Institution: University of York		
Unit of Assessment: 17 – Business and Management Studies		
Title of case study: Improving income in retirement from Defined Contribution Pension Funds by protecting against sequence risks		
Period when the underpinning research was undertaken: 2010-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Peter N Smith	**Role(s) (e.g. job title):** Professor	**Period(s) employed by submitting HEI:** 1995-present
Period when the claimed impact occurred: 2014-2020		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact (indicative maximum 100 words)

In recent years, Defined Contributions (DC) pension funds have grown in importance. However, the risks associated with them can have dramatic consequences for individuals' financial security in retirement. This is especially with regard to 'sequence risks', i.e. risk that the timing of withdrawals from a retirement account can damage the investor's overall return. Research by Smith, with colleagues at City's Business School, developed an investment strategy that significantly reduces investors' exposure to sequence risk. This strategy has been implemented in four retail investment funds and a web-based tool has been developed to make the research results open to all. Analysis demonstrates that this strategy can enhance fund performance, benefiting investors, and savers close to retirement.

2. Underpinning research (indicative maximum 500 words)

The dramatic falls in bond yields since 2007 have pushed many pension funds into deficit, creating serious problems for the sustainability of pension systems throughout the Western world. In the UK, Baroness Altmann, a former Minister of State for Pensions and Child Maintenance, has expressed serious concerns about the consequences of `pension pain' on the wider economy and this has become a salient and emotive political issue across Europe and other developed nations.

Novel research conducted by Peter N Smith at York, with Andrew Clare, James Seaton and Stephen Thomas at City's Business School, explored how sequence risk can be significantly reduced by applying trend-following or smoothing investment strategies **[A-E]**. Sequence risk is the risk that the timing of withdrawals from a retirement account can damage the investor's overall return. The risk of poor investment outcomes arising from withdrawal patterns is a poorly understood and under-researched but a crucial aspect of the risk many small pension fund investors face. However, the importance of understanding this risk is especially timely given the significant movement, in recent years, from Defined Benefit (DB) to Defined Contribution (DC) based pension schemes.

While DB schemes provide a pension where the benefit is known (determined by a formula involving salary and duration of employment), the value of a pension under the DC alternative is, by contrast, based on the investment returns on contributions made by the individual and their employer. Assets in occupational and personal DC plans now exceed assets in DB plans in most countries. Individuals have to manage their own long-term savings and, very importantly, the rate at which they use up their savings in retirement. This means that both investment and longevity risk rest increasingly with the individual investor rather than with their employer. Those individuals in DC schemes towards the end of their working life or early in retirement are exposed to particular forms of investment risk in addition to those usually faced by investors. Sequence risk arises from large investment losses at times where accumulated investment savings are highest. These losses can have negative effects on the income of individuals in retirement on a scale from which it will not be possible to recover. Examples of these large systemic losses are September 2008 during the Financial Crisis and March 2020 during the COVID-19 crisis. The damage to the standard of living of these individuals may subsequently also impinge on their health and longevity.

'Trend following' is an investment or trading strategy which attempts to take advantage of long, medium or short-term moves observed in various markets. Traders who employ a trend following strategy 'jump on' the trend (when they perceive that it has established within their reasons or rules) and 'ride it'. If the trend turns, the trader exits, moving their funds into risk-free short-term government debt and waiting until a further trend develops. The underlying economic justification for trend following lies in behavioural finance tenets including herding, disposition, confirmation effects and representativeness biases.

Work by Smith and colleagues **[A][B]** examined the superiority of 'trend following' or 'smoothing' investment strategies in terms of both higher average returns and superior performance in reducing the exposure to extreme downside risk that bedevils many alternative strategies. Subsequent research highlighted the effectiveness of smoothing strategies in mitigating the effects of large asset market downturns on the value of the accumulated pension savings of individuals, allowing them to withdraw more in their retirement **[C][D][E]**. In the context of the investment of DC funds, this smoothing approach was found to reduce downside risks without sacrificing overall levels of return. Although involved in all aspects of the joint research, Smith specifically contributed expertise in the area of financial risk management.

In **[C]** the authors highlight sequence risk in investment in equities and the evaluation of pension savings, focusing on the rate at which funds from the savings pot can be taken as income over the retirement period. They also show that this withdrawal rate can be improved by extracting information from market data such as the cyclically-adjusted price-to-earnings (CAPE) ratio. They show that, in some circumstances, individuals can expect to withdraw about 50% more per annum where the proposed investment strategy is used.

Many suppliers of DC investment schemes follow the maxims of lifecycle models, which promote investment in high return, high risk equities in the first part of an individual's working life and savings journey. This exposure is then unwound into apparently lower risk government bonds along a 'glidepath' from middle age into retirement. A growing body of opinion points out the lower expected returns and income in retirement that follow from the strategy without a commensurate reduction in risk. In **[D]** Smith and colleagues show, for the UK, that investment in 'trend following' equities post-retirement can raise expected returns significantly with no increase in risk overall and with a reduced exposure to the specific risk of a large drawdown in wealth. They show that adopting this strategy is more effective than the typical advice, which is to 'spread one's eggs over many baskets' and diversify one's investment into a wider range of assets. In **[E]** they go on to show that glidepath investing is clearly dominated by sustained investment in trend following equity strategies.

3. References to the research (indicative maximum of six references)

[A] Clare A., Seaton J., **Smith**, P.N., and Thomas S., (2014). "Trend following, risk parity and momentum in commodity futures." *International Review of Financial Analysis,* 31, 1-12. https://doi.org/10.1016/j.irfa.2013.10.001 + ++

[B] Clare A., & Seaton **Smith** P.N., J. Thomas S (2016). "The trend is our friend: risk parity, momentum and trend following in global asset allocation" *Journal of Behavioral and Experimental Finance*, 9, pp 63-80. https://doi.org/10.1016/j.jbef.2016.01.002 + *

[C] Clare, A., Seaton, J., **Smith**, P.N., and Thomas, S. (2017). "Reducing sequence risk using trend following investment strategies and the CAPE", *Financial Analysts Journal,* 73, 4, pp 91-103. https://doi.org/10.2469/faj.v73.n4.5 +

[D] Clare, A., Seaton, J., **Smith**, P.N., and Thomas, S. (2020). "Can sustainable withdrawal rates be enhanced by trend following?", *International Journal of Finance and Economics*, 26, 1, pp 27-41. https://doi.org/10.1002/ijfe.1774 +

[E] Clare, A., Seaton, J., **Smith**, P.N., and Thomas, S. (2019). "The rehabilitation of Glidepath investing", *Department of Economics and Related Studies, University of York, Discussion Paper*, 19/17, University of York. http://dx.doi.org/10.2139/ssrn.3347183

+Peer reviewed journal
++ Submitted to REF 2021
*This paper has been downloaded 11,884 times, making it one of the most downloaded of all time on the Social Science Research Network (SSRN)

4. Details of the Impact (indicative maximum 750 words)

Research by Smith and colleagues, quantifying the benefits of trend following and smoothing investment techniques, has had significant impact across the REF period. Initially, the authors focussed on the use and implementation of a variety of investment strategies to construct a number of financial products available to investment professionals. Later work built on this experience to focus more specifically on the investments of defined contributions pension funds. The overall message of the underpinning research has been translated into practical advice for investment funds, that they should offer products that have lower fees, low volatility and protection against downside and therefore sequence risk. Wide dissemination within relevant practitioner networks has resulted in growing awareness and changing the practices of a number of investment funds.

Uptake and performance

There has been significant direct application of the research by a number of organisations to the management of investment funds, including the following three funds that were early adopters.

1. WM Capital Management company uses Smith et al.'s research to design their retirement products: With significant funds under management, WM Capital Management offers retirement investment solutions specifically based on this research to Independent Financial Advisors (IFAs) and investment funds **[1]**. An example of the latter is the WAY Global Momentum Fund (ISIN GB00B57W7682) which has GBP29.5 million assets under management (Jan 2019). On its website, WM Capital Management writes: *"The academic model behind the WM Retirement Investment Solutions has been created by Professors Stephen Thomas and Andrew Clare from Cass Business School and Professor Peter Smith of University of York. These three specialists are regarded as international leaders in investment strategy, with a large global following of their research papers. The investment process they have created has been back-tested over many years and has been successfully used to drive live portfolios over the past seven years. It is a totally unique approach and is based on years of high-quality independent research."* **[1]**.

2. Plain English Finance*:* The VT PEF Global Multi-Asset Fund (ISIN: GB00BDZZSM84) offered by Plain English Finance adopted the findings and principles in Smith et al.'s research. This fund has circa GBP10 million in assets under management and takes the fundamental insights of the research and applies them in a live investment setting **[2][3]**. Plain English Finance highlights the importance of sequence risk for those about to enter retirement and the solution offered by trend following. Of only four references Plain English Finance use in their prospectus, two refer to Smith et al **[2]**.

3. Whole Money offers products based on the research: Whole Money, a trading company of the ITI Group, used the research **[A-E]** to inform development of their Whole Money Lifetime Fund and Pension Pathway. On its website, Whole Money refers to new investment '*technologies*' that are *'wrought in academia'* and *'revolutionise retirement planning, not just in the UK but worldwide'* **[4]**. It also notes how: *'The UK pensions industry – worth £6.1 trillion – has been searching for this kind of innovation, as well as being driven by upcoming changes in regulation. Now, it's here.'* Smith is one of only three professors engaged to provide academic support to Whole Money's commercial advisory board **[4]**.

App development for individual investors*:* Through 2020, Solent Investment has been developing an app based on the research, which will be available from Solent Investment Strategy

Builder to individuals through their Independent Financial Advisors. The app will help consumers improve their financial literacy and plan their retirement journeys, by enabling them to assess their chosen income withdrawal path and pension investment portfolio and update them on a regular basis. Launch of the app was delayed from summer 2020 due to Covid-19 and it is now forecast for Spring 2021.

Improving financial well-being of pension holders*:* There is growing evidence that the trend following model developed by Smith and colleagues enhances the performance of investment funds. A prime example is Plain English Finance, mentioned above. Their prospectus **[2]** shows, when the model was 'back tested' on the fund's performance going back to 2001, *"how effective trend following can be for loss minimisation - something which is absolutely key for investors"*. It goes on to note: "*that both* (a standard, diversified and trend following) *approaches achieve roughly the same returns and would have turned £100,000 invested in January 2001 into around £320,000 by the end of June 2017 with no further investment. Crucially, however, the trend following version had a maximum peak to trough loss of around 10%, whereas the version with diversification but no trend following suffered a fall of over 25% (both in the year 2008/2009)"*. The prospectus also states: "*The net result [of trend following] is to achieve meaningful long run returns on your money, with significantly reduced risk of loss. The fund is the investment equivalent of the tortoise – grinding out steady returns over time. As a result, the long run performance numbers are exceptional"* **[2]**.

These assessments of improved performance have led others to comment on the wider contribution of the research in helping to improve the financial wellbeing of pension holders more generally. In a review of the issues **[5]**, the Head of Pensions and Investment Education, Columbia Threadneedle Investments notes that planning a pension is currently one of the *"most difficult of life's financial decisions"* with *"many DC savers at risk of sleepwalking into retirement penury".* In this regard: *"It is...no exaggeration to say that the ground-breaking research conducted by Professors Clare, Smith and Thomas and the implementation of their findings into an easily accessible investment solution, that significantly reduces these risks is, for many, the difference between enjoying and enduring one's retirement."* **[6]**. The Founder of Plain English Finance is also positive about the wider contribution, stating: "...*the work being done by Professors Andrew Clare, Stephen Thomas and Peter N Smith is undoubtedly of paramount importance for savers & investors, the financial services industry, governments and by extension, entire populations everywhere. I would argue that their work very likely provides us with one of the few common sense solutions to one of the most fundamental and destabilising challenges of our time, and should be viewed in that context. Their work is of crucial importance for society as a whole, not just for those of us in financial services*." **[7]**.

<u>Changing industry practice</u>

The findings of the research have been widely disseminated within industry circles and have gained significant traction. According to a Non-Executive Director, HSBC Retirement Services Ltd, Morgan Stanley Investment Management Ltd and GAM Sterling Management Ltd, the research has helped to fill a significant gap in industry knowledge globally. He notes how: '*The established pensions and asset management industries have to date focused on how to improve retirement outcomes through the accumulation of larger "pension pots", rather than the effectiveness of how those pots are utilised at and in retirement. This is an international phenomenon, and as retirement systems in markets such as the US, Australia and the UK begin to mature, the shortfall in thinking and proposition design is creating an immediate crisis. Academic and industry strategies to date are under-developed, and have continued to focus on the 'wrong risks' i.e. how to optimise accumulation rather than how to evolve into decumulation, the phase where members are drawing down their pension pots'*. In this regard, he states that the work of Smith and colleagues represents a major step forward. Specifically: *"The two publications **[C]** and **[F]** revolutionise the quality of understanding of the risks involved and the potential solutions to those, as well as providing a welcome practical solution for retirees, scheme members, trustees and industry providers. I believe these are landmark studies the conclusions of which could, and indeed should, become the benchmark for future member engagement and product design in this vital area of financial provision."* **[8]**.

In addition, the publication of some of the research in *Financial Analysts Journal* **[C]** helped to communicate the findings to a wide practitioner audience. This journal has a significant professional readership through its parent organisation, the CFA Institute, which sets the world's professional standards for investment management professionals. Messages from the research were highlighted by the CFA in a blog and discussed by Peter Smith in conversation with industry professionals in the US in a webinar **[9]** in June 2019. The research has also been presented at a number of industry conferences including Certified Financial Planner (CFP) conference, October 2016, DB to DC Transfers, Westminster and City 6th Conference, April 2018, the Chartered Institute for Securities and Investment (CISI) financial planning conference, October 2018, and Portfolio Risk Summit, ETF Strategy, May 2019. Finally, the ideas have traction in the worldwide retirement investment community as indicated by the reference in **[10]** by Newfound Research, a US-based investment.

5. Sources to corroborate the impact (indicative maximum of 10 references)

[1] Retirement Investment Solutions, WM Capital Management.
[2] Global Multi-Asset Fund Overview, Plain English Finance (see pp. 7, 9-11, 29 & Appendix 3, and also pp. 3, 17).
[3] VT PEF Global Multi-Asset Fund Factsheet.
[4] Whole Money Lifetime, Whole Money. https://whole.money/about
[5] Wagstaff, C. (2018), "Generating retirement outcomes to be enjoyed and not endured", Columbia Threadneedle Investments, London.
[6] The Head of Pensions and Investment Education, Columbia Threadneedle Investments, email 5 August 2020.
[7] The founder of Plain English Finance, email 7 December 2020.
[8] A Non-Executive Director, HSBC Retirement Services Ltd, Morgan Stanley Investment Management Ltd and GAM Sterling Management Ltd, email 26 August 2020.
[9] Blog linked to publication of the research in *Financial Analysts Journal.*
[10] Faber, N. (2017). "Addressing Low Return Forecasts in Retirement with Tactical Allocation", Newfound Research, Boston, MA.