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**BUILD YOUR OWN NEST: Singapore's first
study on matched savings schemes for lower
income, older women**

Brief report by Prof David Chan and Prof Benedict Koh

**This report was originally appended as "Annex A" of the Tsao Foundation's media release
on the study disseminated on 20 October 2018.**

Matched Savings Scheme is a research study, commissioned by the International Longevity Centre – Singapore (ILC – Singapore) of the Tsao Foundation and funded by the Tote Board, found that a monthly matched savings scheme is effective in sustaining the retirement savings behaviour among a group of 377 elderly women from low-income households over the study period of 18 months.

The research, conducted by principal investigator psychology professor David Chan and co-investigator finance professor Benedict Koh, used an experimental design and longitudinal tracking to examine the effects that different factors of a matched savings scheme have on the participants' decision to continue saving regularly (through voluntary monthly top-ups of their CPF special account). The findings showed that for matched savings schemes to be effective, they should take into account (i) the amount saved, (ii) the matching ratio, and (iii) how the matching ratio is framed to the participants.

Why this Study

This study examined the effects of a matched savings scheme on the savings behaviour of elderly women in Singapore. A matched savings scheme is one where a sponsor matches a fixed monetary sum to the regular voluntary savings made by a participant to his or her savings account. Once deposited, the matched amounts belong to the participant for his or her future use. Specifically, this study focuses on the a group of low-income elderly women participants' savings behaviours in terms of voluntary monthly top-up contribution to their CPF special account for the following reasons:

- a) Why women? On average, women live longer than men by about 5 years but many women may not be in good health in their golden years. Healthcare cost and other expenditures required to maintain a reasonably good quality of life put financial pressures on savings for retirement adequacy. Many women work part-time/intermittently or not at all and therefore may not have enough savings in their CPF accounts.
- b) Why matched savings? Similar matched savings schemes in other countries such as the US, UK, Canada and Australia have shown some evidence of success in increasing savings behaviour. While financial education can only affect behaviour change towards financial planning for old age, it is critical for low-income women to have some support to increase their amounts of savings.
- c) Why CPF special account? The CPF special account was selected because it locks up savings which neither the women nor their family members can withdraw. It builds up old age income security to support the women when they age. It also supports the women's desire to remain financially independent in old age.

Research Methodology

Sample

The sample of 377 participants¹ were recruited from a group of low-income elderly women who have attended a basic financial literacy course organized by the ILC – Singapore.

Procedure

The study evaluates the effectiveness of a 18-month matched savings scheme on participants' savings behaviour in terms of contributing, on a monthly basis, a fixed amount of savings to their CPF Special (or Retirement) Account.

Each month, upon verification of their contribution, participants would receive a specific match amount, which was fixed for the participant according to a pre-specified matching ratio (see para.8 below). Participants may choose to complete consecutively the monthly contributions or stop contributing anytime in the study period of 18 months. Once they stopped, the participants would be dropped from the matched savings scheme but the matched amounts that they received for the previous months would remain theirs. The effectiveness of the scheme was measured by the proportion of participants who continued their monthly contributions (i.e., retention rate) until the end of the 18-month period.

Factors examined in the research

The focus on the study is on the retention rate, which measures the percentage of participants who continue to participate in the matched savings scheme. The study adopted an experimental design to examine how the following three factors (independent variables) associated with the scheme affect the retention rate (the dependent variable) of the matched savings scheme:

- (i) Two different monthly amounts saved. This is the fixed monthly amount contributed by the participant, i.e., either \$50 or \$100;
- (ii) Four different matching ratios. This is the ratio of the amount matched (contributed by the sponsor) to the amount saved (contributed by the participant), i.e., 0.5 or 1.0 or 1.5 or 2.0; and
- (iii) Two different framings of the matching ratio, i.e., framed as a “matching percentage of the amount saved” or “expansion of the amount saved”².

Participants were randomly assigned to one of the different possibilities for each factor. Thus, the experimental design produced 16 different groups of participants corresponding to all the possible combinations of the three factors (i.e., 2 amount saved X 4 matching ratio X 2 framing = 16 conditions).

¹ The majority of the participants in the sample were Chinese (97%), older women (mean/median age = 58yrs old), without university education level qualification (89%), and HDB dwellers (72%). The large majority had low monthly personal income of less than \$3,000 (87%), and more than half of them (59%) were employed. Among the participants, 41% were not working (i.e., unemployed but looking for work, not looking for work (homemaker) or retired). They do not have employment income but some of them may have a monthly personal income that they receive from their husband or children. For the 59% of the participants who were working (i.e., full-time employees, part-time employees or self-employed), some of them may also receive a monthly personal income from their husband or children. Participants were asked to indicate their total monthly personal income (i.e., from all sources). Among the working participants, 79% indicated that the main source of their total monthly personal income was from their work. The large majority of them (87%) have a monthly personal income of less than \$3,000 (87%) or less than \$2,000 (73%).

² For example, for the matching ratio “1.0”, the two different framings were as follows: [Matching percentage] - When you save \$100 in your account, we will add \$100 to your account. This means that we will match 100% of what you saved. [Expansion] - When you save \$100 in your account, we will add \$100 to your account. This means that your account will have double (2 times) the amount that you saved.

To provide a more rigorous test of the effects, the study included two control group conditions (amount saved = \$50 or \$100) in which savings behaviour was encouraged and tracked but with no matching of the savings³.

Research Findings

Matched savings scheme effective in terms of retention rate

The research findings showed that the matched savings scheme was effective in terms of retention rate. Overall, 7 out of 10 (i.e., 71%) of the participants continued to stay on the scheme (i.e., continued to save in their CPF special account) throughout the 18-month period.

Specifically, there was an initial substantial and constant drop in the retention rate over the first 6 months (i.e., a drop by an average of three percentage points per month in the retention rate until 83% in the 6th month). For the rest of the study period (i.e., from the 6th month to the 18th month), the retention rate were maintained at a relatively stable and high rate, dropping slowly by only an average one percentage point per month, from 83% at the 6th month to 71% at the final 18th month. This contrasted with the retention rate for the control groups in which the participants were encouraged to continue to save without providing any matched savings, which dropped to only 1 out of 10 (i.e., 11%) after the first 6 months in the 18-month period of the study.

Retention rates affected by amount saved, matching ratio, framing of matching ratio

As presented in Table 1, analyses of the three experimental factors showed that:

- i. The retention rate was higher when the amount saved was more, i.e., \$100 (77%) rather than \$50 (65%).

This might not be surprising because, all other things equal, the absolute amount of money matched was higher. That is, for the same matching ratio, participants who saved \$100 would get a match that has a higher dollar amount than those who saved \$50.

- ii. The retention rate was higher when the matching ratio was higher, but it was not a straightforward linear effect. Specifically, the matching ratio of 0.5 produced a relatively poor retention rate (50%). The matching ratios of 1.0 and 1.5 were effective and they produced a high retention rate of a similar magnitude (74%), whereas a matching ratio of 2.0 produced the highest retention rate (85%).

This pattern of results confirms our hypothesis that the same objective difference in matching ratios (the difference between two adjacent ratios were always 0.5) do not necessarily translate into the same subjective motivational value of the matching ratio. While the ratio of 2.0 was clearly perceived more favourably than the ratio of 1.0, the ratio of 1.5 was perceived similar to 1.0 and not midway between 1.0 and 2.0.

- iii. The retention rate was higher when the matching ratio was framed as a “matching percentage of the amount saved” (74%), as compared to framing it as an “expansion of the amount saved” (68%).

³ Participants randomly assigned to the control groups were invited to commit to save the fixed monthly amount. There were no offers to match the savings nor any specific incentives or advice given, so that these two control group conditions differed from the 16 experimental conditions in terms of the absence of any matching (and therefore the two factors of matching ratio and framing were absent). The purpose of the control groups were to provide a baseline of savings behavior to interpret the retention rate on the matched savings scheme.

This framing effect is consistent with the psychological research that people tend to make comparisons when they make judgment and decisions, and they are influenced by the salience of relative comparison of what they put in and what they get. The “matching percentage of the amount saved” framing makes salient the gain by framing the match amount (what they get) as the percentage of what is saved (what they put in). In contrast, the “expansion of the amount saved” framing assumes that people do not care much about comparisons and are focused only on gain in terms of the extent to which the amount they saved are increasing.

Table 1. Retention rate by (i) amount saved, (ii) matching ratio, (iii) framing of matching ratio.

Experimental Factor	Different Groups within Each Factor	Retention Rate
Amount saved		
	\$50	65%
	\$100	77%
Matching ratio		
	0.5	50%
	1.0	74%
	1.5	74%
	2.0	85%
Framing of matching ratio		
	“Expansion of the amount saved”	68%
	“Matching percentage of the amount saved”	74%

Note. Retention rate refers to the percentage of participants who continued their fixed monthly contributions to the CPF special account until the end of the 18-month period of study.

Practical Implications

This study provided evidence that, for the population of women represented by this sample and also those segments of the Singapore population that are similar to the characteristics of this sample, a matched savings scheme structured similarly to the one used in this study can be effective in encouraging savings behaviour at a relatively high retention rate.

The findings also showed that the three factors (i.e., amount saved, matching ratio, framing of the matching ratio) are important and should be taken into consideration when designing matched savings schemes (initiated by Government or communities) to enhance their effectiveness. There are practical implications for implementation of similar matched savings schemes:

- (i) First, it is important to identify the appropriate amount required of the participant to save in order to maximize retention rate in the scheme.
- (ii) Second, while it may seem obvious that a higher matching ratio should produce a higher retention rate, the effect may not be linear and therefore the decision on the matching ratio has to consider how much incremental retention rate is gained by a specific increase in the matching ratio. As shown by this study, while a matching ratio of 2.0 is clearly better than 1.0, a matching ratio of 1.5 may not produce a “midway” retention rate and may even be no different from the matching ratio of 1.0. Where resources allow, using a matching ratio of 2.0 rather than 1.0 to design a matching scheme makes good sense in terms of increasing retention rate. However, it may not be resource-effective to use a matching ratio of 1.5 instead of 1.0, insofar as the incremental gain in retention rate by using the higher matching ratio may be relatively trivial or even absent.
- (iii) Third, it may be possible to increase retention rate by appropriately framing the matching ratio in addition to describing the ratio or the amount of the match. Framing the matching ratio in terms of the “matching percentage of the amount saved” is not only objectively accurate but may also appeal to the motivation of the participants because of the human tendency to compare between what is matched (what one gets) with what is saved (what one puts in).

About the Principal Investigator

David Chan received his PhD in Industrial and Organizational Psychology from Michigan State University. He is Professor of Psychology and Director of the Behavioural Sciences Institute at the Singapore Management University (SMU).

Professor Chan’s works have been published in top psychology, management, and methods journals. He has authored and edited 10 books published by Routledge, Sage, and World Scientific in the areas of social and behavioural sciences including their application to issues in Singapore. In 2000, Professor Chan was ranked 9th world-wide in the Top 100 most published researchers of the 1990’s in the top journals of Industrial and Organizational Psychology. His works have been cited several thousand times in various disciplines. He has received several international scholarly awards including being the first non-American to receive the Distinguished Early Career Contributions Award from the Society for Industrial and Organizational Psychology. He has served as editor and editorial board member for several journals.

Professor Chan is currently a member of the Social Science Research Council, the National Council on Problem Gambling (NCPG), the Diabetes Prevention and Care Taskforce, the Singapore-Japan Joint Committee on Science and Technology, and the International Panel of Experts and Research and Development Advisory Panel for the Urban Redevelopment Authority, a director on the Board of the Singapore Corporation of Rehabilitative Enterprises and the Board of the National Volunteer and Philanthropy Centre, and Chairman of the International Advisory Panel to the NCPG & National Addictions Management Service. He is also a consultant to numerous public and private sector organisations in Singapore.

Professor Chan is a recipient of the Long Service Volunteer Award and the Outstanding Volunteer Award from the Ministry of Social and Family Development, the Long Service Volunteer Award and the

Special Recognition Honour by the Ministry of Home Affairs for outstanding contributions to the Home Team in the field of psychology, and the Public Administration Medal (Silver) which is a National Day Award presented by the President of the Republic of Singapore.

Professor Chan writes op-ed articles in *The Straits Times*' By Invitation Series, which is a regular newspaper column on social issues. He appears regularly on *Channel NewsAsia* current affairs television programmes and he is the consultant to the *Channel NewsAsia*'s "Social Experiment", which is a 5-part programme series that examines human behaviours and social phenomena using scientific experiments, as well as "Days of Disasters", which is a 5-part documentary series that examines the lessons learned from previous disasters in Singapore.

Together with Nobel Laureate in Economics Professor Daniel Kahneman and Professor Ed Diener, Professor Chan served on an international committee that submitted to the United Nations a report on measures of national well-being across countries. He is the first scientist in the world to receive Elected Fellow status of all six major international professional organisations for psychology.

About the Co-Investigator

Benedict Koh received his PhD in Finance from the Wharton School of the University of Pennsylvania. He is Professor of Finance and Associate Dean at the Lee Kong Chian School of Business, Singapore Management University. His teaching and research interests are in Corporate Finance, Pension Finance, Investment Management, Financial Markets, Commercial Banking, Empirical Finance and Wealth Management. Before joining academia in 1985, he was a corporate banker at the Chase Manhattan Bank.

Professor Koh is currently the Editor of the Journal of Pension Economics and Finance. Previously, he was the Associate Editor of the Asia Pacific Journal of Finance and Asia Pacific Journal of Management. He has published numerous articles in academic journals, books, Singapore Stock Exchange Journal, investment magazines and newspapers. His book on ***Personal Financial Planning***, published by Prentice Hall, was listed as one of the top five best sellers in the non-fiction category.

Professor Koh is also a consultant to numerous banks, corporations and government agencies. Some examples include ABN-AMRO bank, Allianz, Bank of Singapore, Capitaland, Citibank, DBS Bank, EDB, GE Life, GIC, Hong Leong Group Bhd, IBM, IMAS, ING Bank, Johnson & Johnson, JTC International, KK Hospital, Kuok Singapore, Keppel Land, Keppel O&M, Lubrizol, Manulife, MICA, MSIG, NCC, NHG, NOL, Norsk Hydro Group, Prudential, Raffles Medical Group, Royal Brunei Airlines, Schneider, SGH PGMI, SIA, Singhealth Group, SNEF, Swiss Reinsurance, UBS and VISA.