less pedigreed.

When it comes to the hot topic of 'active vs passive' (strictly, should be 'index tracking') we are keen to take as holistic, or system-wide, view as possible. The following piece suggests that the changing mix of players is nothing more than the result of an evolutionary search for a more efficient outcome (the cheapest form of price discovery). In this light, the only reasonable expectation is for the mix of players to continue to shift...

Active versus passive – an ongoing investment debate

The trend of shifting investment allocations from active to passive management has accelerated in recent years. "Since the end of 2006, investors have withdrawn nearly USD1.2 trillion from actively managed US equity mutual funds and have allocated roughly USD1.4 trillion to US equity index funds and ETFs." ("Looking for Easy Games", Mauboussin, Callahan and Majd, Credit Suisse, 2017)

It is simply a mathematical fact that active investing in aggregate produces market returns minus costs. Empirical evidence overwhelmingly supports the findings that net of fees, the majority of active managers underperform the market. Does it really make any sense for most investors, particularly the ones who are less informed, to engage in this negative-sum game?

On the other hand, active investing does produce a very valuable social good: the discovery of so-called efficient prices for all financial instruments, a key foundation upon which market-driven capitalist systems are built. An economy with no active investing would be extremely inefficient from a capital allocation point of view.

One of the key questions to address in this debate is whether the current balance of active vs passive is appropriate from an aggregate/society point of view, which in turn would inform whether the current shift towards passive is value-enhancing or value-destroying for society.

In order to answer that question, let's evaluate active management as a social good, by comparing the aspects of price and value. Warren Buffett once famously made the statement that "price is what you pay and value is what you get". The net gain for the society is the difference between two: value (V) – price (P).

The price/cost of price discovery is relatively easy to calculate. One can measure the total amount society spends to invest (A) and then compare this cost to what society would pay if all investors held a passive market portfolio (B) – the difference (A-B) is the cost of active investing/price discovery. Kenneth French used this exact logic in his 2008 American Finance Association presidential address, suggesting that for the period of 1980-2006, investors on average spend 67bps of the market cap in the US for price discovery (P).

The value bit is, however, much trickier. In theory, it is the economic loss to society due to inefficient asset prices in a hypothetical state where there is no active investing at all compared to another hypothetical state where prices are completely efficient. (Grossman and Stiglitz (1980), however, made it clear that pure efficiency is fleeting: market inefficiencies are a necessary incentive for investors to engage in active investing). In practice, the value of price discovery is very difficult, if not impossible, to calculate.

A new study (latest draft on 23 December 2016) by two Wharton professors (van Binsbergen and Opp) addressed a different but relevant question: how much potential value could society gain if all informational inefficiencies in current asset prices were eliminated? The authors quantitatively assessed the real value losses associated with financial market anomalies. It is well known that firms make the wrong investment decisions as a result of distortions in market prices and the cost of capital. The maths is complicated but the conclusion is clear: society could gain value that is worth 10.6% of public firm net payouts for eliminating price inefficiency completely. I have used free cash flow as a reasonable proxy for the paper's net payouts. Given the latest reading of free cash flow yield for the S&P 500 of 4.7% (as of 23 Jan 2017), the potential value to society of eliminating all existing price inefficiencies in the S&P 500 is around 50bps of the market cap. This finding, that there is still value on the table, provides an incentive for the job of price discovery. The lack of a suitable counterfactual, however, means that we cannot quantify directly the amount of value (V) that active management has delivered from a base of complete market inefficiency. Nonetheless it is probably reasonable to assume that the more efficient financial markets are, the less the economic gain would be from further reducing pricing anomalies and the higher the value society was deriving from active investing (everything else being equal).

There is evidence suggesting that financial markets have become more efficient. Bai, Philippon and Savov (2015) claimed that using certain measures, prices in financial markets were 80% more efficient in 2010 than 1960, well before the first ever index fund was launched. The upward trend in improving market efficiency is steady throughout the 50-year sample. Along with a shift towards passive, in the last few decades we have also experienced the rise of high-cost and highly-active alternative sectors like hedge funds. It is plausible to suggest that these two trends together produced better price discovery for society (V).

How about the cost (P)? The aforementioned study by Kenneth French covered a shorter period of 1980-2006 and his data indicated a relatively stable P throughout the entire period (starting with 64bps in 1980 and ending at 66bps in 2006; 1983 and 1986 saw the highest 74bps and 1981 saw the lowest 56bps).

I believe this shows the investment 'system' is a dynamic ecosystem (or complex adaptive system, in deeper jargon). The system has acted as a search engine to find a more optimal solution – better price discovery for the same spend. It looks to have achieved that by barbelling from active to both cheap passive and expensive high active. So much for the past, what happens now? It is reasonable to expect the system to continue searching for an even better position, and that could involve more in passive, lower fees on hedge fund allocations, and a further shift from 200-stock traditional active portfolios to 20-stock high-conviction portfolios.

Financials

It is a straightforward step from the shifting mix of players to the financials of the investment industry. In this section, the pieces propose changing mandate fee structures to pay out a share of dollar-value created, warn against asset owners being captured by highly-paid employees, and consider whether high levels of variable pay best serve the interests of the end savers.

An alternative approach to asset manager fees

In a previous post (see 'Measurement' section), I argued for a new metric – cumulative dollars earned 'CDE' (and for this to be compared to 'cumulative fees earned' by the manager). Secondly, my colleagues at WTW have long argued that a fair asset manager fee would be no more than one-third of the gross value created. This balances the need to compensate the agent for their skill with the recognition that the principal is supplying all the capital at risk. It is time to combine these ideas.

Sticking with the status quo ad valorem rate arrangements for the time being, how do we approach the principle of the fee should be no more than 33% of the value added? There are two choices: (1) predict the manager's future gross alpha and agree to an annual fee representing one-third of that amount, or (2) use a performance fee mechanism to calculate payments after the event. Clearly, with the first option, actual experience in an individual case is likely to differ from initial expectation – for better or for worse. In aggregate, however, given that alpha is a zero-sum game then we know that this approach will mean the asset managers take more than 100% of the value created, which is not the intention.

Does this mean we have to go down the performance fee route if we are to solve the macro issue? Regrettably, because I dislike the complexities necessary to correct for the unwelcome side effects of traditional performance fees, I think the answer is 'yes'.

Therefore we need a less-complex solution, and I believe that paying a share of cumulative dollars earned offers a fair and transparent alternative. In principle, we measure the CDE and the asset manager is entitled to 33% of that amount. In practice there is a little more complexity but, I would argue, nothing like the complexity needed for current performance fees. I suggest the necessary elements are agreement on:

- The value sharing (say 33%, but could be different).
- Any base fee element (in extremis this could be zero). An obvious reference point would be the appropriate index-tracking (or perhaps the appropriate smart beta) fee rate. The opportunity could be taken to move away from the basis point structure within the industry and set a dollar payment rate (possibly indexed to wage inflation).
- A withholding mechanism. Changing the fee structure will not remove the noise from the performance results, and so there will still be a requirement to protect against cumulative overpayment. One option would be a symmetrical clawback system, where in a subsequent year the manager returns money to bring the cumulative fees paid back to the agreed share of CDE. On the assumption that this would be too painful for the asset manager, a withholding rate (say, 50%) could be agreed. The earned-but-not-paid part of the fee would be carried forward to the next calculation date. I am aware that there are some (but not many) performance fee structures with such mechanisms already in place for long-only equity mandates, but it is different from the current arrangements in the alternatives field and so there may be implications (such as tax crystallising) which could make this unworkable. Of course in private equity there are 100% withholding mechanisms – the problem there is that fees are paid on total return rather than alpha.

The mechanics of calculating the fee are then (fairly) straightforward. At the end of the first year the value of the benchmark portfolio is calculated – this is a notional portfolio that starts at the same size as the real portfolio and changes in value in line with the benchmark or index (and is adjusted to mirror the cash flows into and out of the real portfolio). The difference in the dollar value of the actual and benchmark portfolios is the dollar value created (or detracted) by the manager (the CDE). The share accruing to the asset manager is then calculated, say 0.33 x CDE. From this, the dollar value of the base fee paid over the year is then subtracted, leaving the dollar value of the performance fee element. As suggested above, a proportion would be paid immediately and the remainder withheld until the next calculation.

The crucial aspect is that subsequent years are continually added so that the cumulative dollars earned are calculated over the whole life of the account. There are no rolling periods from which bad years can drop out, causing a fee boost, and there is no need for high water marks. If the asset manager adds considerable value over time, they pocket 33% of it (or as agreed). If they do not add any value at any stage, they only collect the low base fee. It is possible for a large fee to be earned in a single year, and for no value to be added after that. If the manager is terminated at that point, they may have earned more than the agreed 33% share, but the asset owner will have been partially protected by 50% of the pay-out being withheld.

Of course there is the complexity of how the accrued but unpaid performance fees are released on termination, but again this is relatively straightforward.

I think this is a fairer, better aligned mechanism.

PDOs: is net value added good enough?

I recently came across a piece in which Keith Ambachtsheer argues that you must assess pension funds on value-for-money (linked here), and not the absolute level of fees or costs. The point of this piece hinges on a confession – namely that I, wrongly, read Keith as talking about 'net value added'. This could be semantics, but I want to give Keith the benefit of the doubt as he has repeatedly extolled the virtues of integrated reporting which proposes assessing value creation through the lens of six capitals (and multiple time horizons) not just in terms of financial capital. Net value added, I would argue, looks very much like a financial-capital-only, single-time-period assessment.

What is the point? Well, I have been thinking recently about the size of pension funds, or 'pension delivery organisations (PDOs)' to use another Ambachtsheer term. For defined contribution assets, does any country need more than five (say) master trusts? Enough for viable competition, but sufficiently few to enable economies of scale to be harvested. I am beginning to settle on the belief that, as far as operational aspects are concerned, almost any single-employer DC arrangement is likely to be sub-scale and therefore inefficient. The arguments need finessing when we leave DC, but I believe the principles remain the same.

My beliefs regarding scale and investment performance are less settled – and particularly where the combination of operational economies and competitive investment diseconomies might fall. However it is the growth of internal investment teams within asset owners that I am finding interesting. I assume that the growth of 'operational' staff is relatively easy to judge and manage relative to the harvesting of economies of scale (cost per member should fall with scale). But how do we judge or manage the size of internal investment teams? With more staff, asset owners can pursue more complex investment strategies which offer, but do not guarantee, higher returns. But more staff also means more agents and more career risk. At what point do the management / employees capture the PDO and run it for their own purposes? If investment returns are always strong, then maybe this concern never becomes material. The financial capital lens suggests that we can safely ignore the high absolute costs, because the benefits are even higher. But if the PDO's investment returns are weak for a period then not only will the financial capital lens show red ink, but we may also find that the social capital is in serious deficit too. At that point the governing board could find themselves with a serious headache.

So at the margin I do disagree with Keith, in that I think the absolute level of PDO costs do matter. In most cases PDOs are profit-for-member entities and so are not subject to the market discipline facing profit-for-shareholder entities. It is therefore relatively easy to add cost under the cover of enhanced net value, but I suspect much harder to reduce cost. My thinking up to this point has been about the number of employees, but I can't resist a brief mention of compensation and incentives. How should a PDO compensate its staff? Let us assume the same base pay and a spectrum for variable pay ranging from 0% (pay for the job) to 200% (pay for performance). Beliefs (and values) can (and do) differ about the extent that the investment return streams will vary as a result of the incentive structure chosen. But when it comes to the difference in the risk of internal agency capture I think there is only one answer. High variable pay means a significantly higher risk that the employees run the PDO for their own benefit.

To bonus or not to bonus?

Towards the end of August there was great fanfare in the financial media regarding the decision of Woodford Investment Management to cease paying bonuses to their executives. Daniel Godfrey, the former chief executive of the Investment Association, announced similar intentions for his soon-to-be-launched investment trust. We considered remuneration in a 2015 TAI research piece, and floated the fixed-pay-only model as an option worthy of consideration.

Having raised this subject within the forum of the Thinking Ahead Institute, it is clear that the discussion around compensation is highly nuanced. Remuneration could be structured in any number of ways, with fixed pay at one extreme and (for illustrative purposes) a fully variable compensation package at the other. Arguments on the impact of pay structure on motivation, performance and alignment of interests are likely to run and run – it is difficult to move beyond subjective beliefs and to make categorical statements regarding outcomes.

What seems fairly certain is that a differentiated pay structure, such as that adopted by Woodford and Godfrey, will attract certain professionals to these firm and put off others. Likewise, it may impact on investors' manager selection decisions (although is unlikely to be the primary consideration).

We applaud these moves for a number of reasons:

- If nothing else, they will provide an interesting case study for the industry.
- The firms are setting a precedent for others to follow. It requires great courage to break with the compensation status quo – if things go badly a firm risks losing its valued staff and may struggle to attract the people it wants.
- We believe that the case for variable pay in asset management is weak, for a number of reasons (see our paper on compensation and incentives).

In truth, though, these are small, relatively new firms that can start with a blank slate – more established firms will be naturally reluctant to make sweeping changes to compensation practices that affect many employees. And the employees may be even more reluctant to see change.

The industry may be at an 'interesting' juncture, where the inertia on compensation could be tested by the continued pressure on asset managers' fee structures. Arguably, the practice of charging an ad valorem fee as a fixed percentage of AUM creates a clear incentive for asset managers to gather assets, and hence sales staff are remunerated according to how much new client money they are able to bring in. Similarly, the impact of past performance on product uptake encourages a natural link between relative performance and compensation for investment professionals. The consequences for unchecked asset growth on alpha decay are well-documented, and do not serve asset owner interests. So there is a clear alignment issue at stake. It is also an issue that is difficult for asset owners (other than the largest) to address in isolation, and the path to a solution seems to rely on greater cooperation between asset owners and the pooling of their collective buying power.

2016 Nobel memorial prize for economics

On 10th October 2016 Bengt Holmstrom and Oliver Hart, two academics who developed modern contract theory, were awarded the 2016 Nobel memorial prize for economics. Contracts are everywhere in modern economies and the investment industry is no exception. They determine how investment professionals are remunerated for their work and how investment institutions are paid to provide services to other institutions, eg managing a portfolio. How does current practice in the industry compare with best practice as defined by the modern contract theory framework? Does it provide appropriate incentives and alignment? I address these questions in this blog post by reference to a small selection of Holmstrom's work which focuses on applied mechanism design (ie how to design a contract). Hart's work is more concerned about contracts relating to the ownership of firms.

In one of his earliest publications "Moral hazard and observability" (1979), Holmstrom introduced the so-called "informativeness principle" which is now widely recognised as one of the key principles in addressing principal-agent problems. In essence it means that if there exists any information that can reduce the uncertainty with regards to what an agent actually does, then this information should feature in the contract. The example he uses concerns CEO compensation. Holmstrom suggested that because share prices reflect factors in the economy outside the CEO's control, simply linking compensation to the firm's share price will reward the CEO for good luck (or punish him/her for bad luck). It is therefore better to link his/her pay to the firm's share price relative to those in the same industry. I would argue that the practice of linking performance fees to absolute returns, while having significant exposure to the market, is in violation of this principle. In many real-world situations it is simply very difficult to separate good (or bad) luck from the effect of actions, even with the assistance of all available information. Arguably, assessing an asset manager's skill in beating the market is one of these situations. What would modern contract theory say about it? According to Holmstrom's findings the more difficult it is to observe the effect of one's actions (whether individual or institutional), the less remuneration should be performance-based. Where there is significant uncertainty, it is simply better to make fixed payments.

Holmstrom's 1991 paper with Paul Milgrom, "Multitask Principal Agent Analyses - Incentive Contracts, Asset Ownership and Job Design", considers situations in which the agents' tasks are multi-dimensional. I believe that it is a fair and accurate description of most, if not all, real-world situations given that I have not yet seen a job description document with only one line in it. In this situation, Holmstrom argued, performance-based incentives have an important role in directing the allocation of the agents' attention among their various duties. This is why a school teacher's compensation should never include a variable component linked to the results of his/her students' standardised exams – in which situation the teacher would be incentivised to only teach the narrowly defined skills that are tested, at the expense of activities such as promoting curiosity and creative thinking, which are harder to measure. What are the implications for the investment world? There is the issue of how sales people are, generally, compensated in our industry. I think it is reasonable to say that an asset manager's sales team's task is at least two-dimensional: 1) to meet clients' needs by recommending suitable products and 2) to increase the firm's revenue by selling more products. Arguably the current practice seems to only link incentive pay to factor #2. Holmstrom's work provides us a strong theoretical underpin to understand where this design would lead our industry to. Given the complexity of the issues, any contract design will need to account for the unique circumstances, and the incentive problems must be analysed in totality. As a result I am not suggesting there is a panacea here. However Holmstrom suggested that, in certain situations, it would be better to fix the compensation (no incentive component) than to base one's compensation only on a subset of the dimensions (the ones that can be effectively measured).

Our congratulations to both Bengt Holmstrom and Oliver Hart for their richly-deserved prize. And well done to The Simpsons (read the story here) for correctly predicting the winner six years prior!

Organisational design

The link from financials to organisational design should be equally clear. However the first piece below links organisational design to 'The arena' (and could easily link to 'The players'), as the procyclical behaviour described within in helps to shape the environment in which investing happens. The solution suggested is to shift more to countercyclical behaviour, and that requires a change in organisational design.

Institutionalizing countercyclical investment

Organisational design

The IMF has published a working paper, Institutionalizing Countercyclical Investment: A Framework for Long-term Asset Owners that I think is a really good paper and worth reading.

The paper explores two questions: (1) whether the world's largest asset owners respond procyclically to past returns, or countercyclically to valuations? And (2) if countercyclical investment is a public and private good (is both market-stabilising and return-generating), how might we encourage more of it?

The bad news is that the analysis concludes that asset owners tend to behave procyclically – they engage in 'multi-year return chasing', or allocate more to asset classes that have been performing well. The good news is that the paper also suggests a number of ways to raise long-term returns and enhance financial stability, including:

1. Enhance governance: we couldn't agree more with the starting point. The paper makes three specific recommendations. First, introduce minimum accreditation standards. This very much jibes with the Institute's work on best practice investment committees where we argued for the primacy of investment expertise over representation, but we stopped short of pushing for accreditation. Second, change communication to stakeholders to emphasise long-term objectives and manage expectations about short-term mark-to-market losses. Third, greater accountability over the implementation of the investment policy statement. The paper doesn't unpack this last point so, if we agree on its importance, it will be up to us to fill in the detail.
2. Rebalance to benchmarks with factor exposures best suited to long-term investors: this section doesn't strike me as the strongest section of the paper. Its main point is that cap-weighted benchmarks are inherently procyclical and there are now non-price-weighted alternatives available which are inherently counter-cyclical. It then holds up NZ Super as a best practice exemplar. More could, and arguably should, be made of counter-cyclical rebalancing at the asset class level, or of valuation-sensitive allocation.
3. Shift the emphasis of risk management to minimise long-term shortfall risk (not short-term price volatility): no argument here – this is very much in line with TAG's 'wrong type of snow'/risk is permanent impairment to mission philosophy. Where the paper differs from my personal belief system is its argument that long-term investors should have a symmetrical stance (need to harvest upside) rather than asymmetrical (protect the downside). For long-term compounding I err more towards the asymmetrical camp, but this may be a nuance.
4. Minimise principal-agent frictions: this section takes two angles – the expected procyclical hiring and firing of managers on relative returns (and the role of consultants is, rightly, included in the discussion), and the less-expected discussion on fee structures that also amplify procyclicality where they reward on the upside but don't punish on the downside. The solutions offered include closed-end vehicles (protecting the asset manager), changing to counter-cyclical benchmarks (as above), and changing fee structures.
5. Ensure regulatory conventions do not amplify procyclicality at the worst possible times: the final discussion is very good, and argues that transparency (mark-to-market) and stability (not being forced to act on mark-to-market valuations) can co-exist.

A different aspect of organisational design is creating high-performance teams. The argument in the piece below is that better teams need cognitive diversity to be built in.

Building cognitive diversity

In the Institute's work on best practice investment committees, we used the maxim (when talking about the composition of the committee) "if you can't change the people, change the people". Depending on your organisation's politics and culture, one form of change will generally be preferred to another. We believe that the ultimate objective should be to improve the collective intelligence of the committee, a measure which is facilitated by developing greater cognitive diversity.

Managing the composition (of a group, team, committee, etc) is only one aspect of building collective intelligence. A major positive impact can be achieved by introducing constructive processes to get the most out of the people involved. In this thread, I describe two approaches below. There are others, and we'd welcome contributions based on your experience of what has worked.

The art of the pre-mortem

Simply put, a pre-mortem involves envisioning a failure scenario over a medium-term time horizon, and brain-storming, with the "benefit of hindsight" what could have been done to avoid such an outcome. The principle behind a pre-mortem is that it makes it easier for those who have concerns about a project to express them. Committee members should write down what "went wrong" independently, to generate a wider spectrum of ideas and avoid being influenced by the views of others.

Research by the MIT Center for Collective Intelligence highlights the need for turn-taking and social sensitivity in order to optimise a team's collective intelligence. The pre-mortem hard-wires these into the discussion process: turn-taking is facilitated by having members explain their reasons for the project's failure, and social sensitivity is (artificially, perhaps) improved by forcing the committee/team to deal with their (hypothetical) accountability in the face of a bad outcome.

Appointing a devil's advocate

This approach seeks to deliberately create a dissenting view within a team that is otherwise in agreement on a particular strategy. In an article in the Harvard Business Review, David Burkus explains: "Conflict is an indicator that diverse viewpoints are being considered and that the competition for ideas is still ongoing." The article discusses how Pixar have reframed the devil's advocate approach into a more positive technique (which they call plussing) where new ideas are seen as additive to the project plan. This process supports a wider spectrum of views, and brings out diversity of thought that might otherwise have been suppressed.

While neither of the above tools are novel, they are probably under-used. Daniel Kahnemann cites anchoring and a bias to overconfidence, particularly among leaders, as crucial barriers to creativity and considering the full range of potential solutions. Despite being aware of them, the investment industry is not immune to these pitfalls. The key to testing a plan's robustness seems to be to stress-test it from as many conceivable angles as possible. To quote Voltaire "Doubt is not a pleasant condition, but certainty is absurd."

Culture

Organisational design, and the cognitive diversity of teams, leads us neatly to 'culture'. The first piece in this section introduces the idea that when it comes to culture, more is not necessarily better. The management of culture is more subtle. The second piece flags the existence of a tool, developed within the Institute, for measuring aspects of an investing institution's culture. The third piece takes a coarser-grained look at the prevailing culture within the wider industry. The final piece is actually a link between organisational design and long-horizon investing.

Culture: can you have too much of a good thing?

Roger Urwin contends that culture in institutional investing has a significant impact on the overall success of organisations and that it's shaped most by the influences of leaders, both past and present. It can also look quite different between asset owners (not-for-profit entities) and asset managers (for-profit entities) and argues that the future sustainability of the asset management model requires much better trust between owners and managers. The complex DNA of excellent culture among investing institutions generally rests on five factors. While acknowledging that positive attributes are needed for good culture, Roger wonders if having too much of a good thing can become a bad thing and says the trick is getting to an optimal 'sweet spot' for each of these:

- **Purpose and drive** – this is often highly reflective of ownership and incentive structure. The client-centricity versus self-centricity factor is critical.
- **People ethos** – where respecting personal development wishes, encouraging maximum creativity, facilitating collaboration opportunities and personal recognition are all critical.
- **Excellence** – with uncompromising expectations for performance, quality and consistency.
- **Integrity** – where innate respect, openness, support for diversity and ethical orientation are present.
- **Distributed leadership** – how leadership involves serving others with wide empowerment and effective networks.

Can you describe the culture in your organisation and articulate why it's different to others?

Measuring culture

Early last week (11 July 2016) we invited AMP Capital (Sean Henaghan and Madeleine Mac Mahon), an Australian member of the Institute, to share with us their experience of measuring their culture through the client value proposition (CVP) and employee value proposition (EVP) scorecards developed by the Thinking Ahead Group (TAG).

Following the Institute's 2015 research project on culture, we asked for volunteers to participate in this pilot study to examine its application to an investment organisation. AMP Capital expressed immediate interest, being a firm believer that culture is the secret sauce to organisational success and a unique ingredient for competitive advantage. They also thought they would also benefit from being able to measure the culture of the external managers they use. AMP Capital noted they have been on a long-term journey to become more client-centric (they were pleasantly surprised by their CVP score, which they had expected to be lower) and so they proposed the idea of running this type of survey on a continuous basis (say every two years) to look into the progress they are making on that journey. Undertaking the project had, they said, been "not at all challenging", with a simple and straightforward process to follow, and AMP Capital highly recommended other members to undertake a similar exercise.

Attendees at the webinar raised the issue that survey questions are vulnerable to "gaming" and suggested that this aspect of the analysis could be further improved. In AMP Capital's view, two main criteria set this project apart from a standard culture survey: (1) Most of the standard culture surveys are primarily HR focused and beg the question "how does this result impact the way we serve our clients?". The Institute framework, on the other hand, by design addresses that question explicitly and directly by linking EVP to CVP. (2) If culture is about understanding the cause and effect, the inclusion of intrinsic incentives in EVP assessment provides far more information in understanding what really drive people to perform compared to a standard culture survey. In terms of the next step, AMP Capital mentioned feeding the data from this project along with other inputs into their "Culture Refresh Group", which will then look for one or two concrete action points to improve their culture practice over the next year or two.

It was a stimulating and engaging hour and you might be interested in the materials from the webinar (slides and voice recording).

Insights from the Edelman 2016 Trust Barometer

Edelman recently published their 2016 trust barometer (May 2016). The bad news, for those of us working in financial services, is that the sector was once again least trusted among the sectors surveyed. The good news, however, is that trust in financial services appears to be increasing: up from 43% in 2012 to 51% in 2016.

At the Thinking Ahead Institute's Cambridge roundtable in November 2015, attendees identified trust as the key priority for improvement in the investment industry. This sentiment was echoed in an address by Citigroup CEO Michael Corbat, when he said "In the end, we can't do our jobs if we fail to gain and retain the trust of the people and communities we serve around the world." However, the conversation at Cambridge also recognised that improving trust is hard to achieve directly, hence the industry needs to demonstrate its commitment to meeting investor objectives at a price commensurate with the value added (alignment, value and efficiency).

Edelman assert that the financial services industry is at a critical juncture, facing disruptive pressure from new entrants (fintech players in particular), increased regulation and societal censure. However, Edelman also recognise that opportunities exist for the sector to play a meaningful role in stimulating growth and alleviating a shortfall in infrastructure capacity. A major theme of the 2016 report is the inversion of trust: there is a widening trust gap across the board between the "informed public" (c.15% of the population - typically more trusting in the institutions of government, business, media and NGOs) and the "mass population" (85% - less trusting). This is particularly acute for financial services, where the trust gap is 18 percentage points in the US, 12 in the UK and 10 in Australia.

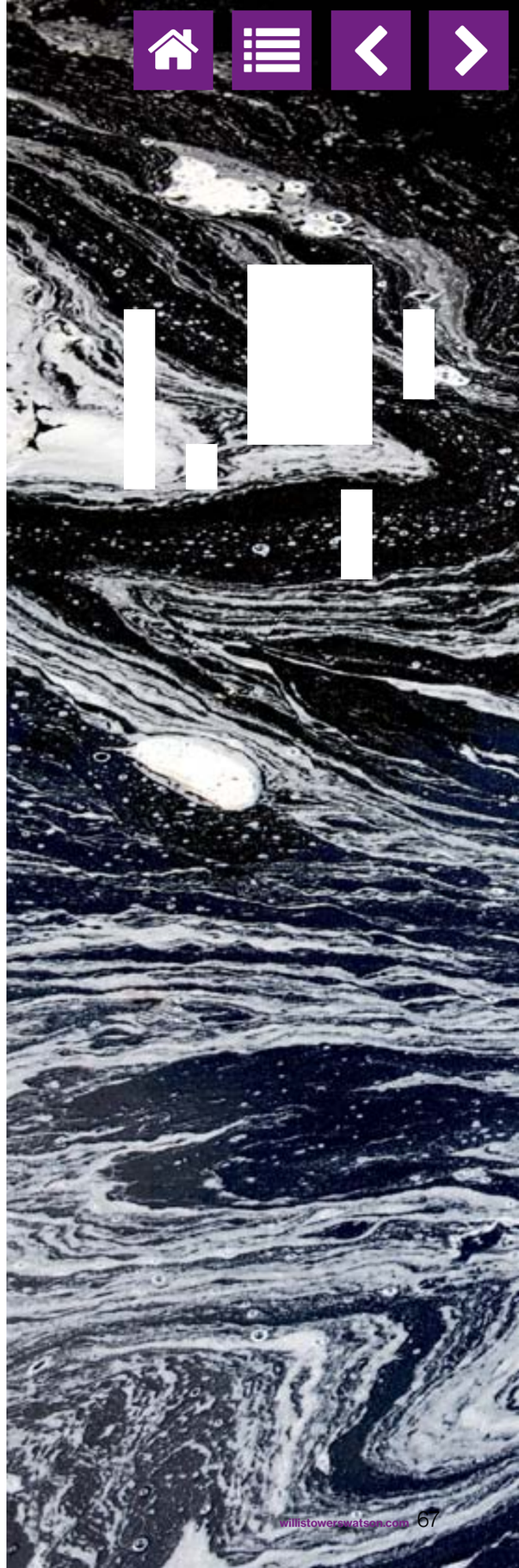
They highlight five ways in which the industry can manage trust issues:

1. Build on "trust momentum" by improving communication and engagement with clients.
2. Recognise the trust gap between the informed public and the mass population, and targeting trust-building efforts at the latter.
3. A startling statistic is that, while financial services is the least trusted sector among the general population, it is the most trusted sector among employees of financial services companies. This suggests companies should seek to leverage their employees as positive advocates.
4. The case for increased trust in financial services is more compelling when firms can demonstrate their contributions to society. As examples Edelman mention the areas of income inequality and public policy.
5. Firms need to focus on trust-building behaviours, the three most important being: protecting consumer data, transparency in social responsibility, and keeping people and their families safe.

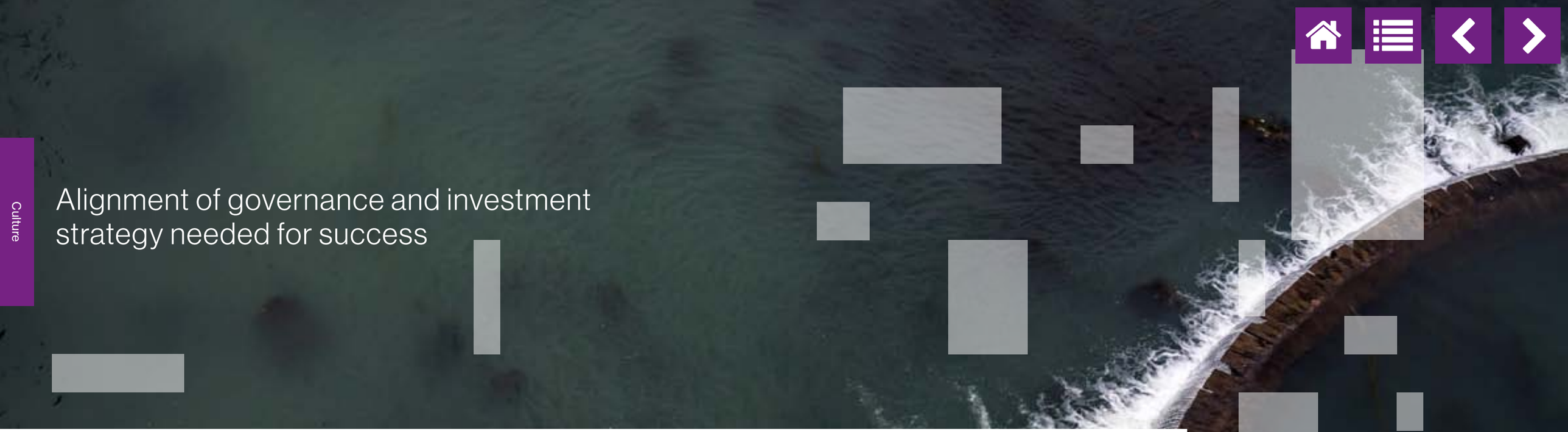
Overall, while the report confirms financial services as an industry lacking in trust, it points the way to actions that might improve this. The most notable of these, in this year's report, is the theme of democratising services – to become more trusted and relevant, financial services needs to prove its integrity to the entire population, not just the financially literate.

The Edelman report is an interesting read, and you can access it here.

Our bridge from thinking about culture and organisational design to long-horizon investing is a piece which looks at what can be learned from agent-based modelling, machine learning and game theory (not obvious from the title, huh). The post almost gratuitously tries to attach itself to all of our research streams – it mentions DC and sustainability specifically. That is the beauty of importing somewhat abstract ideas from outside of our domain, they can shed a new light on many areas. The attachment to organisational design is obvious, and flows from the title. We have chosen to lead from here to long-horizon investing as the thought piece makes the point that most investment decisions are not one-offs, but rather open-ended paths where the feedback and consequences appear with the passage of time.



Alignment of governance and investment strategy needed for success



Agent-based models (ABMs) are often used to investigate how decisions made by individuals within a system lead to systemic outcomes that might not be obvious from knowing those micro decisions. DeepMind (a Google owned company) has published a paper on using machine learning techniques to study how agents in prisoner's dilemma-style games learn whether to cooperate or exploit each other. In the paper's conclusion DeepMind joins a chorus of researchers that proposes the use of agent-based modelling to assess how changes in regulations will affect behaviour, including testing for unintended consequences of policy. From an asset owner's perspective this has potential application to the design of DC retirement arrangements – particularly the ability to model decision-making in response to choice with incomplete information, and how this might lock people into different decision paths. If one has a paternalistic perspective designing such systems to have a "least harm" bias makes sense. Developing the tools to test if a system encourages harmful behaviour would seem a necessary part of that process.

DeepMind describes in its paper (Multi-agent Reinforcement Learning in Sequential Social Dilemmas) that it applied its experience of using neural networks for decision-making to repeated play of prisoner's dilemma-style games. The results showed the emergence of cooperation (playing so that both players benefit) and defection (playing for individual benefit at the expense of the other player) spontaneously in each game. Whether players learnt to cooperate or defect depended on the game being played but also the "cognitive ability" of the player.

As noted in the paper, from a structural perspective the single play version of the games in the paper are identical to the prisoner's dilemma. However, incorporating repeated play and learning by the players introduces a temporal and path-dependence to the strategies employed by the players and the behaviours/outcomes that result. The paper notes that a number of real world dilemmas that could be considered single-play prisoner's dilemma-style games are actually better thought of as repeated, sequential games of the type modelled in the paper. Real world problems given as examples are the extraction of renewable vs non-renewable resources and the emergence of social behaviour patterns from experience of sustainable vs unsustainable social behaviours.

While many in the investment industry aim to exploit machine learning for its potential to assist in security selection, portfolio management or trading, this paper from DeepMind shows that these advances also have the potential to better model financial decision-making and the impact of policy in potentially more realistic simulations. Possible applications of such modelling might include insight into how market strategies might evolve or the unintended consequences of different regulations on the financial industry.

The DeepMind paper also shows how successful players pursued strategies that they were able to successfully execute (ie strategies they could implement) even if there were theoretically better strategies available. In an investment context this resonates with the concept of asset owners selecting an investment strategy that their governance allows them to execute effectively in preference to a theoretically "better" strategy which can't be executed successfully. This suggests that, for an asset owner, understanding one's governance and building a strategy that can be executed within that governance capability (or improving the governance capability to match the desired strategy) is the appropriate approach to take in a competitive environment. Making best use of a finite supply of governance capability requires a full exploration of beliefs and objectives in order to identify the strategies where a successful execution is most likely. This is particularly important in harder areas such as sustainability.

Long-horizon investing

Long-horizon investing has been a subject of research since the founding of the Institute, albeit that the research has become more focussed and has benefited significantly from the formation of a working group. Consequently, there is a wealth of material available on the topic, and this section is the largest we will traverse – containing eight posts. They are presented in chronological order (oldest to most recent), as it turns out this was the most sensible route through the material we could devise.

The unfortunate consequences of the quarterly earnings cycle

Each quarterly earnings season, companies find new and creative ways of presenting their results in the most favourable light, as discussed in this article from the Economist.

Recently, there has been some high profile fallout from companies issuing creative earnings statements (Valeant and SunEdison, for example). In a general sense, we might ask whether the requirement for quarterly earnings disclosure causes companies and shareholders to focus on the wrong metrics. Graham, Harvey and Rajgopal found that CFOs regard earnings, not cash flows, as the key measure affecting investor decisions. Indeed, there is evidence that company share prices respond strongly, in the short term, to reported earnings and how these compare with (a) equivalent earnings from the same quarter in the previous year and (b) analysts' consensus estimate of earnings. The practice of prioritising the declaration of profits can, according to the authors, lead to firms taking decisions that reduce long-term shareholder value, such as deferring investment in profitable capital projects that may depress earnings in the short term.

This focus on short-term profits may present an opportunity for the long-term investor. We have previously referred to a paper by Geoff Warren of CIFR, where he stresses the importance of long-term sustainable cash flows as the key indicator driver of long-term value creation. Investors should therefore seek to engage with portfolio companies' management to refocus attention on cash flows, rather than earnings. Such an approach could also serve to distinguish those companies with a genuine long-term mind-set from those who are more interested in sustaining their share price in the short term.

This also raises a question around influence and engagement: are the companies directing attention to metrics they believe are more controllable, or are they seeking to manage their declared earnings because this is what shareholders are most interested in? And is there an opportunity for investors to influence the way their portfolio companies are managed by sending a clearer message to management on what they deem to be most important? Put another way, are investors fully exercising their power of ownership? Or is it a case of the market being dominated by short-term investors (presenting opportunities for longer-term investors to capture value)?

FCLT conference – London, 9 November 2016

On 9 November 2016, the Focusing Capital on the Long Term (FCLT) initiative held a conference in London. The purpose of the event was ostensibly to bring together influential organisations to build greater momentum in the industry for longer-term investing – the benefits and obstacles to overcome. Dominant themes of the day revolved around shareholders (and their proxies) discharging their responsibilities as owners, and building trust and alignment between asset owners and asset managers.

Julian Samways, Managing Director of JPES Partners, chaired a panel comprising:

- Sarah Williamson, the CEO of FCLT Global
- Dominic Barton, global managing partner at McKinsey
- Stefan Dunatov, CIO at Coal Pension Trustees
- Lars Dijkstra, CIO of Kempen

The panel discussion raised several issues regarding the prevalence of short-termism within the investment industry, the benefits of embracing a long-term mindset, the obstacles that prevented this and how they might be overcome.

The dominant view (in the room, at least) was that there is a general desire by all investors to be long-term. However, this is inhibited by the perceptions of others' limitations (eg asset managers' perceptions that they will be fired for short-term under-performance, asset owners' tendencies to see short-term under-performance as a signal of a manager's (lack of) ability).

There is strong evidence that pressures in the investment eco-system are driving participants towards even greater short-termism (in investing and in corporate decision-making), particularly in emerging markets:

87%

87% of executives and directors feel under pressure to deliver performance over **two years or less.**

65%

99% of **2015 earnings** have been spent on dividends and buy-backs.

55%

55% of CFOs would delay net present value-positive projects to **hit quarterly earnings targets.**

The impact of this short-termism is already visible in the US economy, which is deteriorating because of a sustained lack of capital investment. In order to remedy this situation, there needs to be greater understanding of both the negative impact of short-term thinking and of what differentiates successful long-term companies. However, when embracing long-term investing, there is a necessary trade-off between signal and activity: if investors look too long-term, the signal is too weak, while looking too short-term results in excessive trading.

Objective setting and measurement plays a crucial role. The ultimate aim of investing is to provide for long-term financial obligations. This suggests re-orienting measurement away from a benchmark-relative metric and towards a metric that has greater relevance to members' future financial needs.

These points sparked a discussion on investment mind-set: rather than trading ownership rights in the hope of a profit, a long-term investor should think and act as an owner of the companies in which they invested. This has implications for portfolio construction – specifically, investors need to question the rationale behind owning companies in which they have little faith (a common approach to investors who will "under-weight" a less-favoured stock relative to its benchmark weight). Asset managers charged their clients a fee for investing in stocks that they expected to under-perform, on the basis that their success is evaluated by their performance relative to their benchmark. Asset managers need to espouse the benefits of changing this practice, and asset owners need to call for a new approach – not least to better serve the interests of the end investor.

But is the concept of ownership perceived to be synonymous with being a shareholder? One view is that a desire for genuine ownership, and the ability to shape outcomes at investee companies, has led to the rise in popularity of unlisted equity. This may be good for the company, as owners and management are better able to work together, but from a societal perspective it tends to increase the concentration of wealth and limits the potential to share in its creation.

Genuine ownership within the public equity space is possible, but demands that investors look beyond shareholder value maximisation to other goals reflecting the company's role within wider society, eg CO2 reduction. Clearly the fragmentation of ownership among asset owners limits their ability to impact company management, and investors need to solve the problem of increasing their collective influence without falling foul of regulations on collusion. This point has been raised as a key to unlocking better long-term investing at both the London and New York Thinking Ahead Institute roundtables.

Overall, there was a pervasive sense of willingness in the room to advance what is seen as a productive initiative. This is a cause that the Thinking Ahead Institute has championed for some time, and the more voices that are calling for a re-orientation to long-termism, the greater the chance of real change happening.

The long and the short of it

In February, McKinsey published this paper that identifies the traits of short-term oriented companies and makes a case that companies managed for the long term perform better. The hallmarks of short-termism are, according to the paper:

- Insufficient and inconsistent investment in capital.
- Boosting published earnings by relying on accruals and accounting methods.
- Growing margins by cutting costs, in order to meet short-term targets.
- Management oriented to meeting quarterly earnings forecasts.
- Excessive focus on analyst metrics (eg using share buy-backs to increase earnings per share) instead of fundamental value.

Long-term focused companies behaved conversely. Using this basis for differentiation, McKinsey go on to show that, over the period from 2001 to 2014, long-term oriented firms invested more, grew revenue faster, added more jobs and performed better financially than other firms. At the same time, paradoxically, there was evidence of an increase in short-term behaviour, although this seems to vary by industry. Ideas-intensive industries, such as software and biotechnology, appear to be managed to a longer time horizon, whereas capital-intensive industries, such as automobiles and chemicals, are more short term. McKinsey speculate that this is down to industry profitability: larger profit pools permit the "luxury" of a longer outlook, and vice versa.

In response to McKinsey's paper, Schumpeter, The Economist's business columnist, suggested three problems with their analysis:

1. As evidence that short termism is overstated, Schumpeter cites the long (and increasing) tenure of S&P500 CEOs, the illusion of high share turnover created by high frequency traders, the rise of passive funds with infinite holding periods and investors' willingness to buy long-dated bonds or factor in profits 10-years out when investing in shares such as Amazon. Schumpeter attributes the current high levels of share buy-backs to high profit levels – they are not coming at the expense of capital investment, which is as high as it has been. Warren Buffett, in his latest letter to Berkshire Hathaway shareholders, justified the case for share buy-backs when profits are large and opportunities for new investment are scarce, or have been exhausted.
2. Schumpeter also questions the commonly held belief that short-term decision-making leads to under-performance – maybe it's the case that under-performing firms are forced to take measures (such as cutting costs and reducing shares in issue) in response to a challenging business climate.
3. The obsession with helping companies take a longer-term view is, Schumpeter tells us, a distraction from the real issue, which is that incumbents in many industries face a lack of competition. Rather than employing (supposedly long-sighted) strategies that shield management from investors' short-term scrutiny, markets should be made more dynamic, encouraging new entrants to challenge for a share of profit.

On the third point in particular, Schumpeter's arguments seem weak. The impetus behind the movement towards greater long-termism is not to "insulate [firms'] managers from investors", but rather to change the dynamic of this engagement. Management without accountability to shareholders allows agency capture by the former. Most definitely, management should not be evaluated on short-term measures (changing incentive structures and compensation would help here). Instead, investors should exercise their discretion and look for investment opportunities where sustainable value is being created. And management should look to engage with investors on their long-term strategic plans.

Ultimately though, I have a point here about self-awareness. We in the Thinking Ahead Group (and, I deduce from conversations we have had, many of the TAI members) are strong advocates for long-term investing. Caught up in this mind-set, it is tempting to be dismissive of positions that regard rallying against short-term thinking as a "distraction". But forming a robust point of view requires humility in acknowledging the merits of opposing arguments – after all, as we try to change the status quo, they help explain the reason why things are the way they are.

Open-end vs closed-end funds

In the context of long-horizon investing, "lock-up" is a term that attracts a lot of attention and debate. In theory, it would give asset managers a stable capital base to effectively pursue their long-term strategy without worrying about being forced sellers caused by redemptions. This is particularly important given the fact that some of the best returns can be made in times of market distress which is when asset owners often seek to redeem investments. However, for various reasons, many asset owners are reluctant to commit to locking up capital (particularly in long-only public markets), resulting in slow adoption of such structures in practice. In this blog post, I briefly review some findings from academic research in the area of open-end vs closed-end structures.

Intuitively, in an open-end structure, provision of liquidity to investors (redemption) can have a negative impact on returns: eg "fire sales" that sell assets below "fair value" to meet redemption calls. The empirical evidence clearly lends support to this argument. Roger Edelen, in his paper "Investor flows and the assessed performance of open-end mutual funds", built a sample of 166 open-end mutual funds and concluded that liquidity-driven trading in response to flows has reduced returns by 1.5%-2.0% pa from 1985-1990. In a separate study, Woodrow Johnson constructed a proprietary database that includes a panel of all shareholder transactions (just under a million, on 50,000 stocks) within 10 funds in one mutual fund family between 1994 and 2000 in the US. The findings are very similar: the cost of open-endedness is about 1.1% pa. Johnson further suggested that under the current structure (ie no pricing differentiation with regards to trading frequency), long-term shareholders who have relatively small liquidity demands are in effect subsiding short-term shareholders for accessing liquidity. In my mind, this raises the question of whether open-end structures in their current form are fit-for-purpose for long-horizon investors.

Now we might be tempted to conclude that, everything else being equal, closed-end funds should in theory outperform by avoiding being forced sellers. Well, unfortunately, not everything is equal here. The lack of monitoring/alignment (in the absence of the threat of redemption) can lead to serious agency costs and underperformance for closed-end funds. Barclay et al found that the greater the managerial stock ownership in closed-end funds, the larger were the discounts to NAV. The average discount for funds with blockholders (shareholders who own 5% or more of the fund's common stock) is 14%, whereas the average discount for funds without blockholders is only 4%. They attributed the agency costs to blockholders extracting private benefits (receiving compensation as an employee; blockholders owning companies receiving fees for service to the fund etc).

Like many situations in investment, there doesn't seem to be a universally agreed "winner" of this debate. Both structures could potentially add value and both structures could destroy value if ill-executed. If asset owners can manage to get themselves over the line about the concept of lock-up, and a proper monitoring mechanism is in place after the capital is locked up, closed-end funds do seem to give managers the highest degree of freedom to turn their skill into better returns. On the other hand, an alternative to requiring lock-up can be a better and deeper articulation to asset owners of how long-term strategies should be assessed and measured and looking for ways of avoiding the cross-subsidy between flighty investors and committed long-term investors. This can include a very clear articulation of the underlying long-term investing thesis and specification of when the strategy is likely to underperform. With that, when short-term underperformance inevitably comes around, asset owners are more likely to stay on course as long as the underlying investment thesis remains intact.

The search for a long-term premium

Jaap van Dam, principal director investment strategy at PGGM, one of the world's largest asset owners that is known for its commitment to long-horizon investing, once asked what he called 'the million-dollar question': "can we be reasonably certain that we will be rewarded for being a long horizon investor? Because, if we're not, then why bother?"

A sound answer to this question, as Jaap rightly put it, will determine whether long-horizon investing will really take off among asset owners.

Supported by the work we have done in the Thinking Ahead Institute, in particular the long-horizon investing working group, I would propose a resounding yes as the answer to this question.

In our paper, "The search for a long-term premium", we conclude that a sizeable net long-term premium of 0.5% to 1.5% per year, depending on investors' size and governance arrangements, can be exploited by investors with the appropriate mindset and skillsets.

Hunting for evidence of long-term premia is easier said than done. In an ideal world, we would run a regression of net investment returns against investors' time horizons. Sadly, to our knowledge, the data to run this regression does not exist due to a number of obstacles such as how to accurately measure the time horizon of investors.

As a result, an "indirect" approach was conducted, based on the belief that long-horizon investing offers investors both return opportunities and the possibility to reduce drag on returns. This led to the identification of eight building blocks of long-horizon value. Each is practical to implement, albeit with changes required to the investment process. Together, they provide evidence of a sizeable premium from long-horizon investing.

We can split these building blocks into strategies that:

1 **Provide long-horizon return opportunities.**

2 **Lead to lower long-term costs and/or mitigate losses.**

Let's start with return opportunities. A study that examined over 2000 highly-intensive engagements with over 600 US public firms between 1999 and 2009 produced some revealing conclusions. The study showed that engagements with investee companies generate, on average, positive abnormal returns of 2.3% over the year following the initial engagement – clear evidence of the benefits of being active owners to encourage investee companies to take long-term approaches.

When investors are willing to pay for liquidity – in other words, sell assets below "fair value" – someone on the other side of the trade gets paid. One study suggested that long-horizon investors have the potential to earn additional returns of 1% pa at the expense of shorter-horizon investors by providing liquidity when it is most needed.

Another aspect of liquidity involves the illiquidity risk premium (IRP), which is well established as a source of return for long-horizon investors. When investors accept illiquidity, they accept greater uncertainty about the outcome because they are less able to liquidate the asset. The longer the capital is tied up, the more return investors expect by way of compensation. Academic studies point to a range of 0.5% - 2% pa for this particular premium – and even higher returns might be available to very long-horizon investors.

A fourth return opportunity for long-horizon investors comes from exploiting various mispricing effects via smart betas. Decades of data suggest that this can add more than 1.5% pa relative to the cap-weighted index.

Investors have long been aware of thematic investing. A belief that education, renewable energy, ageing, technology and so on, are key value drivers, is held by many investors. The lack of consistency in implementation approach means we have been unable to find empirical evidence that categorically demonstrates the success of a thematic approach. However, belief in thematic investing is certainly strong: 93% of attendees at the 2016 Thinking Ahead Institute New York roundtable believed that it was possible to enhance portfolio value by investing thematically.

A long-horizon mind-set can also usefully guide behaviours to reduce drags on investment returns.

A study of over 400 US plan sponsor "round-trip" decisions (firing and replacing managers) between 1996 and 2003 compared post-hiring returns with the returns that would have been delivered by fired managers. It suggested that by replacing their investment managers, the plan sponsors on average gave up a cumulative 1.0% in the three years following the change – a dear cost they paid for buying high and selling low that can be mitigated by a long-horizon mind-set.

Open-ended fund structures, despite the flexibility they provide, might not be fit-for-purpose for long-horizon investors who do not require nearly as much liquidity as other short-horizon shareholders. In such a structure, long-horizon shareholders effectively subsidise their short-horizon peers for their liquidity needs. One study found that liquidity-driven trading in response to flows (in particular redemptions) has reduced returns in US open-ended mutual funds by 1.5%-2.0% pa from 1985-1990.

Last but not least, significant savings in transaction costs can be made by avoiding unnecessary turnover as a long-horizon investor.

Capturing the benefits of long-horizon investing is likely to require a major shift of mind-set and significantly expanded skillsets by investors. In many cases, it entails incremental spending – eg expanding investment expertise in active ownership by hiring a specialist, or increasing the number of trustee meetings to strengthen long-horizon investing beliefs.

The potential benefits of this additional spending are in many cases return enhancements. In the paper we take two hypothetical pension schemes to develop a reasonable estimate of the potential long-term premium in practice.

The smaller fund focuses its long-horizon efforts on avoiding costs and mistakes. It reduces manager turnover, avoids chasing performance and forced sales, and moves part of its passive exposure into smart beta strategies. The rationale is: if you don't have the resources to win big, at least don't lose. The net benefit of these efforts is potentially an increase in investment returns of about 0.5% a year.

The larger fund has the governance and financial resources to consider all available options for capturing premia. It introduces long-horizon return-seeking strategies while reducing its exposure to mistakes and costs. The net uplift to returns is potentially around 1.5% a year.

In the investment world where there are very few universal truths, it would be hubristic to conclude that we have proven the existence of the long-term premium. We are, however, "reasonably certain" that the costs of developing the mind-set and acquiring the skillsets to address long-horizon investing challenges are substantially outweighed by the potential return enhancements.

If such a premium exists, why are institutional investors not already exploiting it? Our next challenge is to understand the potential obstacles, and, finally, present a range of practical solutions for investors to access that premium.

Having successfully conducted the search for a long-term premium, we now embark on the journey towards building a long-term orientation.

The persistency of the long-term premium

In a previous post (see above), I introduced a research piece (The search for a long-term premium) produced by the Thinking Ahead Institute long-horizon investing working group. The paper attempted to quantify the potential return uplift to asset owners of having a long-horizon orientation. We provided evidence of a sizeable net long-term premium of 0.5% to 1.5% pa, depending on investors' size and governance arrangements. The eight building blocks of the long-term premium laid a solid foundation for the practical framework of capturing the value-add.

The result is unlikely to be shocking to investors given my belief that most investors intuitively get the benefit of long-horizon investing. 100% of attendees at the 2016 Thinking Ahead Institute New York roundtable expressed a belief in a positive long-term premium.

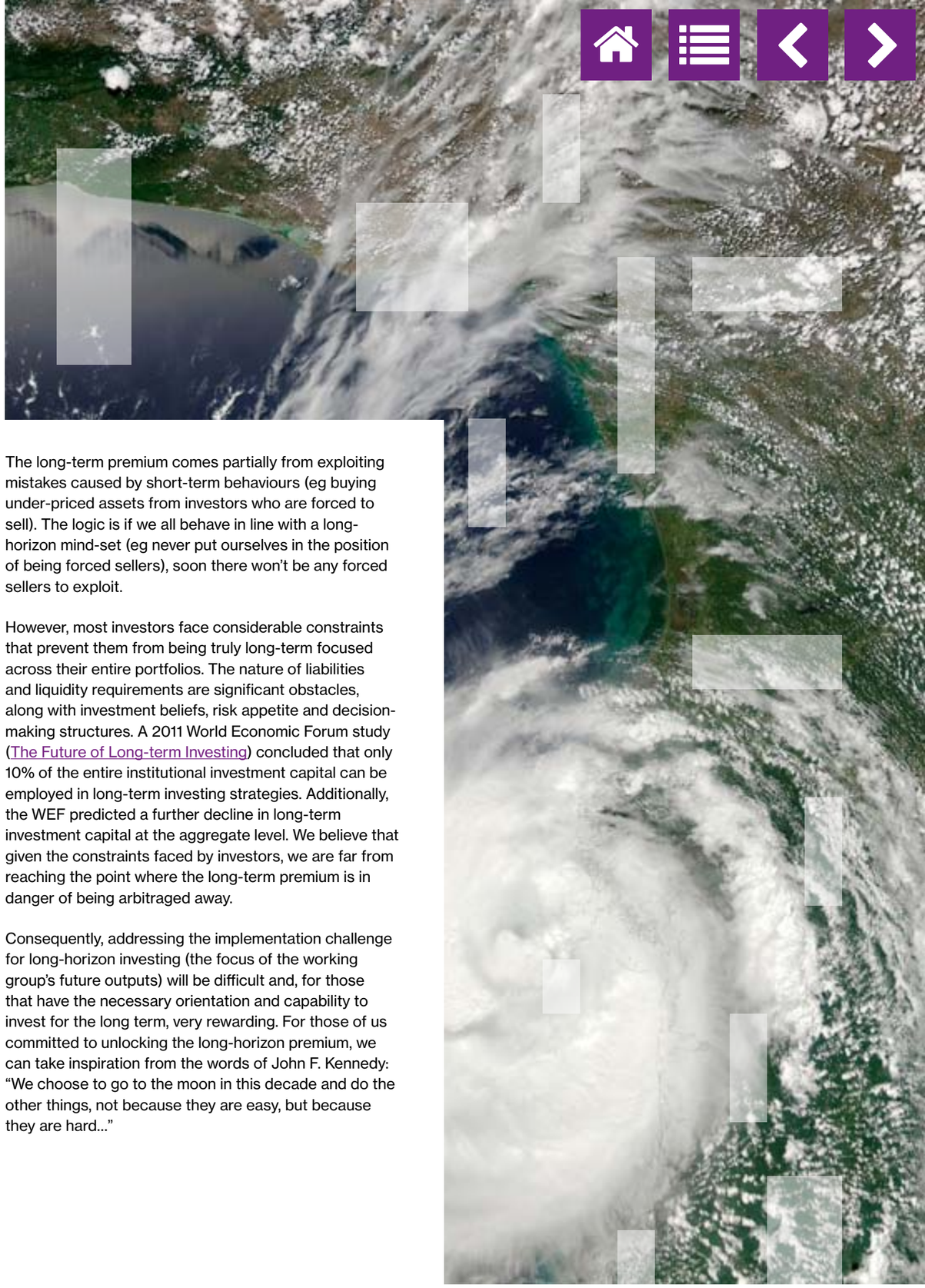
(94% of them believed it was higher than 0.5% pa)

In this post I am going to try to address the next logical question that begs to be asked: if everyone believes in the existence of a long-term premium, why aren't they already doing something to capture it, and as a result very quickly arbitraging the premium away?

In investment, it is generally the case that a consensus expectation would lead price to very quickly reflect that consensus, causing any potential profits from trading on that expectation to evaporate. However there can be important anomalies that persist over long periods of time. Consider the value premium. Despite it being the oldest and most studied anomaly in investment, it continues to persist. Why? One theory is that investors' tendency to buy high and sell low not only ruins their chance of capturing the premium, it arguably makes them become a source of "funding" the premium. The money-weighted return investors achieved in value strategies trailed the value index by 1.3% pa over the period from January 1991 to June 2013 (Timing Poorly: A Guide to Generating Poor Returns While Investing in Successful Strategies, Hsu et al, Journal of Portfolio Management, 2016).

Back to long-horizon investing: while evidence suggests the existence of a net positive long-term premium, practically harvesting this premium poses enormous implementation challenges. I would argue the long-horizon premium exists and persists precisely because it is so hard to capture. In fact, 80 years ago, Keynes wrote a whole chapter on the challenges of long-term investing. Clearly nothing much has changed since then: *"Investment based on genuine long-term expectation is so difficult to-day as to be scarcely practicable. He who attempts it must surely lead more laborious days and run greater risks than he who tries to guess better than the crowd how the crowd will behave; and, given equal intelligence, he may make more disastrous mistakes. ... It needs more intelligence to defeat the forces of time and our ignorance of the future than to beat the gun. Moreover, life is not long enough; human nature desires quick results, there is a particular zest in making money quickly, and remoter gains are discounted by the average man at a very high rate. ... Furthermore, an investor who proposes to ignore near-term market fluctuations needs greater resources for safety and must not operate ... with borrowed money ... Finally it is the long-term investor, he who most promotes the public interest, who will in practice come in for most criticism"*

The 1997 "The limits of arbitrage" paper written by Shleifer and Vishy made a similar argument to support the persistence of a long-term premium. They argued that trading on long-term mispricing is generally more expensive and difficult (eg an asset manager may be fired for short-term under-performance before their long-term strategy has had paid off). This barrier to entry makes trading on long-term mispricing particularly rewarding for those who can successfully overcome the skill and implementation hurdles.



The long-term premium comes partially from exploiting mistakes caused by short-term behaviours (eg buying under-priced assets from investors who are forced to sell). The logic is if we all behave in line with a long-horizon mind-set (eg never put ourselves in the position of being forced sellers), soon there won't be any forced sellers to exploit.

However, most investors face considerable constraints that prevent them from being truly long-term focused across their entire portfolios. The nature of liabilities and liquidity requirements are significant obstacles, along with investment beliefs, risk appetite and decision-making structures. A 2011 World Economic Forum study (The Future of Long-term Investing) concluded that only 10% of the entire institutional investment capital can be employed in long-term investing strategies. Additionally, the WEF predicted a further decline in long-term investment capital at the aggregate level. We believe that given the constraints faced by investors, we are far from reaching the point where the long-term premium is in danger of being arbitraged away.

Consequently, addressing the implementation challenge for long-horizon investing (the focus of the working group's future outputs) will be difficult and, for those that have the necessary orientation and capability to invest for the long term, very rewarding. For those of us committed to unlocking the long-horizon premium, we can take inspiration from the words of John F. Kennedy: "We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard..."

The power of thinking right to left

I was quite struck by a line within an article written by Nitin Nohria, the dean of Harvard Business School (HBS), who made a very simple yet powerful suggestion to counter short-termism: think right to left.

Nohria credits the original idea to Jim Champy, author of "Reengineering the Corporation: A Manifesto for Business Revolution". What most business leaders (and arguably most investors) do is think left to right ie start by focusing on immediate issues and then think about how to get from here to the goal (left to right).

Champy recommends instead that leaders think more carefully about their long-term goals and then think backward about what they need to begin doing today to achieve these goals (right to left).

Nohria applied this thinking to his role of managing the MBA programme at HBS. Thinking left to right, he argued, would lead to him discounting the threat of online education while thinking from the right about the business education landscape in ten years' time, he could no longer ignore its promise and peril.

I believe this way of thinking has immense implications for those investors who want to build a long-horizon mindset.

Right to left thinking, by design, focuses on the long term because it starts from the distant future and works backwards to the present. It encourages investors to project themselves far into the future, think strategically about long-term end goals, long-term liabilities and / or obligations and resources and comparative advantages they can exploit to achieve these long-term goals.

Right to left thinking improves alignment. When investors start their thinking process from the right, the purpose receives the attention it deserves. For example, engaged in this way of thinking, a defined contribution pension delivery organisation would place more emphasis on achieving sufficient incomes for plan participants post retirement instead of participating in rather harmful short-term "mark to peers" activities. Left to right thinking starts with and focuses on the "what"; in contrast, right to left thinking focuses on the "why". It is the "why" that inspires people and encourages the right behaviour that aligns with long-term goals.

Right to left thinking also enforces discipline for investors to focus on the information that encourages long-horizon thinking. Instead of assuming that the current themes continue to play out and trying to front run markets in identifying winners and losers, right to left thinking encourages the identification of long-term transformational changes that have far reaching implications in the distant future and higher impact on the investment portfolio in the long run. Instead of obsessing about catalysts for near-term price adjustments (flow of immediate results, how earnings might compare with market expectations), investors who think from the right naturally pay more attention to factors like long-term cash flow generation potential, sustainability of competitive advantage and, for universal owners, sustainability of the financial system / wider society / environment and licence to operate issues.

Last but not least, right to left thinking promotes a long-term approach to risk management. Starting with immediate issues and short-term outlook, investors understandably (but mistakenly) view risk as price volatility. A long-term risk management approach starting from the right recognises failure to achieve mission as the ultimate risk and therefore targets avoiding a permanent impairment in the mission. With a long time horizon, the likelihood of certain extreme risk events become significant enough to receive attention while a short-term left to right approach would dismiss its chance of occurring and ignore its potentially catastrophic impact. A great example of applying right to left thinking in risk management space is so-called pre-mortem analysis. It is designed to ask the question "in 20 years' time, our organisation fails / no longer exists, what happened?" This technique facilities a deep discussion on potential threats and increases the likelihood that main threats are identified and as a result are prevented or avoided or, at least, managed in some way.

Building a long-horizon mindset starts from thinking right to left.

By the way, the whole article is very good – download the full publication from this website and head to page 36.

Patience, a depreciating asset

This post contains my first thoughts on the role of patience within long-horizon investing, a concept which cropped up over a coffee with Dr Geoff Warren (Australian National University) this June. We are currently exploring whether a co-authored paper on the topic makes sense.

To understand why patience might be important for long-horizon investment consider the following thought experiment. An investment is available, today only, for $100 that will pay $163 in 10 years' time (equivalent to 5% pa) – without any opportunity to sell before then. The mark-to-market value of the investment will rise by 5% each year so the full return profile is known in advance (and the volatility is 0%). The investor's required return is 4% pa. How much does the investor allocate to this investment? And can we conclude whether the investor is a short-term or long-term investor? The answer to the second question can only be inferred from the answer to the first question. If the investor allocates 100%, then there is nothing else for them to do but walk away for 10 years and get on with other aspects of life. The less the investor allocates then, perhaps, the more short term their thinking. But we haven't got to the patience thing yet.

Let's change two of the terms of the experiment. First, the mark-to-market value of the investment will either rise by 5% or fall by 5% each year. Second the investor can now sell their holding at the end of any year. Skipping the central range of possible outcomes, consider the case of nine consecutive 5% annual falls in price (setting up a spectacular 160% return in year 10 to get us to the $163 end point). The thought experiment is now more complicated in that even a genuinely long-term investor may be subject to mark-to-market constraints and therefore not free to allocate 100%. But it should also be clear that patience has a role to play in that there is now a requirement to wait in order to harvest the 5% pa return.

However, simply waiting a number of years for a certain outcome is only one aspect of patience. Once we introduce uncertainty to the final outcome – this apparently attractive investment could instead be a value trap – we approach the heart of why patience is so important to long-horizon investing.

From these thoughts, we can advance the hypothesis that the key differentiating feature of long-horizon investors is their ability to be patient. In the terms of our thought experiment where bad early paths are possible (and precluding the breaching of any constraint), the point at which the investor sells out reveals their true time horizon.

An alternative way of expressing this is that an investor's 'longness' is tested by, and only revealed by, adverse outcomes. When returns are favourable the concept of 'longness' carries very little meaning or importance.

Implicit within this is a belief we should call out: long-horizon investors should only expect to earn a return premium over short-horizon investors by surviving periods of adversity (making disciplined, value-adding decisions – even if 'to do nothing').

It follows that patience will be tested. And this leads to the idea that patience should be viewed as a depreciating asset. In fact, this would lead us to define the observed behaviour of 'capitulation' as the point at which patience ran out.

We can also borrow insight from the 2nd law of thermodynamics ('in a closed system, entropy (decay) always increases'): if the investor is a 'closed system' (ie has an initial endowment of patience, which then decays) then there will always be a point of capitulation if the outcomes are adverse enough. This shows that long-horizon investors must make themselves into 'open systems' where the restocking / replenishment of patience through time is possible if not inevitable.

As billed, this post is just the first sketch of some thoughts that need considerable development. One of the key questions we will need to answer is 'how do you replenish patience?'. Presumably the supply of patience must come from the principal (or the governing board representing them), which implies the answer will include supportive governance. But can the principal have inexhaustible patience, or do we need to identify how they replenish? Then there is the gap between individual patience and organisational patience. How do we create and maintain organisational patience in the face of changing individuals either on the governing board, or within the executive? There is a fair amount of work required here, but it seems that the insight is likely to be important.

Sustainability

In the Thinking Ahead Group we dream of the day when long-horizon investing and sustainable investing are treated as largely synonymous. Regrettably that day has not yet arrived, and so we pursue our research under the two topic names – but in as joined-up manner as we can. The piece we have chosen to link the two sections – Limits to growth? – should make the overlap pretty obvious.

Limits to growth?

What is sustainability? The Thinking Ahead Institute has a couple of working groups considering different aspects of the subject and one thing we have learned so far – hold the front page – is that a universally-accepted definition of sustainability does not exist. Each investment professional has their own, legitimate take on the subject. For what it is worth, my take is settling on the notion that sustainability is intrinsically linked to the rate of extraction of resources from a system relative to the rate at which they are replenished. This may sound a little abstract, but it has led me to reflect on different forms of growth 'dynamics' (the 'shape' of the growth rate over time). I can think of three different types of growth, but there may be more.

1. **Sigmoidal, or S-curve, growth:** growth starts slowly, accelerates for a while before decelerating to a zero growth rate. This growth dynamic applies to most biological things, and explains why trees do not grow to the sky.

2. **Exponential:** the growth rate is consistently positive up until the point of collapse. An example would be the growth of a colony of bacteria in a petri dish. There is a technical wrinkle concerning whether the point of collapse occurs in finite time (a problem for us) or in infinite time (we can ignore).

3. **Chaos:** the classic example here is the growth in the rabbit population on an island, with unpredictable booms and crashes.

The common thread across all three is access to resources. Growth stops when the resources can't be extracted from the environment fast enough. In the case of exponential growth, collapse comes when all available resources have been harvested. [And yes, I doubt it will ever be economic to mine resources from passing asteroids and, further, I consider a human colony on Mars to represent failure rather than success – just think of the per capita resources required to sustain life there...]

We now need to tie the two ideas of sustainability and growth together. If the rate of replenishment of the resources is zero, in other words we are gifted a one-off endowment of, say, fossil fuels, then we know we are dealing with exponential growth – eventually the resources will run out. If the rate of replenishment is positive (and there is an existing stockpile), then we know two things: (1) the sustainable rate of extraction, and (2) that we can exceed the sustainable rate of extraction for a period, albeit with a future cost. However you configure it, I am led to conclude that, over the very long term, the only sustainable growth rate is 0% per annum. This is not how we appear to be wired – we seem to be wired for growth – so how do we explain this mismatch? Two different strands of thought occur to me.

First, there is history. For the vast majority of human history global GDP growth is estimated to have been between 0% pa and 0.05%pa, and then around 1750 it exploded exponentially. This growth pattern would fit either the sigmoidal or exponential dynamics reviewed above. Arguably the former is the 'more sustainable' option – and it is possible to make the case that we could currently be in the deceleration phase. If global GDP is truly exponential, then reasoning by analogy would suggest that positive growth can be sustained until the resources run out, at which point it collapses. In this latter case we would need to define the time frame over which we were concerned about 'sustainability' and if the collapse is likely beyond this, then it is outside our frame of reckoning.

The second strand of thought is inspired by Eric Beinhocker's The origin of wealth. This book makes the case that wealth is knowledge – so more knowledge equals more wealth. Assuming this to be true, wealth will increase indefinitely if knowledge increases indefinitely. The indefinite increase of knowledge seems plausible, given that the more discoveries we make the more recombinations of them can be made, to yield yet further discoveries. There are two caveats in my mind. Again from history, the lesson from the destruction of Arab centres of learning shows that knowledge (and wealth) can be destroyed – even if that is harder to imagine now that knowledge exists in digital form. Second, for me, the problem of resource limits still needs to be solved. For knowledge and wealth to increase indefinitely it seems to me that both have to be free of any resource constraints – and that is hard for me to imagine.

To conclude, I am settling on a belief that over the very long run the only sustainable growth rate is 0%pa. Given my belief in complex adaptive systems, a steady state seems remotely likely. More likely would be a chaotic pattern of positive and negative growth rates. What does this mean in the real world of investing? With the caveat that there is seldom a simple and direct link between abstract thought and portfolio positions, there seem to be meaningful implications for portfolios. First, equities are call options on growth whereas bonds look more as though they extract resource at a rate more in line with replenishment – so asset allocation could be revisited. Second, there may be implications for risk management – in particular, being mindful of risk over longer horizons, and possibly having a more dynamic risk budget over time. Third, there are clear implications for security (and/or sector) selection. We see the subject of sustainability as continuing to grow in importance – and so we will continue to refine our thinking in this area.

The next piece could be dismissed as merely philosophical but, we would argue, raises an important and fundamental point that gets to heart of sustainability thinking – what do you do with existing investments that may be causing societal harm? The following two pieces get us back into more mainstream sustainability thinking.

Should we deliberately strand some of our assets?

This thought was triggered by a confluence of a relatively recent statement on climate change by NZ Super Fund (here), and the relatively old writing of JM Keynes. NZ Super have classified climate change as representing an 'undue risk' which then obliges them to manage it – we believe this marks them out as the leader on this issue among institutional asset owners, and we applaud them for it. The title of the linked article includes the phrase 'multi-faceted climate change strategy' and the article goes on to highlight several ways in which they will change what they do. However, one phrase is relevant for this thought piece, namely "targeted divestment".

In chapter 12 of his General theory of employment, interest and money, Keynes writes about investment. Specifically, in our present context, he writes: "the Stock Exchange revalues many investments every day and the revaluations give a frequent opportunity to the individual (though not to the community as a whole) to revise his commitments". And for emphasis, slightly later he writes: "there is no such thing as liquidity of investment for the community as a whole".

So, let us assume for the purpose of this thought experiment that climate change is real, and that it will materially disrupt business models, seriously harm certain asset values and have other detrimental social impacts. These conditions would also create significant opportunities for new investment. So the ideal outcome for society – the whole of the human race in the case of climate change – would be for some business operations to stop immediately (let's say any that cause carbon to be emitted into the atmosphere) and for others (say zero-carbon) to instantly achieve appropriate scale. It is reasonable to assume that the existing capital stock could not be converted to the necessary new purposes without some cost (possibly complete write-off). Therefore, what society (the end savers) should ask of its agents is to write-off the 'bad' assets – this would require shareholders to force company management to shut down the necessary operations, causing the value of the related assets to fall, likely to zero. Simultaneously society should ask its agents to fund new 'good' assets that do not harm, or positively protect the planet.

Clearly the real world does not work this way. NZ Super will address both sides through targeted divestment of 'bad assets' and they "will intensify our efforts to actively seek new investment opportunities" in 'good assets'. IF they are correct about climate change and in their analysis, then they will earn a significant first mover advantage – selling assets now that will eventually go to zero (by the assumptions of our thought experiment), and buying assets that will become increasingly valuable. Society however will not be so lucky. The 'bad assets' will still exist, and will still be run to produce a financial return. Only now they will be owned by someone else – the community as a whole cannot divest.

If the risk of climate change is real, it could well (eventually) require some degree of deliberate – forced or voluntary – stranding of existing assets. Price action alone may not be enough.

Understanding materiality and immateriality in sustainability: why does it matter?

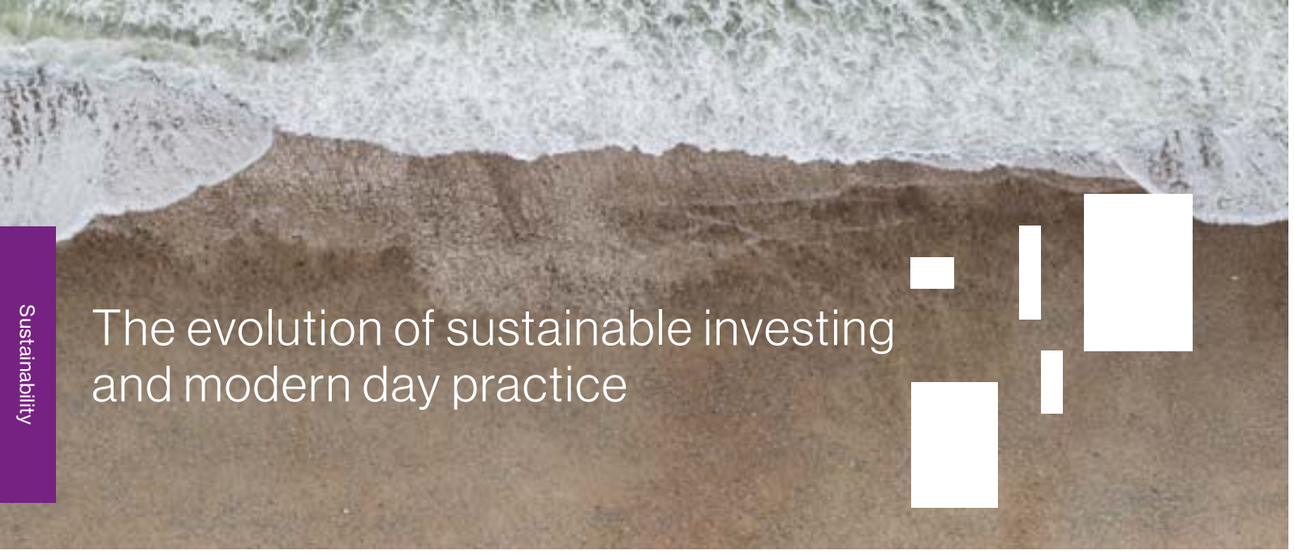
Over the last three years, there has been a growing number of voices which have stressed the importance of incorporating sustainability in the investment process. In 2014, the Law Commission recommended that both trustees and their financial advisers "bear in mind that ESG and ethical factors may, in any given case, be material to the performance of an investment" and the UN PRI in its 2015 report on fiduciary duty in the 21st century noted that "failure to consider long-term investment value drivers, which include environmental, social and governance issues in investment practice, is a failure of fiduciary duty". Proponents like these have resulted in the subject of sustainability gaining greater traction with investors, with the US SIF (The Forum for Sustainable and Responsible Investment) reporting that $8.10 trillion in US-domiciled assets at the beginning of 2016 were being held by organisations that apply various ESG criteria in their investment analysis and portfolio selection.

Critical to the prominence of sustainability in investors' minds has been the growing body of evidence emerging over recent years indicating that companies that engage with sustainability in their decision-making perform better over the long-term than those that do not. However despite this and the proliferation of sustainability products, there still remains a degree of imprecision as to what exactly constitute 'material' sustainability factors. Recognising the complexity of the concept, the Global Reporting Initiative has sought to help companies understand how different stakeholders approach materiality, noting that for investors it is "any factor which might have a present or future impact on companies' value drivers, competitive position, and thus on long-term shareholder value creation."

Grewal et al., in their 2016 working paper on Shareholder Activism on Sustainability Issues, shed some light on a number of interrelated issues around the question of materiality and provide evidence which links this to ESG performance. Specifically they note:

- A growing number of investors are engaging companies on non-traditional ESG issues in addition to traditional topics such as executive compensation and shareholder rights.
- Fifty-eight percent of shareholder proposals studied were filed on immaterial ESG issues (filtered using guidance from SASB) suggesting that a significant number of shareholders are unaware of materiality, or are pursuing objectives other than enhancing firm value.
- Shareholder activism was effective in improving company performance on the focal ESG issue regardless of its financial materiality.
- Even though they rarely receive majority support, proposals filed on immaterial ESG issues are accompanied by larger and faster increases in firms' ESG performance on the issue relative to material issues due to: addressing agency problems, the firm's inability to differentiate which issues are material and attempts by the firm to divert attention from poor performance on material sustainability issues.
- Proposals on immaterial issues are associated with subsequent declines in firm value and conversely, those on material issues are associated with subsequent increases in firm value. This suggests that pressure on companies to address ESG issues that are not financially material for the firm but relevant to other non-investor stakeholders destroys financial value.

If the evidence is correct and failure to distinguish between material and immaterial factors is destroying value, then the drive by investors towards integrating ESG practices may lose its impetus, by failing to translate into increased profitability for companies. At the Thinking Ahead Institute we believe that, using a foundation of sustainability beliefs, it is critical for investors to be able to make this distinction and to then use this to understand how these factors can affect risk management and portfolio construction. The TAI sustainability portfolio construction working group was set up to do just this and we will report on progress throughout the coming year.



The evolution of sustainable investing and modern day practice

It's official – sustainable investing is trendy. According to the Global Sustainable Investment Alliance's (GSIA) latest review, there is now USD $22.89 trillion of assets professionally managed under responsible investment strategies, an increase of 25% since its previous 2014 report. Sustainable investments now represent about 26% of assets manged globally and sustainable investing grew in both absolute and relative terms in nearly every market represented in the report.

Yet despite the meteoric rise in the amount of capital allocated to this area, many investors find sustainable investing difficult to define which is unsurprising given the large number of closely related terms in this space which are used interchangeably and the mottled history of sustainable investment practice over the last several decades.

Deutsche Bank's 2012 study on Sustainable investing: Establishing long-term value and performance charts the evolution of sustainable investing from the 1500s to present day by grouping it into four broad categories:

1. Ethical investing (values-driven): 1500s onwards
   - Historically motivated by religious inclinations, this era was defined by negative screening, or deliberately opting not to invest in companies or industries that did not align with investor values.
2. Early socially responsible investing (values-driven): 1960s-mid 1990s
   - Socially responsible investing (SRI) became a newly coined 'catch-all' term for ethically oriented investing and referred to a value-based exclusionary investment approach (therefore somewhat indistinguishable from the previously used term 'ethical investing').
3. Current socially responsible investing (values-driven; risk and return): late 1990s to present
   - This period represented a shift away from ethics based investing towards incorporating ESG factors into investment decision making – therefore linking it to investment returns. Early and modern practices are differentiated by the growth in shareholder activism and the introduction of positive-screening investing.
4. ESG / responsible investing (risk and return; best in class): 2003-present
   - This emerged from a renewed interest to include corporate governance into SRI (in addition to financial, social and environmental factors) and investors' desire for improved risk/return outcomes drove focus to this type of investing. Bolstered by the UN PRI, responsible investors became a universally defined concept representing those investors who incorporate ESG factors into their investment process.

In their 2009 lecture at the Carbon Finance Speaker Series, Krosinsky and Robins aptly summarised the evolution of sustainable investing as moving from being "driven by the values of the investor (from the inside out)" to "addressing changing external realities (from the outside in)".

So what is sustainable investing?

Given the evolution and multi-faceted nature of sustainable investing, it would be foolhardy to assume that there can be a universally agreed definition. At the Thinking Ahead Institute, we broadly define sustainability as "being mindful of the long-term implications of short-term actions so as to not compromise needs/objectives". A sustainability mindset is always cognisant of the rate of extraction of resources from a system (current and projected) relative to the rate at which they are replenished.

Specifically, for investment, sustainability:

- Involves a deep understanding of the material factors that affect long-term value creation.
- Aims to generate long-term enduring value in an efficient and balanced approach that is fair to successive generations...
- ... and emphasises adaptability, governance and stewardship as coping mechanisms.

The primary goal of sustainable investing can be seen as balancing the maximisation of risk-adjusted financial return with the pursuit of extra-financial motivations and positive impact.

So where do the asset owners of today stand on the issue of sustainable investing?

Based on the GSIA 2016 review, the largest sustainable investment strategy globally is negative / exclusionary screening (USD $15.02 trillion) followed by ESG integration (USD $10.37 trillion) and corporate engagement / shareholder action (USD $8.37 trillion). The GSIA also reported that the fastest growing strategy, albeit currently the smallest, was impact/community investing.

At the recent Responsible Investor Europe 2017 conference, the world's largest pension fund called on asset managers to improve their corporate governance. The Government Pension Investment Fund (GPIF) of Japan, currently managing USD $1.3trn, emphasised the importance of asset managers publicly disclosing their stewardship activities, integrating ESG into the investment process and exercising voting rights.

There is also a growing trend among asset owners to integrate ESG considerations into passive investments. Examples of this are GPIF's recent announcement to switch 3% of its Japanese equity portfolio (¥1 trn) and Swiss Re's, one of Europe's biggest insurers, announcement to move its entire USD130bn investment portfolio, both to ESG indices.

Sustainable investing requires an evaluation of a fund's values and investment beliefs. It is values that distinguish the investment mission and goals of a fund; it is beliefs that distinguish the investment strategy. Funds' missions can cover the spectrum from 'traditional' (where the focus is solely on financial aspects) to widening/longer term views of responsibilities (including ownership and consideration of externalities) to joint missions combining financial and defined extra-financial considerations (dual-goal mission)[2]. The investment strategies chosen to be pursued by organisations follow the intersection of mission and the organisation's belief of the level of materiality and mispricing reflected in sustainability factors.

Based on the 2017 Future Fund and Willis Towers Watson research of the 'Top 15' asset owners, 10 of the 15 asset owners studied could be seen to have (a) missions/ motivations linked to financial considerations with varying degrees of pro-social collateral benefits and (b) beliefs that sustainability factors are material (albeit not mispriced). Two of the 15 had the same motivations but also had beliefs around materiality and mispricing of sustainability factors. The remainder followed 'traditional' financial motivations with beliefs around the materiality of sustainability factors. The study notes that while sustainability is seen as a critically important emergent subject, the asset owners recognised that there were missed opportunities in the overlapping areas of sustainability, ESG, stewardship and long-horizon investing. This chimes with the recent paper produced by the Thinking Ahead Institute, The search for a long-term premium (see above), wherein it concluded that there was a net premium of up to 1.5% pa available to long-horizon investors that can be exploited by investors based on return opportunities and the potential to reduce the drag on returns.

Measuring the bottom lines – the next steps

In 1997, John Elkington, coined the phrase "the triple bottom line" to argue that corporations should not only focus on the economic value that they add, but also on the environmental and social value they add (and destroy). Linked to the significant growth in sustainable investing, investors are increasingly being asked to consider three dimensions to investment: risk, return and impact. Understanding this trifecta is an important responsibility of sustainable investors and needs to be adequately addressed. Improving the disclosure, measurement and impact of sustainability initiatives is much needed to provide further fuel to its exponential growth.

This concluding paragraph provides the perfect guidance for the next stage of our journey. How do we improve the "measurement and impact of sustainability"?...

[2]The concept of dual-goal mission is particularly relevant to universal owners who, as a consequence of their size, own a slice of the whole economy and market through their portfolios. Here, the performance of such funds is more heavily dependent on the long-term progress of the economy than on individual companies.

Measurement

...Well, we believe one sensible step is towards <integrated reporting>...

Integrated Reporting (2016 London Roundtable)

(This post summarises a session at the 2016 Thinking Ahead Institute roundtable, held in London on 2 and 3 November)

According to the International Integrated Reporting Council (IIRC), an integrated report is a "concise communication about how an organisation's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation of value in the short, medium and long term."

The session began with Jyoti Banerjee from the IIRC providing a broad outline of the framework. Jyoti posited that the following developments in business environments have changed the way that value is perceived: increased calls for long-termism; visibility of non-financial information; exponential growth in big data, which provides additional information on companies; and disruptive business models that have changed the way of doing business. He sees these developments as integral to the growth of <integrated reporting>, which aims to encourage companies and investors to have a better understanding of how value is created.

Using SAP, a German technology company as a case study, Jyoti outlined how by studying multiple capital inputs into a business (financial, manufactured, intellectual, human, social and relational, and natural), companies can form a compelling story as to how organisations create value over the short, medium and long-term. In producing an integrated report, businesses would also be expected to consider other factors such as materiality (which elements of value creation are important and to whom?) and connectivity (how does value created in one part of the company impact value creation elsewhere?)

Jyoti noted that consideration of non-financial factors through the use of an integrated report was starting to gain traction across a number of markets (for example South Africa, Singapore, Japan and Brazil). He also pointed to the European Commission's directive which calls for increased disclosure of non-financial factors in company reports. In conclusion, Jyoti reiterated his call for businesses to think beyond financial inputs and to consider more holistically how organisations created value.

Attendees then considered a practitioner's views on using the framework for reporting in South Africa, where it is mandatory for listed companies. The introduction of was seen as broadly positive as it encouraged companies to consider the environment in which they operate and forced investors to look at longer-term metrics when considering value creation. However, in practice, the introduction of mandatory integrated reporting has made reporting more onerous for professional investors. Specifically, there was wide variability in the quality of reports produced. As the document needed to be understood by non-professional investors, it was often used by organisations as a public relations/marketing document, which contained non-verifiable information. In their efforts to be comprehensive, integrated reports often buried key financial and other metrics used to determine a business' worth in the detail. This often led to an increase in the number of discussions investors needed to have with management in order to cut through to the critical issues.

The session concluded with approximately 77% of participants agreeing that there was a need for non-financial information to be included in their reporting with 76% agreeing/strongly agreeing that there was merit in using an integrated reporting framework. Attendees supported the initiative to further develop the research stream in 2017.

A completely different measurement idea – although very loosely connected back to sustainability – is to increase the focus on money-weighted returns, as they are ultimately what the end saver 'eats'...

Cumulative dollars earned (CDE) – a possible new metric

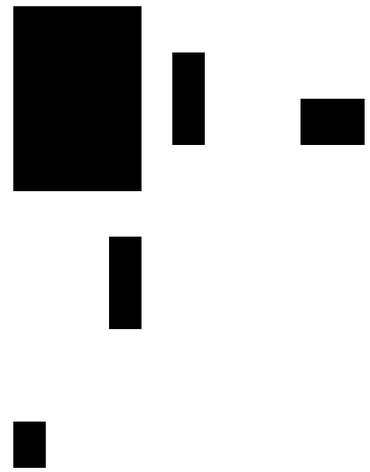
Within the Institute, and even outside it, we (I) have been pushing the idea of money-weighted returns. I would characterise the response as broadly supportive, despite acknowledgement that more effort is involved in calculating them. I wonder whether it is now time to see if we can turn talk into action, especially as this is likely to be another case of 'the devil lying in the detail'. This could be a situation ideally suited to 'rapid and distributed prototyping' or, in English, the best approach might be for a few members to experiment on their own and report back for common learning.

At the 2015 Cambridge roundtable we presented a slide showing returns for a hypothetical hedge fund which demonstrated it is possible to post a positive time-weighted return while losing significant value (dollars) for investors. We could now formalise and extend that idea.

To seed the thinking, I would float the following idea: we could propose a new metric to be included in key information documents for funds – "cumulative dollars earned for investors". At the risk of appearing somewhat aggressive, we could also suggest "cumulative fees earned for manager" (CFE). The relative scaling of the two numbers could be interesting... The former idea is already calculated by LCH Investments for hedge funds (link), but we haven't seen anything for the latter.

As noted, the devil is likely to lie in the detail. How should cumulative dollars earned (CDE) be calculated? Presumably beta- and leverage-adjusted – but what if part of the value the manager adds comes from deliberate management of beta through the cycle? Should CDE be quoted as a monetary amount, favouring larger, longer established (and successful) funds? Or quoted as a percentage of assets – in which case, how to calculate the appropriate asset value over time?

It should be relatively easy to calculate an estimate of the CDE (and CFE) for public funds using monthly AuMs and monthly returns. Segregated accounts would be a different matter altogether, and may only be calculable by the asset managers, or asset owners directly. I have a hunch that these calculations could provide additional information that we are currently not seeing – but it is only a hunch, and I could easily be wrong. I would appreciate hearing views on whether throwing a bit of effort at this is felt to be worth it.



Limits to prediction

We now approach the end of our journey through these waters. The link from 'Measurement' to 'Limits to prediction' hopefully needs no explaining. As previously flagged, this section should be considered an extension of 'The arena'. How far into the future can we realistically see? Does that knowledge change how we manage our portfolios?

The following five posts summarise academic sessions from the 'Limits to prediction' ACtioN (applied complexity network) meeting organised by the Santa Fe Institute (SFI) and hosted by Willis Towers Watson on 9 September 2016.

Fundamental limits to prediction

Limits to prediction

David Krakauer, the president of SFI, opened the meeting and spoke about the fundamental limits to prediction. Scientists are getting better at predicting the future, but prediction remains an inherently difficult problem. There's good reason to believe that we will eventually face some fundamental limits. Prior to the ACtioN meeting, SFI recently hosted a workshop bringing together researchers who work on the mathematical, algorithmic, and practical aspects of prediction across a wide range of fields, trying to understand these limits.

A classic example of where prediction faces fundamental challenges is in chaotic systems. The evolution of a chaotic system, by definition, is very sensitive to its initial conditions. Krakauer used the weather system as an example where predictions beyond a window of just a few days are incredibly difficult (in fact, not any better than using a historical average) because points that are very close to each other in starting position will diverge dramatically over time. In this case, the exponential divergence in the dynamic system beats the exponential growth of computational power.

Krakauer's view is that the most fundamental limit to prediction is in fact human imagination. He referred to the Dirac equation (for the technically-minded, the Wikipedia link is here) as a prime example. Dirac's equation simplified reality but also predicted negative energy which was clearly at odds with the current understanding of reality. The subsequent discovery of the positron (positively charged electron), validated the equation and changed our understanding of reality.

Krakauer spoke about the "no free lunch theorem"; because no algorithm is completely assumption free, there can't be a universally-best algorithm for a given problem. There will always be a better specialised algorithm for a specific problem than a general algorithm (mathematically provable). The implication for investment is that searching for an optimal investment strategy to work in all environments is destined to fail. Specialist context knowledge about each specific environment is critical to the solution strategy.

Krakauer does not believe big data can solve all the problems associated with predictions. He suggested that the benefit of data saturates at a certain point and solutions must rely on better models and better theories. This lends support to TAG's approach in advancing the complexity framework as a foundation of better theory for the investment world. The complex and reflexive nature of the investment landscape significantly limits the power of empirical methods, even with increased range and depth of data-sets. Our view is that big data will have significant impacts if we can link the step-up in data sources with a step-up in explicit models of reality. If big data is applied to lighter understandings of reality, then we will encounter major issues in data mining and contribute only minor understanding to the field.

Rock, paper, scissors, Higgs: from quantum field theory to the no-trade theorem

(Simon DeDeo is assistant professor at Carnegie Mellon University's School of Informatics and Computing.)

This talk concerned the application of information theory to forming predictions. Simon DeDeo's view is that probability is not just a statement of frequencies that are determined by physical laws, but is heavily influenced by human interaction in a system – that is, the very people trying to understand the probabilities of a system are important contributors to the randomness in that system. In this context, consistency of action (as measured by the Shannon information ratio) makes a system more predictable, whereas idiosyncratic behaviour lowers the predictability. As a result, DeDeo concludes that ignorance of the world is the primary source of uncertainty, in that it is more likely to lead to inconsistent behaviour.

DeDeo referred back to a previous session, in which David Krakauer discussed two ways of improving our power of prediction, namely better use of data and better models for representing the world. His analysis led him to conclude that it is shortcomings in the latter that currently create the greatest impediments to our ability to predict the future.

Due to the large number of uninformed actors within a system, most of life tends towards maximum entropy, ie maximum disorder. The only aspects of the world that are truly predictable are those that are constrained by physical laws. For everything else, the world can be characterised by a jumble of interactions between people with different belief systems about the world. The difference in belief systems makes people appear idiosyncratic, although here is where DeDeo is focusing much of his research to try and expose an underlying basis of determinism.

As an example, DeDeo looked at the ability to determine political inclination based on language. In the US, he noted that the increased polarisation of the two main political parties had increased the predictability of the language used – which he equates to the way that people formulate their views of the world. Once we have established a speaker's or writer's political leaning, predicting the next word to appear in a sentence becomes increasingly easier. In Shannon terms, once we have established an agent's belief system, the information ratio or predictability of that agent increases significantly.

All this is very interesting, but what does it have to do with investment? DeDeo's research has applications to investment markets. With no predictability (ie completely idiosyncratic behaviour), markets could be said to be efficient. However, it may be possible to deduce discreet belief systems within the market ecology, and discover some degree of consistent behaviour within these belief clusters, thus elevating the potential for information discovery to something above zero – and hence forming a possible viable basis for a trading strategy.

Predicting the antigenic evolution of influenza viruses

While some talks explored the limits of what can be predicted, Dr Terry Jones presented a case study on how designing vaccines for the influenza virus was practical only once its future adaptations could be predicted. In essence it is a case study of applying imagination (see above post on *Fundamental limits to prediction*) in order to transform an impossible task into a simple task.

The talk began with some history of the impact of influenza. Notably while most people's day-to-day experience with the influenza virus (the flu) is relatively benign this has not always been the case. Between 1918-1920 a flu pandemic spread across the world infecting 500 million people (33% of the world's population, and including remote islands in the Pacific and the Arctic) and killing somewhere between 50 to 100 million of those infected (3-6% of the population). To put this in perspective, World War I resulted in the death of 17 million people.

Given the possibility of global pandemics, to have such a virus circulating in the population means there is a great deal of interest in studying it. As the flu is a virus, vaccination is required to stop it spreading through a population. This is where problems are encountered. It takes time (9-12 months) to produce a vaccine in sufficient amounts to vaccinate those most vulnerable to the flu and the virus is continually evolving (making past vaccines ineffective). The challenge is therefore to produce a vaccine that is effective on the flu strain that will be circulating when the vaccine is being administered – but which doesn't exist yet.

Dr Jones showed how his team have taken the data used by those trying to make this prediction (with varying degrees of success) and transformed it into an "antigenic map" (essentially the proteins produced by the virus). Mutations can occur in any protein, making the search impossibly large. The breakthrough was the realisation that a virus is harmless if it cannot bind to a human cell, and therefore only the mutations in a tiny subset of the proteins matter. The map showed the groupings of strains with similar antigenic properties corresponding to groups of flu strains that shared common vaccines and how these antigenic properties would be stable for a short time before evolving into (jumping to) a new state – making past vaccines ineffective. This mapping also made prediction of where the virus might "jump" next possible and therefore it became possible to develop a vaccine with sufficient lead time that was likely to be successful in protecting people against the flu.

From an investment point of view the talk showed how things that might seem unpredictable may be predicted, or, at least become less unpredictable, if the right properties are looked at with the right perspective. While financial risk models are typically very good at analysing our current portfolio (if tomorrow looks like yesterday) they are poor at incorporating how a portfolio (and by extension the investment strategy that creates it) will change in response to future market conditions. If we wish to better protect (immunise) our portfolio against negative events maybe more time should be spent thinking about how our strategy and economies/markets evolve (the long term changes invisible to our risk models) and less about what these look like today.

And finally, it reminded us that pandemics and other "extreme risks" do occur from time to time. If investing assets on behalf of future generations with a multi-generational investment horizon then some low probability, high impact events are a matter of when and not if.

Language evolution is predictable, up to a point...

(Mark Pagel is a Fellow of the Royal Society, Professor of Evolutionary Biology at the University of Reading and External Professor and Science Board member at Santa Fe Institute.)

Language, according to Mark Pagel, is one of the things that really distinguishes the human race. No other species on earth has anything close to our diversity of language - there are around 7,000 different languages spoken in the world today.

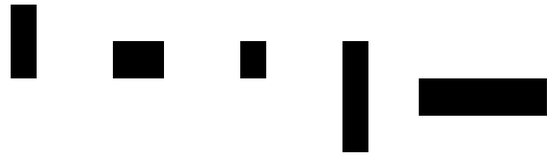
Pagel's research helps to explain where this diversity comes from. He borrows techniques from biology and uses them to make inferences about the evolution of languages, with the aim of finding the ancestral roots of several of today's modern languages.

Focusing on the Indo-European language family, Pagel notes astonishing regularity in the origin and spread of Indo-European languages, similar to the branching processes often drawn to map out the evolution of genes. Previously, there was widespread belief amongst many comparative linguists that words evolved so rapidly that they would quickly run out of any signal of their ancestry. However, Pagel's work has revealed common ancestry for Indo-European languages as far back as 8,000 to 9,000 years ago.

Borrowing a concept from physics, Pagel analysed the linguistic 'half-life' of words ie how long one has to wait before there is a 50% chance that a word will be replaced by a new, unrelated form. By determining words that took the longest to change, it is possible to analyse links between language families with the aim of determining the origins of a common language.

Pagel's research shows that there is a credible inverse relationship between how frequently we use a word and its rate of replacement. Furthermore, about 25 words in the English language account for about 25% of our speech and this trend is seen across a number of other languages. We all use languages in a similar way and Pagel argues that it is therefore reasonable to infer that this is what we have done throughout history. Words must "compete" for relevance and it is through a form of natural selection that some words come to dominate and others to decline in usage. So assuming that the underlying process of language evolution remains the same, these ideas can be used to predict the future.

It is possible to extend Pagel's research on language to the development of culture and behaviour in the investment industry. Borrowing from Pagel's link between the persistence of words and their frequency of use, can we identify behaviours amongst investors that have persisted throughout time through common practice, and which negatively or positively influence the industry? By identifying the major influences (for example, adherence to regulatory rules, due consideration of the end saver and wider corporate social responsibility, preservation of profit for shareholders) the Institute can concentrate on those areas of the industry likely to have the greatest impact on shaping behaviour.



Limits to prediction in economics and elsewhere

(Doyne Farmer is a professor at the University of Oxford - Institute for New Economic Thinking - and an external professor of the Santa Fe Institute)

Prof. Farmer made an early and interesting distinction between forecasting and prediction. He defined forecasting as the prediction of trajectories, and therefore necessarily involving the concept of time. Prediction, on the other hand, is not related to time and is instead concerned with how two things relate. He proceeded to outline his personal credentials with respect to prediction. His first practical experience was as a graduate student when he, and collaborators, decided to take on the casinos at roulette – the game traditionally considered to be the epitome of randomness. They, however, as physicists decided that the ball must obey the laws of motion and therefore its resting point must be at least partially predictable. Through trial and error, and building the first computer that would fit into a shoe, they were able to achieve a 70% success rate on the roulette table.

Later in life, Farmer decided to apply his physics knowledge (and algorithms) to stock market data and formed The Prediction Company (subsequently sold to UBS). Again, through hypothesis testing and honing, they were able to generate a success rate of 60% or more through quantitative analysis (shocking, back then).

These experiences usefully illustrate the two methods for prediction:

1. Using a fundamental model, such as Newton's laws for roulette balls.
2. Using a statistical model, or drawing analogues.

This relationship between data items could also show up here. As for the limits to prediction, Farmer also proposed two explanations: chaos and ignorance.

Chaos occurs in deterministic systems (which should be 100% predictable, because they are deterministic) that exhibit 'sensitive dependence on initial conditions'. The problem here is our inability to measure the initial conditions accurately enough, and so the error in our prediction gets bigger the further out in time we go.

Farmer used ignorance and noise interchangeably, to describe what we don't know. This could be our inability to measure initial conditions as above, could be estimation error, but also includes our lack of fundamental understanding.

Bringing these thoughts together, Farmer turned to market efficiency – which means that markets are difficult to predict (more likely to be ignorance than chaos, as markets are unlikely to be deterministic systems). Farmer suggested that markets were an example of 'self-organised criticality', meaning that an apparent equilibrium state can change suddenly past a critical point. He highlighted the role of arbitrageurs in promoting market efficiency, which introduced a paradox as arbitrageurs require inefficiency. He therefore concluded that if markets are efficient at first order they are necessarily inefficient at second order (an argument shared by Grossman and Stiglitz in their famous 1980 paper on the impossibility of efficient markets). This led him to suggest an evolutionary theory of the market, where inefficiencies are the food source for trading strategies.

Limitations of reliance

Limitations of reliance – Thinking Ahead Group 2.0

This document has been written by members of the Thinking Ahead Group 2.0. Their role is to identify and develop new investment thinking and opportunities not naturally covered under mainstream research. They seek to encourage new ways of seeing the investment environment in ways that add value to our clients.

The contents of individual documents are therefore more likely to be the opinions of the respective authors rather than representing the formal view of the firm.

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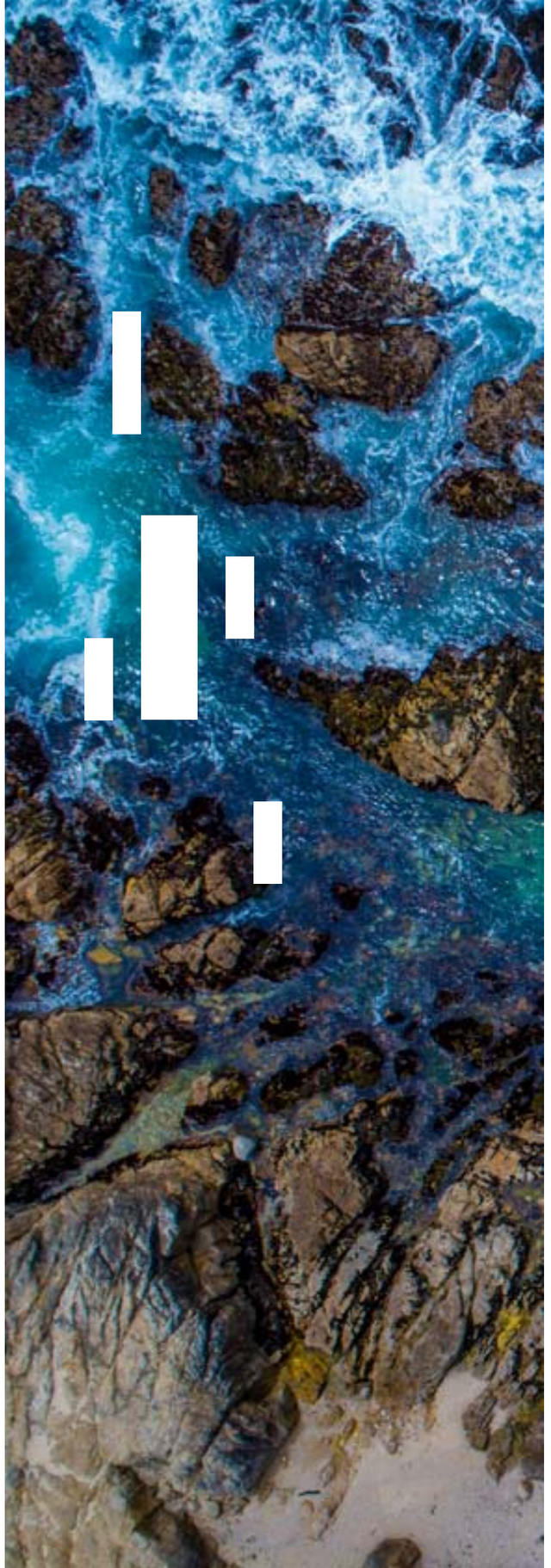


About the Thinking Ahead Institute

The Thinking Ahead Institute seeks to bring together the world's major investment organisations to be at the forefront of improving the industry for the benefit of the end saver. Arising out of Willis Towers Watson's Thinking Ahead Group, formed in 2002 by Tim Hodgson and Roger Urwin, the Institute was established in January 2015 as a global not-for-profit group comprising asset owners, investment managers and service providers. It has over 40 members with combined responsibility for over US$13 trillion and aims to:

- Build on the belief in the value and power of thought leadership to create positive change in the investment industry.
- Find and connect people from all corners of the investment world and harnesses their ideas.
- Work to bring those ideas to life for the benefit of the end saver.

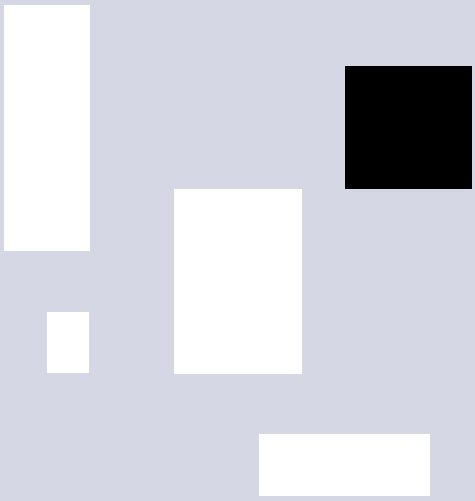
At the Institute we identify tomorrow's problems and look for investment solutions, which, we strive to achieve through:

- A dynamic and collaborative research agenda that encourages strong member participation through dedicated working groups.
- A global programme of events including roundtable and key topic meetings, webinars and social events.
- One-to-one meetings between Institute member organisations and senior representatives of the Thinking Ahead Group.

The solutions we collectively develop fall into three overlapping areas:

- Better investment strategies.
- Better organisational effectiveness.
- Enhanced societal legitimacy.

This framework guides the Institute research agenda and the desired output of each research project. The Thinking Ahead Group acts as the Institute's full-time executive. The Institute has a governance board comprising both Institute members and Thinking Ahead Group representatives.



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