

OECD Working Papers on Finance, Insurance and Private Pensions No. 39

Financial Education for Long-term Savings and Investments: Review of Research and Literature

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https://dx.doi.org/10.1787/5jrtgzfl6g9w-en

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Financial Education for Long-term Savings and Investments: Review of Research and Literature

by
Adele Atkinson, Flore-Anne Messy, Lila Rabinovich and Joanne Yoong

ABSTRACT

Long-term savings and investments (LTSI) by individuals enhances their financial security while also supporting growth and financial development. Evidence shows that financial knowledge and skills are positively related to LTSI behaviour, and indicates a strong correlation between levels of financial literacy and retirement wealth accumulation. However, both the quantity and quality of LTSI are often worryingly low, pointing to an important role for financial education to increase levels of financial literacy and thus improve LTSI among individuals.

Evaluations of various types of financial education aimed at increasing LTSI have identified some promising results. Initial findings suggest the need for additional, targeted evaluation of education programmes to compare the effects of different delivery channels and the intensity of provision in order to identify optimal approaches. More detailed research is also important to fully understand why some evaluations indicate mixed outcomes from certain programmes.

Approved by Pierre Poret, Deputy Director, OECD Directorate for Financial and Enterprise Affairs

JEL codes: JEL Classification: D04 Microeconomics / Microeconomic Policy: Formulation, Implementation, and Evaluation; D14: Microeconomics / Household Behavior and Family Economics / Household Saving; Personal Finance; D31: Personal Income, Wealth, and Their Distributions; G28: Financial Economics / Financial Institutions and Services / Government Policy and Regulation; I21: Analysis of Education

Keywords: Long-term Savings, Long-term Investments, Financial Education.

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EXECUTIVE SUMMARY

Main findings

Higher levels of financial knowledge and skills are associated with increased long-term savings and improved investment behaviour. However, many people are currently ill-prepared to make their own long-term financial plans. Many individuals lack the knowledge and skills, as well as the motivation and confidence, to improve their longer-term prospects. This suggests that there is a need for high quality financial education, information and guidance to help people better plan for their future financial needs. This review therefore seeks to identify the essential components of such interventions.

The evaluation evidence on the effectiveness of financial education for long-term savings and investments is currently limited, with only a relatively small number of rigorous evaluation studies available. Most, but not all, of these report the findings of initiatives within the US and little attempt has been made to study the impact of varying parameters such as the way in which financial education is delivered or the content of that education.

The available evaluation evidence indicates that whilst the quality of financial education varies, well designed initiatives can - and do - stimulate long-term savings and investments. Effective financial education initiatives for long-term savings and investments include (but may not be limited to) those that are:

- Of sufficient duration and frequency: there is some evidence that longer financial education programmes have stronger effects, but that there is a point at which there are no further gains from increasing the amount of education provided.

- Provided at work: Workplace education designed to increase retirement savings has been shown to lead to increased enrolment and/or contribution into pension schemes, both amongst participants and their co-workers (and particular among those with lower levels of saving).

- Delivered alongside opportunities and incentives to save: Financial education seminars combining presentations and case studies on a range of financial literacy topics have been found to increase savings into Individual Development Accounts – a US initiative to increase long-term savings among low-income households.

- Strategically timed: several effective interventions have been timed to coincide with particular teachable moments, such as during a period of open enrolment for pension funds or as a worker plans to migrate.

- Technology-based: Technology and media have been successfully employed to make financial education more engaging, and to help improve long-term savings and investment behaviour. For example:

- Interactive tools are a component of several successful programmes; when targeting retirement savings, they may add more value when used in combination with other information about the participants' retirement plan.

- Computer games designed to target long-term savings and investment behaviour have been shown to increase knowledge (data on behaviour is forthcoming).

- Videos and other story-based visualisation approaches have also been shown to increase financial knowledge.

- Computer-simulated images of the participant at around 65 years of age, designed to make young people more aware of their 'future-self', have been found to increase hypothetical contributions to savings for retirement in a preliminary study.

- Combined with specific information: Just as interactive tools have been found to be more effective when combined with information, research among farmers in China has shown that it is possible to increase pension contribution rates among existing savers by combining education with information on the expected pay-out of a pension.

There is still much to be learned in terms of the design of effective financial education for long-term savings and investments, and the limitations of the current evidence base highlight the need for more research and evaluation. The OECD International Network on Financial Education's evaluation tools, checklist and reporting template have been developed to help address this need.

1. Introduction

Long-term savings and investments (LTSI) enhance the future financial security of individual households while also supporting growth and financial development. In advanced financial markets, savings and investment products have become more complex, while in low- and middle- income countries, individuals may be reluctant to save or unable to do so as a result of financial exclusion. However, in both developed and developing countries levels of financial literacy are low, making financial planning difficult for unsophisticated investors (Lusardi and Mitchell, 2014).

The OECD is committed to helping policy makers and other stakeholders in member governments and beyond, in particular through the International Network on Financial Education (INFE), to establish efficient financial education strategies that encourage appropriate consumer behaviours with a focus on the balance between short-term priorities and longer-term security (while acknowledging that financial education acts as a complement rather than substitute for a supporting environment of adequate consumer protection, financial regulation and supervision).

The OECD's definition of financial education is the following: "*the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being*".

For purposes of this review, we distinguish between savings and investments intended for the long-term versus short-term precautionary savings - for instance investing in a retirement fund versus ensuring a few months' salary are consistently set aside in a "rainy day fund". It is also important to define capability relative to specific choices and products relevant to LTSI.

According to the OECD and its International Network on Financial Education (INFE), financial education for long-term savings and investments (LTSI) is regarded as *a specific and focused strand of financial education that seeks to provide current and future consumers/investors with the knowledge, skills and capability to manage and accumulate savings to meet their long-term needs (including pension, education, changes in marital or household status, funeral and loss of income), and make confident and informed decisions about such saving and investment decisions* (OECD, 2014).

Evidence shows that knowledge and skills indeed are positively related to desirable LTSI-related behaviour. A number of studies show a strong correlation between financial literacy and greater retirement planning and retirement wealth accumulation, across different countries (Lusardi and Mitchell, 2014). For instance, in the Netherlands, van Rooij, Lusardi, and Alessie (2012) find that an increase in financial literacy from the 25th to the 75th percentile is associated with a 17–30 percentage point higher probability of stock market participation and retirement planning (see also Lusardi and Mitchell (2014) for an overview of the literature).

The evidence also shows that knowledge and skills alone are not enough: other dimensions of capability matter for LTSI, including the motivation and self-efficacy to actually undertake a course of action (see Knoll (2010) for a discussion more specific to LTSI).

However, the literature on the relationship between evaluated financial education programmes and financial behaviour including long-term savings and investments has been less conclusive, although early papers such as Bernheim, Garrett and Maki (2001), Clancy *et al.* (2001), Duflo and Saez (2003) and Bernheim and Garrett (2003) suggest that certain financial education programmes are associated with positive behaviour change.

In this paper we provide an account that both summarises existing reviews of the literature and updates this knowledge base with new/emerging evidence regarding the links between selected existing financial education initiatives and LTSI. We focus on three key categories of LTSI-related behaviour:

1. for non-savers: planning or strategic planning for long-term needs, including seeking education and generic financial advice when necessary;

2. for new savers/investors: initiating and sustaining positive savings and investments with the objective of meeting long-term needs;

3. for existing savers/investors: making optimal choices when purchasing or using LTSI products (such as term-deposits, unit trusts, mutual funds, bonds, shares and/or contributory retirement funds/schemes) including an appropriate understanding of and response to risks related to investment returns as well as fraud.

This report reviews the state of the existing academic literature on population-based interventions targeting these behavioural outcomes, particularly the role of initiatives and programmes designed to increase awareness of the importance of long-term savings, provide generic advice to financial consumers who actively seek it, or incentivise long-term savings and investment through some product feature such as matched savings, tax exemption or depositor guarantee. We do not review school-based financial education interventions, which are already covered extensively in other OECD publications.[1]

The four key research questions that we seek to address are:

1. What is known about the effects of various financial education initiatives specifically on long-term savings and investments?

2. What does the evidence suggest about how to best design a given intervention, especially with respect to:
   - Settings (workplace, community, other) and platforms (classroom, mass-media, one-on-one counselling, self-directed)
   - Intensity (duration or frequency) and timing, especially with respect to 'teachable moments'
   - Pedagogical or material design principles
   - Financial or other incentives

3. What is known about the differences in effects and needs of programmes that target specific vulnerable population groups, or low- versus high-income countries?

4. What can be done to most effectively support major and potentially legally imposed decisions such as choosing a pension fund or an annuity from an LTSI financial education perspective?

1. See www.financial-education.org for a full list of OECD publications on this topic.

Section 3 on Findings presents and discusses the evidence for all of these questions. Sections 4 and 5, on limitations of the evidence and key emerging messages, aim to provide policy-relevant, evidence-based insights into areas where further research is needed, and returns to our final research question on what can be done to most effectively support major (and potentially legally imposed) decisions such as choosing a pension fund or an annuity.

2. Methodology

We considered evidence in two broad groups for this review. In the first tier of evidence, we place the findings of studies that are drawn from experimental evaluation of an intervention or rigorous non-experimental/observational studies that plausibly demonstrate a causal attribution of impact to a particular type of intervention.

To identify this set of relevant studies, we first considered papers covered in a major recent systematic review as well as recent comprehensive narrative reviews of the evidence. The primary systematic review used as an initial starting point is Miller *et al.* (2013), in which a literature scan was conducted including searches of peer-reviewed papers in Econlit under the broad terms "financial awareness, financial capability, financial competence, financial education, financial knowledge and financial literacy" between January 2000 and September 2013, bibliographic entries from previous literature reviews starting in 2007, and recent OECD, World Bank, Global Partnership for Financial Inclusion, and Alliance for Financial Inclusion (AFI) papers.

The result of this scan was 188 intervention studies, including studies on savings, retirement savings, record keeping and loan performance separately, which is freely available via the World Bank.[2] Another meta-analysis measured the relationship between financial education on a range of financial behaviours in 80+ papers (Fernandes *et al.*, 2014).[3] This potential source list was then augmented with a comprehensive bibliography of studies covered by Gale and Levine (2010), Fernandes *et al.* (2014), Lusardi and Mitchell (2013), Hastings, Madrian and Skimmyhorn (2014) and Xu and Zia (2012).

Given the focus of this report, we have included only papers evaluating financial education interventions relevant to LTSI, i.e. planning, knowledge and actual decision-making related to savings and investment for the long-term.

- We have included interventions that were either specifically described as LTSI-related financial education or financial education interventions were not specifically LTSI-related but in which significant effects on LTSI-relevant outcomes were reported.

- Consistent with the definition presented earlier in the text, we excluded studies of interventions in which the nature of the financial education intervention was either general or not described and outcomes involved only broad indicators of financial inclusion (such as the opening of savings deposit accounts) without specifically studying LTSI behaviour; also excluded were interventions examining other aspects of financial capability that are only

[2] http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTGLOBALFINREPORT/0,,contentMDK:23491961~pagePK:64168182~piPK:64168060~theSitePK:8816097,00.html

[3] All of the papers included in (Fernandes *et al.*, 2014) are also included in (Miller *et al.*, 2014), which doubles the number of included papers on financial education.

indirectly related to the capacity for LTSI such as debt repayment and management and livelihoods or entrepreneurship.

- We also excluded studies that adopted a broader definition of LTSI financial education than the OECD, which implicitly emphasises not only specificity and focus but deliberate intent (for instance, we do not consider inadvertent observational learning to be a financial education intervention in itself, although such peer effects are important consequences to note).

- Finally, we note that we include only studies in which choices or behaviour are studied (whether hypothetical or actual, and whether effects are found nor not), but exclude studies that examine only knowledge gains.

At this initial stage, in most cases, the number of eligible studies that addressed the research questions was relatively small or zero. For discussion purposes, we therefore also drew on a second tier of evidence from high-quality observational studies, case studies, and other qualitative studies of interventions that did not meet the criteria of scientifically-robust identification of causal impact, but nonetheless are relevant to the four research questions, offer important insights, and indicate the possible direction of outcomes, especially in the absence of more robust evidence. These were identified via additional Google Scholar searches using the keywords identified by Miller *et al*. (2013) and snowball searches based on the relevant studies covered in the review. We also included library searches specific to individual research questions, both in English and Spanish. Finally, we conducted a search for relevant grey literature (unpublished studies of interventions), including sources such as research reports provided via the US Treasury's Consumer Education Resource Center, discussion papers and thematic reviews from the UK Financial Conduct Authority (formerly the Financial Services Authority) and special initiatives of major international organisations. In particular, we refer to the volume, *Enhancing Financial Capability and Behavior* (World Bank, 2014), which summarises the results of recently concluded Russia Trust Fund.

With respect to each research question, we characterise the quality of evidence as strong if based on many robust studies, and limited if based on a few robust studies and many instances of supporting evidence. We consider the findings to be positive in favour of financial education interventions if the majority of the evidence finds improved LTSI outcomes, negative if no effects are found, and very negative if outcomes are found to worsen.

3. Findings

3.1 Financial education and LTSI

While Miller *et al*. (2013) identified 188 papers presenting the results of evaluations of financial education interventions on financial knowledge and capability, the authors identified only five studies (all based in the US) that evaluated the impact of financial education interventions on long-term (retirement) savings; we describe these papers in detail in Table 1.

Table 1. Miller *et al.* (2013) LTSI paper summaries

Title	Authors	Date	Sample size	Intervention	Country	Findings
The Effects of Financial Education in the Workplace: Evidence from a Survey of Households	Bernheim and Garrett	2003	4 319	Not specified but likely seminars/ classroom based	USA	Employer-based financial education significantly stimulates retirement saving among low and moderate savers.
The Effect of Providing Peer Information on Retirement Savings Decisions	Beshears *et al.*	2012	4 943	Sent a simplified 401(K) enrolment or contribution increase form with information on saving levels of co-workers.	USA	Peer information decreased the savings of (unionised) recipients who were not eligible for automatic enrolment in the 401(k).
Asking for Help: Survey and Experimental Evidence on Financial Advice and Behaviour Change	Hung and Yoong	2013	618	Individual counselling or online tool for investments in retirement portfolio	USA	Unsolicited advice has no effect on investment behaviour, Individuals who actively solicit advice ultimately improve performance, in spite of negative selection on financial ability.
Financial Literacy and Retirement Planning: New Evidence from the RAND American Life Panel	Lusardi and Mitchell	2007	812	Not specified but likely seminars/ classroom based	USA	Respondent financial outcomes improved if exposed to economics in school and to company-based financial education programmes.
Does Retirement Education Teach People to Save Pension Distributions?	Muller	2003	640	Classroom based seminars	USA	Attending a retirement meeting increased likelihood of saving among persons age 40 and under but decreased probability of saving among college graduates and women.

In addition to these studies, in our searches we identified a number of further experimental studies (including one that is yet unpublished) relevant to our review. Duflo and Saez (2003) study a university that encouraged a random sample of employees to attend to an annual information fair about its employer-sponsored retirement plan. In this experiment the authors found plan participation rates in treated departments was about 1.25% points higher than control departments. At the individual level, the effects between individuals who attended were only marginally higher than those who did not, but Duflo and Saez (2003) attribute this partly to the possibility that financial education had both direct effects on attendees as well as indirect effects on their peers who did not attend. They also found that the increases in savings more than offset the minor costs of incentivizing participation in the study interventions.

Another field experiment in the United States examined over 17000 employees at the University of Minnesota. Goda *et al.* (2012) randomised their subjects into a control group as well as three treatment groups and compared the effects of general and individual-specific LTSI education on their retirement plan behaviour. The treatment groups received informational brochures about their goals and retirement savings planning with and without customised information about how their hypothetical contributions would translate into asset balances and income at retirement age. The authors find that the combined effect of customised projections about income and balances together with planning materials increased average contribution levels. While these effects were confined to a small number of individuals, those who did make a change increased their contributions by over $1000 a year.

Barcellos *et al.* (2014) conduct a field experiment in which they designed and tested both a generic version of financial education materials based on the US FDIC MoneySmart curriculum and a customised version on financial issues relevant to immigrants in the United States on a population of first and second-generation immigrants. Both interventions included information on saving and investing, in particular rules governing Individual Retirement Accounts, and for the customised version, retirement plan rules that apply to non-citizens. While the programmes had a large immediate impact on knowledge, the effects were short lived and there were no effects on intended financial behaviour.

Outside the United States, Song (2012) uses a field experiment with farmers in China to evaluate two kinds of financial education related to a highly subsidised rural pension scheme. In one treatment, farmers were shown projections of expected pension benefit levels after age 60 if they contributed at various levels (the calculation treatment), while in a second treatment, farmers were taught basic concepts of compound interest as well (the education treatment). The author finds that financial education did not change participation rates, but the calculation treatment increased annual contributions to the scheme from 2 percentage points to 2.8 percentage points of annual per capita income. This results in a 40% increase in average contribution rates in the education treatment group relative to the control group, or about 73 RMB. This increase is considerably larger than that in the calculation treatment group, which saw an increase of 20-25 RMB. The author concludes that increased understanding of compound interest is a key driver of treatment effects.

Bruhn *et al.* (2014) conducted a randomised experiment around a financial literacy course provided in Mexico by a financial institution. The course consisted of free, four-hour instruction which included, among other things, retirement. In addition to finding low levels of interest in attending the course among the general population, the authors found no impact on retirement savings. For those who attend, training resulted in a short-run boost in some measures of saving but, significantly, no impact on retirement savings i.e. no effect on LTSI.

Turning to non-experimental evidence of specific interventions, Skimmyhorn (2012) exploits a natural experiment in the staggered rollout of a financial education course provided to new U.S. military personnel. The study finds that the course almost doubled contributions to the military's Thrift Savings Plan (a retirement savings account) over at least 2 years.

Also in the United States, Lusardi *et al.* (2009) adopt a mixed-methods approach to developing and evaluating an intensive social marketing-based campaign built around a planning tool targeted at increasing contributions to supplementary pensions for new university employees. They first conducted formative qualitative research to shed light on new employees' main barriers to supplemental retirement plan enrolment. On the basis of this research, they developed a planning tool that simplified the process, which they then tested experimentally. Although the study was not strictly randomised, the authors found that the enrolment rate more than tripled in the 30-day period following

the intervention, and doubled in the 60-day period, compared to the comparison group, and conclude that the intervention was effective at increasing participation as well as relatively inexpensive.

Clark, and co-authors (2003, 2006, 2008) examine a typical 1-hour retirement savings seminar by a single provider, TIAA-CREF, at various different institutions. Using before-and after surveys of participants, the authors find that the seminar affected workers' stated retirement goals, albeit with only limited behaviour change afterwards.

Elsewhere, Clancy *et al.* (2001) conducted a study of the Individual Development Accounts (IDA) programme, a subsidised savings programme for low-income participants in the United States that provides tax breaks, savings matches and compulsory financial education. IDAs are intended to encourage LTSI, as withdrawals typically include home purchase and post-secondary education. Adjusting for self-selection, the authors find that savings in the IDA increase with participation in more financial education; people with one to six hours of financial education averaged $20.38 in average monthly net deposits (AMND), while those with seven to twelve hours averaged $32.55. For people with zero hours of financial education the figure was $8.01 AMND. Past the twelve hours of instruction, though, AMND levels off. A qualitative study (O'Neill 2006) corroborates the finding that the IDA-based financial education courses not only affect respondents' savings behaviour but also affected other LTSI outcomes such as 401(k) plan participation.

A number of important earlier observational studies examine the policy-driven expansion of financial education that took place in the United States prior to 2000 (including Muller 2003, described in the table above), without reference to specific programmes. Using a national sample (US Health and Retirement Study), Lusardi (2002) finds that retirement seminars held by employers have positive effects on employees at the lower end of the savings distribution. Similarly, using a survey of employers, Bayer *et al.* (2009) add to the study by Bernheim and Garrett (2003) above in finding that retirement seminars had a significant effect on raising participation and contribution to savings plans.

While these studies are able to take the perspective of the effects of LTSI in the general population, a major drawback of these observational studies lies in the potential for unobserved confounding factors, as well as respondent bias in subjective recall and definition of "financial education". The direction of bias furthermore is ambiguous: Bayer *et al.* (2009) argue that, to the extent that workplace financial education tends to be remedial in nature, biases work against finding positive and significant results. However, individuals who voluntary elect LTSI financial education are likely to be self-selected in important yet unobserved ways (discussed later).

Table 2. Additional studies on the effects of financial education on LTSI

Title	Author and date	Method	Sample Size	Intervention	Country	Findings
Financial Education Interventions Targeting Immigrant Populations: Results from a Randomized Control Trial in the United States	Barcell-os *et al.* (2014)	Experimental	370	Distribution of financial education materials	USA	Groups that received the educational intervention were more likely to correctly answer questions designed to measure financial knowledge. Effects of intervention on knowledge were large but most faded away after 6 months. Little effect on intended financial behaviour measures, both immediately after the intervention and 6 months later.
The Effects of Financial Education in the Workplace: Evidence from a Survey of Employers	Bayer *et al.* (2009)	Non-experimental	1 778	Employer-provided financial education; written materials	USA	Both participation in and contributions to voluntary savings plans are significantly higher when employers offer retirement seminars. Unable to detect any effects of written materials
The Minimal Impact of a Large-Scale Financial Education Programme in Mexico City	Bruhn *et al.* (2014)	Experimental	3 503	Financial education course with monetary incentives	Mexico	Attending training results in a 9 percentage point increase in financial knowledge, and a 9 percentage point increase in some self-reported measures of saving, but in no impact on borrowing behaviour. Any savings impact may be short-lived.
Financial Education and Savings Outcomes in Individual Development Accounts	Clancy *et al.* (2001)	Non-experimental	2 378	Financial education for poor in Individual Development Accounts	USA	Financial education has sizeable effects for the poor. Courses need not be long to take advantage of most of the potential benefits.
Adjusting Retirement Goals and Saving Behaviour: The Role of Financial Education	Clark and d'Ambr-osio (2008)	Non-experimental	633	Financial education seminars on college campuses	USA	Financial education can influence workers to reconsider retirement goals and alter saving behaviour.
Smart Money: The Effect of Education, Cognitive Ability, and Financial Literacy on Financial Market Participation	Cole *et al.* (2010)	Quasi-experimental	20 676 047	Study of the effect of education on financial behaviour	USA	Education improves credit scores, and dramatically reduces the probability of declaring bankruptcy or suffering foreclosure during the financial crisis. Cognitive ability increases financial participation.

Title	Author and date	Method	Sample Size	Intervention	Country	Findings
The Role of Information and Social Interactions in Retirement Plan decisions: Evidence from a Randomized Experiment	Duflo and Saez (2003)	Experimental	6 200	University-organised benefits information fair with a monetary reward for attendance	USA	TDA enrolment five and eleven months after the fair was significantly higher in departments where some individuals were treated than in departments where nobody was treated. However, effect on TDA enrolment was almost as large for individuals in treated departments who did not receive the encouragement as for those who did.
What Will My Account Really Be Worth? An Experiment on Exponential Growth Bias and Retirement Saving	Goda *et al.* (2012)	Experimental	16 881	Low-cost, direct-mail and intervention providing projections of how current contributions would map into future account balances at retirement and income in retirement	USA	Those sent income projections along with enrolment information were more likely to change contribution levels and increase annual contributions relative to the control group.
New Ways to Make People Save: A Social Marketing Approach	Lusardi *et al.* (2009)	Experimental	459	Cost-effective planning aid programme to facilitate saving and contributions to supplementary pensions for not-for-profit employees	USA	Sharp increase in supplementary retirement accounts after programme implementation: the election rate more than tripled in a 30-day period and doubled in a 60-day period
IDA Financial Education: Qualitative impacts	O'Neill (2006)	Qualitative	93	Financial education programme, 8 sessions	USA	Knowledge gains and behaviour changes by IDA financial education programme participants. Participants adopted many behaviours that will help them manage money more effectively

Title	Author and date	Method	Sample Size	Intervention	Country	Findings
Essays in Behavioural Household Finance	Skimm-yhorn (2012)	Quasi-experimental	408 042	8 hour Personal Financial Management Course (PFMC) for new soldiers	USA	PFMC doubles savings, has significant effects throughout the distribution of savings and the effects persisted for two years; PFMC reduced cumulative account balances and aggregate monthly payments.
Financial Illiteracy and Pension Contributions: A Field Experiment on Compound Interest in China	Song (2012)	Experimental	1000 households	**Control:** Visited households, explained pension contract **Calculation:** Calculated expected pension benefit levels after 60 with various contribution levels with starting age 30 **Education:** Questions about compound interest, taught basic concept of compound interest, and calculation treatment	China	Education treatment increases contributions by 49 to 53 RMB, resulting in an increase of around 37% to 40% relative to the average contribution of 133 RMB in the Control group.

3.2. The design of financial education interventions

Even within a focus on LTSI, the optimal design of a financial education intervention depends on the specific programme objectives and target audience. The design of financial education interventions involves a number of components, including its setting (institutional (schools or workplaces), community or home), delivery (video, online, in-person, written materials, mass media), timing (random, when joining workforce, near retirement), duration (brief exposures to information versus interventions lasting hours or days) and frequency (one-time versus repeated). In this section, we briefly review the existing research on each of these intervention design components.

Setting and delivery

The appropriate delivery channel for any intervention is closely related to the intervention setting. As noted previously, we have omitted school-based financial education from this review. In a general population-based approach, the setting and delivery for interventions are critical to their effectiveness, yet little is known about which platforms are optimal for which messages and target groups. This is partly due to the fact that until relatively recently, the majority of financial education programmes that have been evaluated have tended to be classroom-based, even for adults. In their meta-analysis of 188 studies of financial literacy interventions, Miller *et al.* (2013) found that more than half of the interventions were provided by an instructor in a classroom setting (which may reflect either the popularity of this approach, or the relative ease of performing evaluations of classroom-based programmes). In spite of growing interest in the area of adult education related to alternative delivery channels, evaluations of non-classroom-based interventions – such as mass media, online tools, individual counselling, phone or print – are all below 10 percent in the sample.

We find mixed evidence with respect to less intense interventions delivered in a workplace setting: brochures, planning tools and enhanced information disclosures can be similarly impactful, but in this case, can have either positive (Goda *et al.*, 2013; Lusardi, Keller and Keller, 2009), zero (Bayer *et al*., 2009) or even negative effects (Beshears *et al.*, 2012).

Based on Sherraden *et al*. (2001), Song (2012) and Bruhn *et al*. (2014**), we conclude that there is weak and furthermore mixed evidence about the value of delivering LTSI delivered to adults in a community setting**. We further suggest that success or failure in this case may rest on the specific nature of the training and participants' willingness and ability to participate in time-consuming activities during leisure hours (in contrast to workplace settings where the relevance is usually salient and the activity may be undertaken on the employers' time). In both the former studies, take-up was relatively high but the interventions also focused on very specific needs in low-income groups with relatively high marginal returns to participation. In Bruhn *et al.* (2014), a study that focuses on a general financial education in a broader population, take-up rates and hence effects were conversely low.

At this stage, we also find, based on Hung and Yoong (2013) and Barcellos *et al.* (2014), only **weak and mixed evidence that LTSI financial education delivered directly to consumers in their home setting can be effective.** We note however, that these two studies reviewed financial education tools delivered to participants enrolled in a nationally representative online research panel. We did not find any rigorous evaluation studies that examined other forms of home-study programmes (such as online seminars, video or DVD-based courses, textbooks or workbooks, distance-learning etc.) in a larger population.

We note that scans of the grey literature also indicate that new evidence will be available soon to fill some of these gaps that clearly emerge above, including a number of ongoing projects sponsored by the Russia Trust Fund (World Bank, 2014) that are investigating the use of innovative new learning platforms.

Duration and frequency

Intensity (as measured by either duration or frequency of instruction to participants) is an important variable in the design of a programme. One theory is that financial education has a threshold effect, i.e. it takes a significant amount of exposure or repetition before effects manifest. An often-cited explanation for lack of programme effects is that it takes time for such cumulative effects of education to be seen. Given that there is some observed decay of the effects of financial education

interventions (Fernandez *et al.*, 2014), some argue that repetition at critical intervals may be necessary to continuously maintain a certain level of knowledge. There may be a need for repeated "course corrections" to counter ongoing misinformation or biased formation.

We find no strong evidence regarding the optimal intensity of different types of LTSI-related interventions. **No studies experimentally varied programme duration and frequency of instruction to participants while holding content and other design features constant.** Most studies evaluate one-time interventions and find limited impacts, but do not then also conversely prove that repeating the interventions improves the outcomes. Robust comparisons across individual studies tend be confounded by differences between longer and shorter programmes, other than duration and frequency of intervention.

However, **individual case studies suggest significant duration and greater frequency are associated with stronger impacts on participants in interactive programmes**. In the context of farmer education, Song (2012) shows that more intensive financial education has significantly stronger effects on behaviour, particularly among older adults (although the longer version of the training also delivers additional content). Similarly, Doi *et al*. (2012) also suggest that one potential explanation for why their financial training succeeds (versus other financial education programmes in similar contexts) may be due to the length (18 hours), although this is unlikely to be the only explanation given other important pedagogical differences.

Finally, in two observational studies, Bayer *et al.*'s (2009) study shows that frequency of retirement seminars affected saving activity positively and Clancy *et al.*'s (2001) study of IDA programme participants shows that take-up of between 0 and 12 hours of financial education has large, positive effects on savings. In these instances, in spite of statistical adjustments, some of these effects may still be due to selection on unobservable characteristics.

However, **more reinforcement may not always be better**. At some point, the law of diminishing marginal returns suggests that eventually the incremental value of additional reiteration will fall. Indeed, in addition to being wasteful of resources, overexposure may result in negative effects if individuals grow bored, lose interest or become reactionary. Furthermore, the optimal intensity of any individual financial education programme may vary by setting, delivery method and target audience. Clancy *et al.*'s (2001) study of IDA programme participants shows that additional financial education after 12 hours does not lead to any incremental gains whatsoever. Bayer et al (2009) suggest that ever-increasing amounts of follow-up with materials can also have no effect.

Timing for teachable moments

Financial literacy experts have argued that financial education should be provided at "teachable moments", i.e. when the content of a financial education programme might be most relevant and useful to a person's life and circumstances (GAO, 2004). Fernandes *et al*. (2013) suggest that to be impactful, there may be a role for 'just in time' financial education tied to specific financial decisions (ibid. page 30) and that financial education that "is not elaborated or acted upon soon afterward" (ibid, p.1) will likely have a reduced effect. Individuals who decide to invest in financial education may be most receptive at specific moments, e.g. specific life-course transition points or point-of-decision moments.

To date we find no strong evidence as to whether the timing of LTSI financial education for an individual is critical to its impact. **We do not find any robust studies in which alternatives for the timing of an intervention were formally tested**, and most observational studies in which respondents report exposure to previous financial education do not have reliably precise information

on timing relative to key life-course events. Yet, **we note that a number of the more effective interventions we examined explicitly included strategic elements in their timing, albeit without evaluating this feature specifically**. For instance, Lusardi, Keller and Keller (2009) and Skimmyhorn (2013) both describe interventions targeted specifically to new employees; while Duflo and Saez (2003) describe the retirement fair they study as timed to coincide with an annual November "open enrolment" period. Doi *et al*. (2012) argue that another potential contributor to programme success in their case was the presence of a "teachable moment" when migrant worker's households had both interest in learning and an opportunity soon after to put what was learned into practice, compared to other studies in which migrants were already at destination or identified in the general population, such as Barcellos *et al*. (2013).

Pedagogical design principles

While the limited number of studies makes cross-comparison across different teaching approaches impossible, we highlight several key cases that make important contributions to our evolving understanding of what works best in LTSI financial education. In addition, we note that in an important new paper on comparative pedagogy, Lusardi *et al.* (2014) have developed and experimentally evaluated four novel educational programmes about risk diversification, an essential concept for LTSI financial decision-making delivered online: an informational brochure, a visual interactive tool, a written narrative, and a video narrative. This study did not meet our inclusion criteria as it does not examine behavioural outcomes; however, it provides valuable insights from head-to-head comparisons of different educational approaches in the same population. We therefore also include it in the discussion below:

- ***Combining specific demonstrations with general concepts***

  In many standard classroom-based financial education programmes, a common critique is that the approach focuses on building the foundation for financial skills, and individuals are left to apply these concepts on their own. In disclosure-based interventions, on the other hand, often individuals are simply provided with descriptive facts about their own status (or in some cases, the status of others) or relevant rules and regulations; the basic concepts are either taken for granted or presumed too difficult to cover. One extension to this takes the approach of "doing the math" for the consumer (e.g. by providing projections for individual accounts) and leaving the concepts aside.

  However, **new evidence suggests that the basics of financial capability remain important, and that theoretical and practical learning are complementary.** Goda, Manchester and Sojourner (2012) find that the providing individuals with income projections for retirement together with general information and material about the retirement plan to guide people in making changes to their contribution had positive effects. For the treatment group, there was a 29% higher probably of making changes in their contribution rates, and to increase their annual contribution by $85 (about $1,150 each for the small sample that actually made changes to their contribution). The authors did not, however, find strong evidence that the plan materials and information or the income projections alone led to significant changes in the contribution rates.

  Similarly, Song (2012) finds that, when educating adults about interest compounding, providing only mathematical growth projections alone is less effective than providing both information about general principles of compounding and the projections. This is especially true for older individuals.

Interactive decision-making

A number of interventions in our review make use of interactive tools that help consumers make real choices. Again, in the studies under review, the concept of interactivity itself was not tested versus a non-interactive tool. However, **we note that the successful interventions of Goda, Manchester and Sojourner (2012), Hung and Yoong (2013) Lusardi, Keller and Keller (2009) all included an interactive element.** In the case of Goda, Manchester and Sojourner (2012), all participants were able to access an online interactive tool that provided similar information to the brochures. Hung and Yoong (2013)'s intervention includes an interactive component in which advice is provided with feedback on portfolio quality. Lusardi, Keller and Keller (2009)'s intervention, while not online, is a planning aid that provides information on how to enrol and simplifies the enrolment process by diving it into small, manageable steps.

Lusardi *et al.* (2014) use a randomised controlled trial to test the use of an innovative financial visualisation tool (FinVis). This tool includes (1) an introduction that describes the way the tool should be used, (2) a tutorial that introduces risk diversification and demonstrates the concept visually, (3) an interactive feature that allows the user to explore the tool and make his/her own choices, and (4) an outcome screen that displays feedback to the user about whether the choices made were relatively more or less risky and whether the user successfully diversified a hypothetical portfolio. They find no effects on financial knowledge. However, technical issues in their experiment (most notably, participants failing to update the necessary programmes on their computers) may have compromised the statistical power of their experiment. We note that Rudolph *et al.* (2009), Savikhin (2009) and Savikhin *et al.* (2011) also discuss and evaluate similar prototypes in a stylised lab setting and find encouraging results.

- ***Gamification***

  Gamification refers to the concept of using game mechanics and incentives to engage users in solving problems as opposed to tools that are explicitly designed for financial decision-making (Huang and Hsu, 2011). While we are not aware of formal tests of the use of gamification in financial capability programmes, in a working paper prepared for the Social Security Administration, Maynard *et al.* (2012) review promising developments this area. The authors describe online gaming experiences designed by the US-based Doorways to Dreams ("D2D") Fund to engage adult low-income consumers in building knowledge of and undertaking positive behaviours using "financial entertainment". These include LTSI-related games such as "Bite Club" (saving for retirement while running a vampire "day" club", and "Farm Blitz" (managing farm resources to build savings and manage emergencies). While robust evidence of success on actual LTSI outcomes is still forthcoming, **initial randomised studies of their games show some impacts on knowledge** while a feasibility study with a large US firm suggests that employees are willing to engage in the activity even in their own leisure time.

- ***Visualisation and storytelling***

  Lusardi *et al.* (2014) explore both the use of visualisation and narratives in their work, as well as their relative impact. They argue that graphical representation can be an important part of financial education for the less literate, allowing decision-makers to quickly learn from trends and patterns in the data; while narratives allow individuals to learn from vicarious experience. In their study, in addition to the tool mentioned above, they also test the use of a brochure with a graphic visualisation, a written narrative about risk diversification, and a video enactment of the same narrative. **They find that the video has**

the largest impact on financial knowledge, while the static brochure and the written narrative have significant and marginally significant impacts respectively. Lusardi *et al.* (2014) argue that their results suggest even in the absence of actual interactivity, methods that engage the user involving visuals and vicarious mastery (such as watching a video) can be effective relative to purely text-based or passive educational programmes.

A more individual-specific approach to visualisation attempts to increase future-oriented decision-making by making one's own "future-self" more salient. One example of this has been documented in Hershfield *et al.* (2014): in a series of four related studies, the researchers used realistic computer-generated older versions of individuals' current appearance (at around 65 years of age) to assess whether interacting with these older versions of themselves might encourage them to save more for retirement. They found that people who interacted with the older-self versions of themselves were more likely to give greater weight to longer-term savings. They also suggest that the intervention can be implemented at relatively low expense. While not strictly a financial education intervention, this innovation may hold promise as an addition to virtual financial training programmes or to the provision of retirement planning information.

Perhaps surprisingly, at this date we found no strong evidence to support the use of mass media-based strategies for LTSI financial education. As noted previously, the use of comic books and radio piloted in Kenya by Eissa *et al.* (World Bank, 2014) showed no impact on the target audience of teenagers. Other ongoing work on edutainment in Nigeria (described below) also suggests little lasting impacts. We also find **no completed studies on mobile-based applications (**although D2D for instance has mobile versions of some games for download).

Using incentives to reinforce and promote financial education

We note that financial education is a choice, and a growing literature models the decision to become and stay educated as an important part of explaining differences in levels of financial knowledge (Delavande, Rohwedder and Willis (2008), Lusardi Mitchell and Michaud (2013)). There are two aspects of reinforcing the choices related to financial education that are particularly important:

Increasing take-up

In many instances, the perceived opportunity costs of attending financial education are large. Bruhn *et al.* (2014) examine an unpopular financial education programme in Mexico and argue that voluntary financial education programmes that are perceived to be long, burdensome and of low marginal value will suffer from low take-up, and hence low overall impact (an issue to be discussed further in the next section). Clark and d'Ambrosio (2008) make a similar argument especially for employees and further argue that without direct short-term compensation, the long-term benefits may not be salient enough to warrant their participation.

Most critically, those who postpone or forego financial education may be precisely the individuals who need it the most: individuals with lack of trust in the financial system, individuals who underestimate the importance of saving, or individuals who tend not to plan and procrastinate. Meier and Sprenger (2013) for instance show a strong correlation between present-biasedness and enrolment in (credit-based) financial education.

Increasing motivation to act

Unfortunately, simply providing financial education to individuals is no guarantee that it will be internalised and acted upon. For instance, Goda, Manchester and Sojourner (2012) find that while impacts were large among their study participants who did respond, only a very few did so. Furthermore, individuals who report a tendency to procrastinate to begin with were the least likely to be affected. In addition, Hung and Yoong (2013) find that an online information tool that provides only brief generic advice can change behaviour positively, but only if individuals are given the opportunity to actively solicit the advice – advice that is provided by fiat (such as brochures sent to all members of a plan) has no effect. Hung and Yoong (2013) suggest that the unsolicited nature of this advice may actually be demotivating.

In our review, we found references to both financial and non-financial incentives. Most commonly, the literature has explored financial incentives. In the intervention studied by Duflo and Saez (2003), the authors offered $20 compensation for attending a retirement plan benefits fair, which increased take-up significantly. Less explicitly, financial education can be paired with other financial incentives to carry out savings e.g. as part of a platform for participating in a matched savings account (Sherraden *et al.*, 2001). Finally, recognizing the role of indirect out-of-pocket costs, financial incentives may sometimes be required to compensate for what may be significant barriers to access. Doi *et al*. (2012) for instance attribute the high participation in their programme partly to transportation reimbursement subsidies.

However, **we find few evaluations of financial incentives to motivate take-up, and their implications, positive or negative**. An important open question is not only whether effects persist when financial incentives are removed but whether extrinsic motivation crowds out intrinsic motivation to save, and what role financial education plays in mitigating these effects. In the wider literature outside our review, incentives are often compared to financial education, instead of being used in combination. For instance, in Indonesia, Cole *et al.* (2011) conduct an experiment to directly compare the effects on a sample of unbanked people of financial education versus price subsidies, finding that these modest financial subsidies have large effects relative to the financial education intervention. In Nigeria (World Bank, 2014), research examines the use of lottery incentives to encourage the use of a savings account but does not tie this explicitly to any financial education. Interestingly, the early results show no persistent effects after the incentives are removed.

A notable exception is mentioned in Hastings, Madrian and Skimmyhorn (2013), who describe work currently in progress on the use of incentives to motivated management fund choice in Mexico's privatised social security system. Households in this study received information on fund manager net returns presented as either a personalised projected account balance or as an annual percentage rate as well as random assignment to a small financial incentive for switching to a fund manager that had better financial performance. The preliminary results describe individuals who receive the small cash incentive as more likely to switch for the better; although these results are yet to be confirmed fully.

Social incentives can also affect financial education; whether through the desire to conform to one's peers, social learning or intra-household bargaining. In the former case, one might hope that role modelling of desirable behaviours or peer-to-peer transmission of financial education improves outcomes (even for those who do not take up financial education). In the latter case, incentives to provide for others in a social network, or better decisions that are taken collectively may also improve individual behaviours. As previously noted, the same Duflo and Saez (2003) experiment shows that colleagues of those who attended the retirement plan benefits fair also benefited almost as much as the attendees themselves, which the authors attribute to peer effects. More recently, Doi *et al.* (2012) show directly that training migrants and their family members together leads to improved

outcomes. The authors suggest two important social factors: firstly, that the combined motivation is higher than individual motivation, but also that potentially, as the migrant workers recruited in this study tended to be female, barriers to change in household behaviour are lowered only when the remaining (dominant, male) household members also change their motivations. We note that **Beshears *et al.* (2012) provides an important cautionary tale with respect to peer effects – there is no guarantee that these effects are always positive**. In this case, providing information about peer savings decisions reduced savings rates. In reality, peer effects may be complex: providing information about norms that are lower than individual savings rates may reduce savings motives; while on the other hand providing information about norms that are too high may be demoralizing and/or cause feelings of stigma or hopelessness.

3.3 Vulnerable groups and comparisons by economic development

Many of the reviewed studies find heterogeneity in the effects of LTSI financial education by key demographics such as age, gender and income. However, some of these effects are inconsistent: Clark *et al.* (2004) for instance, find that women are particularly likely to benefit from LTSI financial education in general; while Muller (2001) conversely shows that retirement education seminars are less likely to benefit women. Others, such as Gobi, Manchester and Sojourner (2012) note that there is also heterogeneity by less observable traits –individuals who are less inclined to plan overall are also less affected by financial education.

Our review has noted and described several evaluations of LTSI education interventions that are designed with specific populations in mind, namely low-income adults, young people, employees and migrants. However, it is surprising to find few studies that rigorously evaluate LTSI financial education for other key vulnerable groups. We do however find a reasonable number of observational studies that describe such interventions that do not meet our inclusion criteria for methodological reasons. Olsen and Whitman (2012) provide an excellent review of several LTSI initiatives targeted at minority populations and women in the United States (including D2D's games); while Postmus *et al.* (2013) and Sanders *et al.* (2007) examine programmes that are developed specifically for battered women.

While most early studies reviewed in this study originated in developed countries, a number of more recent studies have come from outside the developed country context, at least partly by design. The recently concluded Russia Trust Fund for Financial Capability focused on funding evaluations in selected underrepresented regions and priority areas, including LTSI in order to specifically focus on answering questions about whether financial education (among other interventions) might operate differently in low-income countries versus a higher income context (World Bank, 2014). We review the work of Eissa *et al.* (World Bank, 2014) examining comics and radio in Kenya, and Mexican bank-based financial education studied by Bruhn *et al.* (2014).[4]

[4] A number of other notable studies are still underway at the time of writing this report, including a South African study of the role of a group-based interactive 1-day seminar targeting members of burial societies and women's groups in the Eastern Cape; randomised trial is being used to study the effects of an online stock market simulator on stock market participation and investment using 60,000 participants in Brazil, and; an evaluation of a two-day training programme to promote banking and savings among clients of a branchless banking scheme in India.

Table 3. World Bank and Russia Trust Fund evaluations on financial literacy and LTSI

Title	Authors	Date	Sample size	Intervention	Country	Findings
Financial Education and Behavior Formation: Large-Scale Experimental Evidence from Brazil	Bruhn *et al.*	2013	900 schools; 26 000 students	Classroom financial education	Brazil	Programme increased student financial knowledge, led to an increase in savings, current attitudes and forward-looking intentions to save improved.
Comic FX in Kenya: Can Cartoons Improve the Effectiveness of Financial Education?	Eissa *et al.*	2012	220 high schools	Comic books	Kenya	No impact on financial literacy and savings behaviour. Impact on likelihood that students want to start a business in the future.
Why is Voluntary Financial Education so Unpopular? Experimental Evidence from Mexico	Bruhn *et al.*	2013	40 000	Classroom training seminar	Mexico	Increase in financial knowledge, increase on savings outcomes, but no impact on credit card behaviour, retirement savings, and borrowing.
Learning by Doing? Using Savings Lotteries to Promote Financial Inclusion in Nigeria	Kanz *et al.*	2011	2 958 714	National marketing campaign and savings lottery	Nigeria	Increased savings and use of additional financial products within a week of intervention. However, no evidence on persistent changes after incentives removed.

While many of these studies are still preliminary, a few important observations can be made. Firstly, this rich and diverse body of forthcoming work adds not only to our understanding of LTSI financial education in low-income countries but to our understanding of LTSI financial education as a whole. Secondly, financial behaviour is complex and difficult to change, regardless of the complexity of the formal financial system or level of economic development. Finally, the early results also indicate that robust financial education must be in place to ensure the necessary financial knowledge for appropriate product use.

4. Limitations

The primary issue faced by our approach is common to all literature reviews i.e. susceptibility to publication bias. Added to this, a large number of the studies discussed remain in the grey literature and are currently in working paper form. Ideally a comprehensive picture of what did not work as well as what did work is necessary to draw conclusions about the relative efficacy of different interventions. However, due to the inherent preference for "new" results in peer-reviewed journals over replication studies as well as occasional conflicts of interest and concerns over reputational risk for programme stakeholders, there are often stronger incentives to publish positive rather than negative findings. It is inherently impossible to know whether negative or null results are less common or

whether authors simply do not wish to or succeed in publishing negative results in the peer-reviewed literature.

In terms of addressing the initial research questions, specific limitations are clear. For LTSI, as noted previously, at this stage, no overall robust meta-analysis is possible due to the small sample of studies, let alone meaningful examination of variation in characteristics across different interventions. **More research on different modalities of LTSI financial education for different target populations and in different settings is clearly necessary.** In addition, common aspects of the LTSI interventions themselves complicate evaluation: features such as setting and delivery channel in practice are conflated (so more studies may not help unless designed to separate these features out) e.g. in workplace programmes, interventions naturally almost always relate to a "teachable moment", so it is hard to draw separate conclusions about the workplace setting versus "teachable moments". **At the same time, these difficulties are exacerbated by the fact that many evaluation studies provide very limited descriptions of the actual interventions, making analysis and comparison difficult.** For instance, Miller *et al.* (2013) note that in fact a major shortcoming in the research literature is the remarkable lack of information about programme intensity: almost half of all intervention studies did not report the length of the programme being studied.

Several common methodological issues were identified across the various studies. **In general, most studies of specific interventions have time frames that are too limited for the analysis of LTSI outcomes, and therefore rely on proxy measures**. This is partly due to the fact that experimental studies in the social sciences more generally are a relatively recent phenomenon. Conversely, studies with appropriate time frames and outcomes are typically observational data studies that do not focus on specific, well-defined interventions. Few studies had any objective measures of actual quality so it is very difficult to understand heterogeneity across programmes of purportedly the same type. Few studies that we found examine a broad range of LTSI outcomes or any formal measure of overall LTSI adequacy. Most examine one intervention and a few outcomes (especially if using only administrative data), although the evidence shows that financially knowledgeable individuals are more likely to have retirement savings outside of Social Security and employer pensions (Milne, VanDerhei, and Yakoboski 1996). In many instances, therefore, it is not clear whether increased savings in 401(k) plans substitute for other savings or represent increased savings overall. In addition, few studies explore broader utility measures e.g. measures of subjective well-being (although Song (2012) notably conducts a welfare analysis).

A last but compelling limitation is that the evidence base is currently generally limited to an understanding of the comparative efficacy of interventions – in the case of RCT, usually in an ideal or "best-case" setting – rather than comparative efficiency. Most studies we reviewed focused simply on establishing efficacy in an idealised setting (e.g. Hung and Yoong, 2013) or effectiveness in a population-based field trial. A growing number of studies examine cost-effectiveness by considering the cost-aspects of providing and developing the intervention, or more explicitly by benchmarking the benefits and costs against other interventions. Duflo and Saez (2003), Goda, Manchester and Sojourner (2012) and Lusardi, Keller and Keller (2009) all consider the cost aspects of the interventions studied. While the interventions all appear to be cost saving in terms of the benefits created, few suggest that the LTSI intervention is efficient i.e. achieves the most benefit relative to cost, or the smallest cost per outcome when compared to the universe of alternatives to financial education.

5. Discussion

We first summarise our findings below, and then reflect on our final research question: what can be done to most effectively support major and potentially legally imposed decisions such as choosing a pension fund or an annuity from an LTSI financial education perspective?

We conclude that, while recent work has considerably added to the overall body of literature on financial education, evidence remains mixed regarding the effect of evaluated financial education initiatives on LTSI, whether in the short or long term and very little information is provided on the programme design and delivery. Based on an overall meta-analysis that pools the findings of the five initial studies, Miller *et al.* (2013) conclude that there is insufficient evidence that financial education significantly affects retirement savings, and furthermore that the **existing data do not allow meaningful analysis of the implications of the different types of interventions and strategies in a meta-analytic fashion**. However, further review of the Miller *et al.* (2013) studies and the additional experimental studies identified in this report suggests that there are significant limitations to a general meta-analytic approach even as presented in Miller *et al.* (2013), since the studies are not necessarily comparable both in approach and outcome measures. For instance, Hung and Yoong (2013) measure outcomes in a randomised hypothetical task, while Muller (2001) measures correlations between retirement seminars and actual outcomes in the Health and Retirement Study (HRS).

Across individual studies, the overall magnitudes and direction of effects that we can identify is mixed. In fact, the evidence clearly shows that LTSI financial education can reduce as well as increase levels of savings. While most studies (including three identified by Miller *et al.* (2013) showed positive effects, two in fact showed "oppositional" effects; in Beshears *et al.* (2012) and Muller (2001) additional information *reduced* rather than increased LTSI, highlighting the importance of careful programme design taking into account knowledge of typical behavioural biases. Muller (2001) also cites a study by Milne, VanDerhei, and Yakoboski (1995) showing how a **seemingly counterintuitive response from workers to individualised retirement education can be explained by understanding the specific content and emphasis of the material**. In this study, employee financial education that included an explanation of their company pension plan and the impact of preretirement withdrawals lowered equity participation, and the authors hypothesised (but did not test) that upon learning their distributions were available before retirement, employees treated the funds more like a short-term investment and decreased the aggressiveness of their holdings.

Existing evidence appears to apply only to a narrow range of topics, effect duration and outcomes, and rarely describes the programme and delivery method in detail, although ongoing studies are likely to considerably broaden findings in the near future. In general, our results focused largely on savings behaviour, and pension plans. We were not able to identify studies evaluating the effects of specific financial education interventions on investments in different financial products for the long term such as annuities. We were also not able to identify any types of intervention that dealt with issues such as fraud and illegal activities. Secondly, **the large majority of studies that describe an experimental manipulation are too recent to allow for long-term follow up to have occurred**. With the notable but contested exception of Bernheim *et al.* (2001), most of the observational studies do not examine outcomes over a period of a few years (and for those depending on self-assessment, recall biases related to programme participation may also deteriorate with time). Finally, we also found no evidence describing effects of financial education on broader welfare-related outcomes. While existing studies examined the impact of financial education on behaviours related to long-term planning and preparation, no study that we are able to find to date described long-term impacts of any form of financial education on broader welfare-related outcomes such as subjective life satisfaction. While several studies suggest implicitly or explicitly that LTSI financial education may

compare poorly to approaches based on choice architecture or strengthening consumer protection, few have examined a combination of these methods.

However, lessons for supporting major long-term financial decisions can be drawn, including the following:

- **Take-up and activation are key.** Even if decisions are legally imposed, financial education may not be mandatory; some findings also suggest that even if mandatory, financial education will be ineffective if participants are disengaged. Recognizing the time and other out-of-pocket costs to participants is important. Building in direct incentives to offset such costs may help (especially for the impatient), but ensuring that programmes are (and are perceived to be) of real value to participants is critical.

- **If the objective of policymakers and programme managers is only to improve LTSI-outcomes (and not increase financial literacy more generally), for pragmatic reasons, a focus on LTSI-specific financial education may be preferable to broad-ranging general financial education**. Our review addressed both LTSI-specific financial education as well as general financial education with LTSI impacts. In both instances, the relative importance of treating LTSI as a specific and isolated strand of FE is not yet clear, much less the extent to which the LTSI focus actually represents value-added versus general financial education. However, in practical terms, given the preceding point, when a programme manager faced with time and budget constraints wishes to influence LTSI-relevant outcomes, prioritizing LTSI is appropriate. A lack of focus and unnecessary programme components can very strongly dissuade participants from engaging with or even taking up financial education.

- **While design of plans or products should be as simple as possible and incorporate intelligent choice architecture, such an approach should also be combined with "point of choice" LTSI financial education**. Drawing on the growing literature on behavioural economics, Choi *et al.* (2004), Mitchell and Utkus (2004), Brown (2007) and Beshears *et al.* (2013a, b) discuss how best to design pension plans and annuity products to encourage better LTSI, including judicious use of defaults and as much simplification as possible. However, choice architecture and consumer protection are also not silver bullets. For instance, while Beshears *et al.* (2009) find that "path of least resistance" options affect employer-sponsored savings plans behaviours at every stage from enrolment to asset allocation. The authors and others such as Choi *et al.* (2004) are careful to also discuss the drawbacks of such an approach and the burden it places on employers: while higher participation rates promote wealth accumulation, low default savings rates, conservative default investment funds, or default firm contributions in the form of company stock can cause individuals who maintain the default to eventually lose out. Our review highlights examples of financial education offered at key enrolment or participation change dates that are in fact associated with positive behavioural change.

- **Adequate consumer protection and individual LTSI financial education are complements and not substitutes.** On the one hand, our review failed to identify meaningful LTSI financial education interventions to address certain areas that remain better served by consumer protection, such as fraud and the identification of conflicts of interest. On the other hand, many of the suboptimal behaviours that are addressed by LTSI financial education, such as lack of planning and savings, can and do persist across all types of regulatory environments. In addition, the diversity of for-profit private and non-government actors involved in LIC evaluations suggests the importance of providing consumers with the

ability to navigate different providers and changing systems, particularly when financial markets are evolving potentially more quickly than the ability of regulators to keep up.

- **Apart from point-of-choice interventions, there remains a strong need for foundational LTSI financial education that conveys the basic concepts and principles of financial planning**. Even among adults in very different socioeconomic contexts, our findings suggest that educating individuals with basic principles remains a critical part of strengthening their ability to respond to other types of helpful interventions.

To conclude, while more research is clearly needed and the evidence base on LTSI financial education has been relatively sparse to date, we also note that ongoing research is providing exciting results and new proofs-of-concept, as well as new findings about what approaches fail to work. We look forward to further advances that will help fill in some of the gaps that have been identified in this review.

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