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Benefiting from our biases: Inducing saving increases among Thai military officers

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ABSTRACT

Most people believe saving is important, but few succeed in saving enough to maintain their desired lifestyles in retirement or achieve other goals for the future. In this study, we conduct a field experiment using concepts from the well-regarded Save More Tomorrow™ program to enhance saving among military officers in the Royal Thai Army. Subjects in a treatment group are automatically enrolled into the program with the option of withdrawing and deductions for saving are taken only from future salary increases rather than from total future income. The vast majority of subjects in the treatment group (98 percent) remained in the program after two years (2016–2018) and four pay raises. Their saving rates relative to income increased by one percentage point versus a decline of nearly half a percentage point for a control group whose saving amount remained fixed against rising income. Our study provides evidence that insights from behavioral economics hold wide applicability across cultural and economic settings and can serve as valuable aids to policy design.

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1. Introduction

Household saving rates in Thailand have been declining during the past decade. Currently about 83 percent of households do not save regularly, and when they do, their saving rates are very low, less than 10 percent of their income (Soonthornthada & Chindakum, 2014). About 26 percent of Thai households have no saving at all (Patmasiriwat & Hengpatana, 2014). Those with little to no saving are at risk of having inadequate funds to maintain their lifestyle after retirement.

The problem of inadequate saving has long been recognized and various strategies have been proposed to solve it. For example, user-friendly financial literacy toolkits have been distributed for decades to educate people on how to manage their financial affairs, including saving. However, the problem still remains and seems to be getting worse. We are in need of additional efforts and better methods to increase household saving in Thailand.

The traditional methods, at least in Thailand, to persuade people to save rely on mainstream economic theory, which generally assumes that people are rational agents. With enough information and knowledge they should be able to solve the optimization problem to decide how much to consume and how much to save in each period to smooth their lifetime consumption. In reality, humans usually face self-control problems, which prevent them from saving enough because they may have difficulty limiting current consumption in favor of future consumption (Thaler & Benartzi, 2004). In addition,

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present-biased preferences cause people to mistakenly think that current and near-term consumption is more important than future consumption (O'Donoghue & Rabin, 2001). This implies that current consumption is heavily weighted in their utility functions, and they will consume more today and save less for future consumption. Such behavior results in a saving rate that is too low leading to insufficient future consumption. To overcome the low-saving problem, we need methods that consider real HUMANS who sometimes (or regularly) behave as irrational agents, and not ECONS who always behave rationally.

This study applies the principles of behavioral economics to design a program to help people to save more. Our program targets people who want to save more than they are saving now (or do not realize they are saving less than they should), and for those who procrastinate in saving more. The idea of the program is to give the subjects the option to commit to save more from future salary raises, as in the well-known Save More Tomorrow™ program developed by Thaler and Bennartzi (2004). Our program, however, is slightly different in three dimensions. First, unlike in the original program, every subject is automatically enrolled, although they can opt out at any time. We apply an opt-out mechanism due to limited resources in providing the subjects with one-on-one financial consultation. Relying only on a direct-mail campaign, as we did in this study, is unlikely to convince many to join the program.

Second, under our program, increases in saving come from future salary increases alone instead of from the entire future salary after a raise. We use this design because many workers in our study live paycheck-to-paycheck and often can barely make ends meet. Clearly announcing that deductions toward saving come only from salary increases would make them feel more positive toward the program as the current salary is untouched. Third, we apply a field experiment methodology to assess results whereby treatment and control groups are established for behavior comparison.

Traditional economic theory would predict that the saving rate between subjects in treatment and control groups should not differ because if the subjects were able to decide rationally on their optimal life cycle saving rates, they would have no reason to stay in the program. However, the behavioral economic principles applied in this study predict that most subjects in the treatment group will find the program attractive and will stay in it, resulting in significant increases in their saving rates compared to those in the control group.

Our program has been implemented under the saving cooperative of the Royal Thai Army's 8th infantry regiment which consists of three battalions. To reduce spillover effects, the randomization unit is at battalion level with subjects in one battalion randomly assigned to participate in the saving program. Subjects in the other two battalions serve as the control group. Although these battalions are in the same regiment, their barracks are located in different areas where average distance from one barrack to another is about 80 km.

Each subject in the treatment group received a letter providing details of the program in the first week of February 2017. After four pay raises occurred in April and October in each of 2017 and 2018, 156 of 158 subjects in the treatment group remained in the program, and their saving rates were increasing. Meanwhile, the saving rates of subjects in the control group were declining even though their salaries were increasing at the same rate.

The paper proceeds as follows. First, we introduce our subjects and discuss their current saving situation. We then explore their perceptions on saving for retirement and identify possible obstacles to their saving more. Next, the details of the program and its implementation are presented. This is followed by reporting of the results for saving through the first four salary raises. Finally, implications of the findings are outlined in the discussion and conclusion.

2. Saving situation of subjects

The experimental program of this study is implemented by the saving cooperative of the 8th infantry regiment of the Royal Thai Army. As a convenience for the cooperative's members, each of the three battalions in the regiment has an office that provides the same services, although with some degree of autonomy in setting up procedures. The main purpose of the saving cooperative is to offer credit and saving services to the members. The cooperative has two types of members based on military standing. One type is temporary members who are drafted to serve in the army for two years. Due to their relatively short time in military service, these members are not eligible to receive credit from the cooperative. Only the saving service is available to them, and it is voluntary. The second type of member is noncommissioned officers who serve in the army until retirement at age 60. These are the subjects of the experimental program of this study. These members are eligible for both credit and saving services from the cooperative. At the time the program was initiated, all noncommissioned officers of all battalions were members of the saving cooperative.

The cooperative offers three types of savings vehicles for members.¹ The first type is a common savings account with an interest rate of 3 percent per year. The second type is a special savings account with an interest rate of 4 percent per year, but with less liquidity than the common savings account because withdrawal is limited to once a month.² The third type is share purchase in the cooperative. This savings option is different from the savings account options in a number of respects. First, while the savings accounts are voluntary, share purchase in the cooperative is a requirement of membership. The minimum monthly investment differs among battalions. Specifically, the minimum requirements for the first and third battalions are

¹ Another vehicle for saving is a government pension plan. Participation in the pension plan is mandatory, with a contribution of 3 percent of salary automatically deducted and matched by the government.

² Withdrawal beyond once a month is actually permitted, but the interest rate then drops to 3 percent.

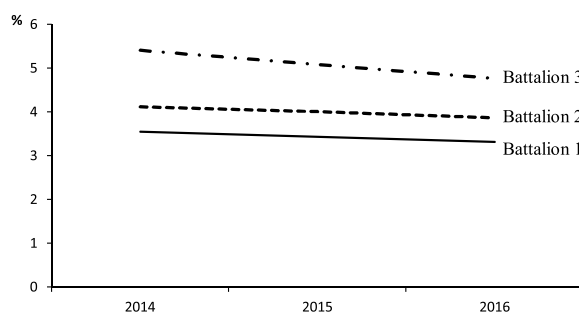


Fig. 1. Average saving rate by battalion, 2014–2016.
Note: Data are for 510 members of three battalions.

500 baht (about 15 US dollars) and 700 baht (about 21 US dollars), respectively. For the second battalion, the minimum requirement depends on officer rank. For ranks of sergeant and below, the minimum is 500 baht, while for master sergeant it is 700 baht. For the share investment program, the money is deducted from salary every month in all three battalions. Further, the principal cannot be withdrawn until retirement or withdrawal from membership. Finally, a return on investment is paid to shareholders annually which in the past ten years has ranged from 5 to 6.5 percent depending on the profit of the cooperative.³

The interest rates from these three savings arrangements were generally higher than those in the market as similar accounts at other financial institutions were concurrently paying interest at 0.75 to 2 percent. Nevertheless, the saving rates of the cooperative's members were generally quite low. Among 510 members in the regiment, only about 30 percent held more than one form of savings, and most of their savings was in the form of forced shareholding. Further, 446 of the 510 regiment members, or 87 percent, saved only the required minimum.

We calculate average saving rates by battalion from 2014 to 2016 before the saving program started, with results presented in Fig. 1. Note that salaries of the subjects were increasing year by year at rates of 4–5 percent. Moreover, the cooperative office has held annual meetings of the membership at which instruction in financial literacy have been provided. Even so, the subjects did not save more as their salaries increased, resulting in a continuous decline in their rates of saving relative to income.

To better understand our subjects, we conducted a short survey in January 2017 during the annual cooperative membership meeting of all 3 battalions.⁴ Overall, the majority of subjects (98 percent) indicate that saving for retirement is important to them. Most (79 percent) further state that their current saving is too low, and they want to save more. However, about 65 percent of the subjects indicate that it is difficult for them to increase saving mainly due to current expenditure needs and lack of willpower.

The survey included questions on whether the subjects behave in a time-inconsistent way. Time-inconsistent behavior occurs when an individual weights current or near-term consumption significantly heavier than that in the far future (Lien & Zheng, 2018; O'Donoghue & Rabin, 2001; Thaler & Benartzi, 2004).⁵ We check for such bias using two questions. The first question asks the subjects to choose between getting 200 baht today or 220 baht tomorrow. The second question then asks the subjects to choose between the same amounts of 200 baht in 60 days or 220 baht in 61 days. More than half the subjects in all battalions show time-inconsistency in that they prefer 200 baht today in the first question but prefer 220 baht in 61 days in the second question.

We next regress the saving rate before the program was implemented on subject characteristics collected from the survey using the following model:

$$s_{i,16} = \alpha + \beta_1 Bat_2 + \beta_2 Bat_3 + \beta_j X_i + \varepsilon_i \quad (1)$$

where $s_{i,16}$ is the 2016 saving rate of subject i ; Bat_2 is coded as 1 if the subjects is a member of Battalion 2 (0 otherwise) and Bat_3 is coded as 1 if the subject is a member of Battalion 3 (0 otherwise), where Battalion 1 is used as the reference; and X_i is the vector of subject characteristics.

Table 1 reports the results of four model specifications. The results show that the saving rates of subjects from Battalion 2 and Battalion 3 are significantly higher than that of subjects from Battalion 1. This result is not surprising because as mentioned earlier the minimum requirement to save in the forced shareholding program of Battalion 1 is the lowest. Higher income tends to lower the saving rate as the coefficient of Salary is negative and statistically significant. This pattern is also

³ The revenue of the cooperative comes mainly from interest earnings from loans provided to members. The interest rate on a loan is fixed at 8 percent per year.

⁴ Some members were unable to join the meeting due to deployment in field operations. These members received the questionnaire by mail with return envelop using the military mail service.

⁵ Present-biased preferences can be captured with models that employ hyperbolic discounting. For details, see Laibson (1997), O'Donoghue and Rabin (1999) and O'Donoghue and Rabin (2001).

Table 1

Determinants of pre-program saving rates, 2016.

	(1)	(2)	(3)	(4)
Battalion 2	0.572*** (0.125)	0.677*** (0.140)	0.577*** (0.125)	0.685*** (0.140)
Battalion 3	1.822*** (0.128)	1.787*** (0.144)	1.829*** (0.128)	1.792*** (0.144)
Salary 2016 (1000 Baht)	−0.150*** (0.008)		−0.147*** (0.008)	
Married			0.009 (0.151)	0.117 (0.67)
Widowed			−0.285 (0.317)	−0.081 (0.3510)
Divorced			0.445 (0.264)	0.316 (0.293)
Children under 18			−0.037 (0.071)	−0.026 (0.079)
Middle rank		−0.823*** (0.157)		−0.796*** (0.162)
High rank		−1.911*** (0.162)		−1.844*** (0.167)
Importance of saving			0.141 (0.101)	0.161 (0.113)
Time consistency			0.187 (0.199)	0.221 (0.223)
Constant	6.007*** (0.178)	4.481*** (0.165)	5.732*** (0.267)	4.120*** (0.262)
R ²	0.489	0.379	0.497	0.383
N	510	510	510	510

Note: Standard errors are in parentheses. *, **, and *** indicate $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively. Married, Widowed, and Divorced are coded as dummy variables with Single as reference. Importance of saving is coded as 1 if very important, 2 if important, 3 if neutral, 4 if not very important, and 5 if not important at all. Time consistency is coded as 1 if respondents select consistent choices in the questionnaire, 0 otherwise. Battalion 1 is used as reference.

captured when the rank variables, Middle rank and High rank, are included as independent variables in columns (2) and (4), where Low rank is taken as the reference. Since the rank variables are highly correlated with Salary, these variables cannot all be included in the same regression. These results lead to two points worth emphasizing. First, individuals do not save more even though their incomes increase regularly as most save only what is mandatory. Second, because the amount of saving does not increase with income, saving rates decline as income rises. For other explanatory variables, we find no significant effects on the saving rate, even with respect to Importance of saving and Time inconsistency.

3. A framework for increasing saving

From the information in the previous section, it seems the first obstacle causing low saving of the subjects could be lack of self-control and procrastination. This is evident from the observation that most subjects indicate saving is important to them and they want to save more. Nevertheless, they fail to do so. The well-known method established by behavioral economics to overcome self-control problems and procrastination in saving is to impose a behavior and allow for “opt-out”. Under such a mechanism, eligible individuals are automatically enrolled in a savings program unless they opt out. As predicted, automatic enrollment plans have shown remarkable success in increasing participation in savings programs (e.g. [Blumenstock, Callen, & Chani, 2016](#); [Choi, Laibson, Madrian, & Metrick, 2004](#); [Madrian & Shea, 1999](#); [Somville & Vandewalle, 2015](#)). However, a drawback of automatic enrollment in programs with fixed saving amounts, such as the existing program in the Thai army battalions, is that saving rates tend to stagnate due to inertia or status quo bias ([Samuelson & Zekhauser, 1998](#)). Even when participation rates in savings programs increase, inertia can result in lowering the saving rates of those who join the programs ([Keller, Harlam, Loewenstein, & Volpp, 2011](#)). This seems to be the outcome for our subjects because the majority start saving with the minimum requirement for the forced shareholder saving account but make no change to their saving amount over time even as their incomes rise.

Other factors that should be considered in designing the savings program are reference point and changes in the gain and loss domains. These factors can help in overcoming inertia. Since the development of prospect theory by [Kahneman and Tversky \(1979\)](#), there have been many studies suggesting that people weight changes in loss domains significantly heavier than changes in gain domains, a phenomenon commonly known as loss aversion (e.g. [Kahneman, Knetsch, & Thaler, 1990](#); [Lien & Zheng, 2015](#); [Pope & Schweitzer, 2011](#); [Tversky & Kahneman, 1992](#); [Viscusi & Huber, 2012](#); [Zhang & Zheng, 2017](#)). What determines whether a change lies in the gain or loss domains is the reference point. In the case of saving, people see their current consumption as their reference point. Deducting a portion of current income for saving more will probably be seen as a loss because they will need to reduce current consumption. It would therefore be difficult for people to increase saving from their current income as they

would wish to avoid this loss. On the other hand, an increase in future income, which is not in hand now, would be seen as a gain by most people. Forgoing a portion of such future gain seems not to be treated as a loss by most people (Knetsch & Mahasuweerachai, 2015; Knetsch, 2010). The combination of reference point and loss aversion suggests that convincing people to save more from their future salary increases would be attractive as they are less likely to weigh such a forgone gain as heavily as they weigh the loss of current salary (Knetsch & Mahasuweerachai, 2015).

The foregoing analysis of our subjects' saving behavior suggests simple and obvious solutions to the inadequate saving problem. Procrastination and time-inconsistent preferences, such that the present is more important than the future, lead us to believe that saving more in the future would be more attractive than saving more in the present. Reference point and loss aversion suggest that people would not treat forgoing some of their future income increases as a loss, which implies that drawing more saving from future salary increases would be easier than drawing it from current salary. Finally, procrastination and inertia shed light on using automatic enrollment which guarantees that when our subjects join the program, they will remain in it until they opt out, which would rarely happen.

4. The experimental program

With the goal of increasing their saving rates, we design an experimental program to help our subjects who would like to save more but find it difficult to do so. We propose a program that contains elements as follows. First, saving comes from future salary increases alone to avoid the impact of loss aversion and make subjects feel positive toward the program as their current salary will never be touched.

Second, subjects are given the opportunity to increase their saving rates by committing to contribute more from their future salary increases two months before a scheduled pay increase. This is to take advantage of present-biased preferences where the sign-up dates and start-up dates of the program should be well into the future (Thaler & Benartzi, 2004). Our subjects realize there are increases in salary twice a year, in April and October. However, the increases are relatively low compared to their current salaries, which make the increases less salient. We therefore believe there will be no change of reference point with respect to upcoming salary increases.

Third, every subject is automatically enrolled into the program, and the increase in contribution rate is continued unless a subject opts out of the program. In this way, procrastination and inertia would work toward keeping subjects in the program.

Finally, subjects can opt out of the program at any time. This is to make them feel comfortable because they know that they can always revert to making their own saving choices if they wish.

Since the three battalions of the 8th infantry regiment are located at some distance from one another, the randomization unit is set at the battalion level to avoid any spillover effects. We arbitrarily selected the third battalion to be the treatment group for which the saving program is implemented. The other two battalions serve as the control group.⁶

We compare the characteristics of subjects across battalions to assess whether differences exist between treatment and control groups. Table 2 presents the results. In important respects, characteristics of subjects in Battalion 3, our treatment group, are similar to those of subjects in Battalions 1 and 2. The importance of saving is consistently rated high, at values of about 1.6 on a scale of 1–5 where 1 is the most important. Time consistency scores are low across the board at average values of less than 0.1 where 1 indicates consistency and 0 inconsistency. Marital status and number of children under 18 do not differ significantly. However, differences do emerge with respect to salary and rank. Battalion 3 shows average salaries by year similar to those of Battalion 1, but significantly higher than those of Battalion 2. Relatedly, Battalion 3 has a significantly larger proportion of subjects at high rank and a significantly smaller proportion of subjects at low rank than Battalion 2. Compared to Battalion 1, Battalion 3 has larger proportions of subjects at both high and low ranks, and a correspondingly smaller proportion of subjects at middle rank.

To test whether any covariates predict membership in the treatment group, we estimate a logit regression. The dependent variable is coded as 1 if the subject is assigned to the treatment group, 0 otherwise. The independent variables are the subject characteristics. Results are presented in Table 3. None of the coefficient estimates differ significantly from zero, which confirms that no covariate predicts membership in the treatment group.

Program implementation began the first week of February 2017, two months before a scheduled salary increase. A letter containing information about the program was sent to every subject in the treatment group.⁷ The letter contained three main parts. The first was an explanation of the importance of saving for retirement. The second was a description of the details of the program including the deduction rate (saving rate) from future raises. An explanation was provided that once the program started, every salary raise would be subjected to an automatic deduction to be applied monthly with the deduction to be transferred to their account. The final part of the letter made clear that the program is voluntary, and participants could opt out any time they wished by filling out a short form available in the cooperative office.

To test whether subjects are sensitive to the rate of saving imposed, three alternative rates were assigned randomly to subjects in the treatment group. Specifically, the rates of saving deduction out of future salary increases were set at 10, 15, and 20 percent. The numbers of subjects at each rate are 52, 51, and 55, respectively. We expect that if subjects are sensitive to

⁶ If the saving program succeeds for one battalion, it will be implemented in the other two battalions at a later date.

⁷ Some subjects had been deployed to field operations. To make sure they received the letter, we sent it again using the military mailing service and asked recipients to sign for it. All recipients acknowledged receiving the letter.

Table 2

Summary statistics of subject characteristics by Battalion.

	Battalion 1	Battalion 2	Battalion 3	<i>p</i> -value Bat1=Bat3	<i>p</i> -value Bat2=Bat3
Salary 2016 (baht)	17,584.52 (510.46)	15,465.11 (333.21)	17,909.05 (513.22)	0.65	0.00
Salary 2018 (baht)	19,202.74 (557.44)	16,888.29 (363.88)	19,557.13 (560.45)	0.63	0.00
Proportion of low rank	0.11 (0.02)	0.29 (0.03)	0.18 (0.03)	0.01	0.03
Proportion of middle rank	0.55 (0.03)	0.42 (0.03)	0.42 (0.03)	0.00	0.60
Proportion of high rank	0.34 (0.04)	0.29 (0.03)	0.40 (0.04)	0.11	0.01
Marital status	1.77 (0.06)	1.72 (0.05)	1.79 (0.06)	0.77	0.37
Children under 18	0.95 (0.08)	0.88 (0.07)	1.01 (0.08)	0.62	0.23
Importance of saving	1.58 (0.04)	1.56 (0.03)	1.58 (0.04)	0.97	0.77
Time consistency	0.08 (0.02)	0.09 (0.01)	0.05 (0.02)	0.32	0.14
N	168	184	158		

Note: Standard errors are in parentheses. Marital status is coded as 1 if single, 2 if married, 3 if widowed, and 4 if divorced. Importance of saving is coded as 1 if very important, 2 if important, 3 if neutral, 4 if not important, and 5 if not important at all. Time consistency is coded as 1 if respondents make consistent choices on near term and distant saving options.

Table 3

Testing covariates that can predict membership in the treatment group.

	(1)
Salary 2016 (1000 Baht)	0.031 (0.025)
Married	0.162 (0.285)
Widowed	0.098 (0.589)
Divorced	0.101 (0.505)
Children under 18	0.041 (0.133)
Middle rank	−0.386 (0.283)
High rank	−0.105 (0.405)
Importance of saving	0.099 (0.193)
Time consistency	−0.499 (0.421)
Constant	−1.397* (0.505)
Log likelihood	−310.181
N	510

Note: Standard errors are in parentheses. *, **, and *** indicate $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively. Married, Widowed, and Divorced are coded as dummy variables with Single as reference. Importance of saving is coded as 1 if very important, 2 if important, 3 if neutral, 4 if not very important, and 5 if not important at all. Time consistency is coded as 1 if respondents make consistent choices on near term and distant saving options.

the saving rate, exercise of the opt out choice will increase as the saving deduction rate rises. However, if opt outs do not differ across saving deduction rates, this will provide evidence that inducing people to save more from their future salary increases is likely to succeed.

5. Results

After the letter was sent to subjects, cooperative officers of the third battalion were tasked with recording details on the number of subjects who came to ask for more information on the program or sought to opt out. No subjects came to ask for more information. However, two subjects (1.2 percent) dropped out of the program. The first was in the 10 percent deduction group and dropped out immediately after getting the letter. This subject was three years away from retirement, and thus

Table 4

Results for change in saving rate during the program.

	(1)	(2)	(3)
Battalion2	−0.075*** (0.013)	−0.060** (0.023)	−0.061*** (0.012)
Battalion3	0.683*** (0.019)	1.056*** (0.023)	0.681*** (0.018)
Salary 2018 (1000 Baht)		0.006*** (0.001)	0.005*** (0.000)
Deduction rate 15%	0.319*** (0.024)		0.320*** (0.023)
Deduction rate 20%	0.782*** (0.023)		0.780*** (0.022)
Constant	−0.283*** (0.009)	−0.401*** (0.032)	−0.397*** (0.017)
R ²	0.951	0.851	0.957
N	510	510	510

Note: Standard errors are in parentheses. *, **, and *** are $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively. Change in saving rate is measured between December 2016 and November 2018. Reference groups are Battalion 1 and a deduction rate of 10% for Battalion 3.

presumably saw the savings that could be accumulated as of little consequence. The second to withdraw was in the 15 percent deduction group and opted out a week before the first pay raise. Given the extremely low attrition, which is unrelated to deduction rates, it seems that when subjects know their current salary will not be touched, even a deduction rate as high as 20 percent does not deter them from participating. This provides supportive evidence that enlisting people in a program to save more from their future salary increases can succeed.

The first pay raise after the program was implemented took place in April 2017 with further regular increases in October 2017, April 2018, and October 2018. The average increases in pay were 1.5 percent for the April raises and 3 percent for the October raises. Beyond the two subjects who dropped out initially, all 156 remaining participants stayed in the program through the fourth pay raise, with the deductions from their salary raises taken out every month.

To test statistically for the effect of the program on saving rates in Battalion 3 relative to the control group, we estimate an equation with change in the saving rate as dependent variable and include the battalion dummies taking Battalion 1 as the reference group. The model is given as:

$$\Delta s_i = \alpha + \beta_1 \text{Battalion2} + \beta_2 \text{Battalion3} + \beta_3 \text{Salary2018}_i + \beta_4 dr_{15\%} + \beta_5 dr_{20\%} + \varepsilon_i \quad (2)$$

where Δs_i is the change in monthly saving rate of subject i between December 2016 and November 2018; Salary2018_i is salary for November 2018; and $dr_{15\%}$ is a dummy variable equal to 1 if the deduction rate is 15 percent (0 otherwise) and $dr_{20\%}$ is a similar dummy variable for a deduction rate of 20 percent, leaving a deduction rate of 10 percent as the reference.⁸ We estimate the equation using OLS regression.

Table 4 presents the regression results. As expected, the coefficient of Battalion3 is positive and strongly significant in all model specifications indicating that the saving rates of subjects in the treatment group, Battalion 3, generally increased relative to those of subjects in Battalion 1. The negative estimate of the constant term indicates that the saving rates of subjects in Battalion 1 generally fell, and the negative coefficient estimate for Battalion 2 indicates that saving rates of subjects in this battalion fell slightly more. These declining saving rates are the result of an existing mandate to invest fixed sums in shares of the savings cooperative against rising incomes. The experimental program of this study acts as a counter force to this saving rate decline. Column (3) shows a change in the saving rate of Battalion 1 subjects of -0.40 percentage points over the two year period of the program. Against this, those subjects in Battalion 3 for whom the saving deduction rate out of salary increases was 10 percent saw an increase in saving rate out of total income of about 0.28 percentage points ($-0.397 + 0.681$). Those for whom the deduction rate was 15 percent saw an increase in their saving rate of about 0.60 percentage points ($-0.397 + 0.681 + 0.320$), and those for whom the deduction rate was 20 percent an increase of about 1.01 percentage points ($-0.397 + 0.681 + 0.780$).

The significant increase in saving rates of subjects in the treatment group confirms that a savings program based on deductions from future salary increases could persuade people to save more. This applies even with a marginal saving rate as high as 20 percent as virtually all subjects in the treatment group remained in the program after four salary increases even at this deduction rate.

If the experiences of these four pay raises are repeated, saving rates of the subjects will continue to rise with every salary increase. To show the effect of the program long term, we make projections for subjects who have at least 20 years of service remaining until retirement assuming a 4.5 percent annual increase in salary. We calculate saving rates for treatment group subjects with 10, 15, and 20 percent saving rates from every raise for 20 years. Table 5 illustrates the rising saving rates of

⁸ Two other variables were initially included but were found to be statistically insignificant and were dropped from the reporting. These variables were Saving importance and Time consistency.

Table 5

Projected saving rates with respect to total income.

Deduction from pay raise (%)	Projected saving rates by time horizon (%)				
	<i>t</i>	<i>t</i> +5	<i>t</i> +10	<i>t</i> +15	<i>t</i> +20
			Treatment group		
10	5.3	6.0	6.1	7.4	8.0
15	5.5	7.0	8.6	9.9	10.9
20	4.8	8.0	10.4	12.3	13.8
			Control group: Battalion 1		
0	3.3	2.8	2.3	1.8	1.5
			Control group: Battalion 2		
0	4.1	3.3	2.7	2.1	1.7

Note: The baseline is time *t* = 2016.

these subjects. The projections show that if the subjects stay in the program their saving rates will continuously increase to quite high levels, while the saving rates of subjects in the control groups would continuously decrease.⁹ After 20 years, the saving rates of those in the treatment group who faced a 20 percent rate of deduction would have reached 13.8 percent. This presents a stark contrast with saving rates of less than 2 percent for the control groups.

Some may want to know whether the subjects in the treatment group reduce other saving as they know that their saving is increasing due to their participation in the program. If the subjects reduce their other saving, this would undermine the impact of the program. To answer this question, we compare the treatment subjects' monthly saving deposits into their regular and special savings accounts before and after implementation of the program. We find no statistically significant difference in monthly saving deposits made into these two discretionary accounts before and after the program implemented ($p > 0.05$). We conclude that our program would unambiguously increase total saving rates of participating subjects.

6. Simulation of expanded program implementation in Thailand

To determine the potential impact of the program if it were widely implemented in Thailand, we conduct a simulation exercise. The simulation is applied to employees in formal sector jobs with college degrees. This group would be the potential target of our program as they are eligible for participation in the Thai Provident Fund.¹⁰ The National Statistical Office (2013) reports the average monthly salary of this group as 16,423 baht (about 470 USD). We assume an average annual increase in salary of 5.5 percent per year.¹¹ We project saving rates and total additional savings over a 20-year period using deduction rates applied to salary increases of 10, 15, 20, and 25 percent.¹²

The results of our simulation for saving rates are displayed in the upper panel of Table 6. We assume a baseline of no saving when the program begins. Over the first five years, saving rates are projected to increase from nothing to 2.9–7.2 percent depending on the deduction rate. Over the course of 20 years, saving rates would increase to 7.1–17.8 percent.

Projections of the magnitude of savings that would be generated by the program are presented in the lower panel of Table 6. Calculations are based on the existing number of employees enrolled in the Provident Fund, which is about three million, as the baseline. We assume all will be enrolled in the program and allow for an exit rate of 5 percent per year.¹³ After five years, deduction rates of 20–25 percent generate savings of 110–140 billion baht. Relative to Thai GDP, assuming a GDP growth rate of 4 percent a year, this would amount to around 1 percent of national income.¹⁴

This increase in national savings is substantial, especially considered against a backdrop under the status quo of a declining saving rate and a quarter of households reporting no saving. Based on the experimental program implemented by the Thai army, there is reason to believe that this kind of program were widely implemented, the majority of eligible employees who are currently saving little or not at all would remain in the program. This means that the increase in saving projected in our simulation exercise is probably not too far off the mark.

⁹ The savings accumulation would actually be higher than presented in Table 5 if we accounted for compound interest where the interest rate is about 5.5 to 6 percent per year.

¹⁰ For current members of the Thai Provident Fund, salaries are subject to automatic monthly deduction according to designated rates (<https://www.thaipvd.com>).

¹¹ The projected rate of salary increase was adopted based on changes in salary in private sector employment for 2007–2013 (National Statistical Office, 2013).

¹² For simplicity, our projections exclude the effects of employer contributions and returns from fund investment. These omissions would cause downward biases.

¹³ Total savings based on this calculation would be downward biased because we do not account for new entrants to the labor force. In addition, the number of employees who would be eligible to access the Provident Fund stands to increase under a government plan to require every firm with over 100 employees to offer participation.

¹⁴ The 4 percent growth rate is based on GDP growth for 1994–2017 (Office of the National Economic and Social Development Council, <https://www.nesdb.go.th>).

Table 6

Projected saving impact for Thailand under broad program implementation.

Deduction from pay raise (%)	Time horizon				
	<i>t</i>	<i>t</i> +5	<i>t</i> +10	<i>t</i> +15	<i>t</i> +20
			Projected saving rates (%)		
10	0	2.9	4.7	6.1	7.1
15	0	4.4	7.0	9.1	10.7
20	0	5.8	9.4	12.1	14.2
25	0	7.2	11.7	15.2	17.8
			Projected total savings (billion baht)		
10	0	56.1	150.4	265.2	387.3
15	0	84.2	225.6	397.8	580.9
20	0	112.3	300.7	530.4	774.5
25	0	140.3	375.9	663.0	968.2

Note: The baseline is $t = 2018$. Projections are based on annual salary increases of 5.5 percent and a 5 percent per year drop-out rate from the program.

7. Conclusion

This paper reports on an experimental program to increase the saving rates of Thai army officers. Officers from one battalion were automatically enrolled in the program which applied saving deductions to future increases in pay. After two years and four pay increases, only two officers of 158 chose to opt out of the program. For those who remained, saving rates relative to income increased by up to 1 percentage point, whereas for a control group the saving rate declined by nearly half a percentage point. The findings are encouraging as to the prospects for such a program rolled out more broadly to yield substantial increases in national saving for Thailand.

The program was designed according to established principles of behavioral economics. The behavioral tendency to postpone saving was applied to help officers achieve the saving increases they desired but were unable to realize. Saving deductions were applied only to future increases in salary, rather than to total future income. The nearly negligible opt-out rates suggest that if people know their current income will not be touched, saving goals are more easily accomplished. Further, the deduction rate applied, spanning a range of 10 to 20 percent, did not seem to matter as opt-out rates were similarly near zero regardless of the rate. These results hint at the power of loss aversion and reference point in the design of a saving program. Present-biased preferences and loss aversion together could, therefore, with the right finesse, turn the wheel from preventing people from saving to helping them save more.

Although the experimental program as designed worked well for inducing higher saving, there are issues to be considered to improve program design. The first relates to the impact of automatic enrollment with opt out permitted as opposed to an opt-in framework. While our program involved automatic enrollment with opt out, we do not know whether the rate of participation would differ significantly if the program were offered on an opt-in basis. It would be desirable to explore this with a controlled experiment.

In addition, in our program rates of saving from future salary increases were assigned randomly among subjects in the treatment group, meaning that the subjects did not have a choice. If we want to apply this program more broadly, randomly assigned saving rates from pay raises would not be a strategic or ethical approach. We might consider two options. The first is offering a single saving rate. The second is providing participants with a choice among saving rates and letting them pick. The advantage of offering a choice is that participants can better adapt the program to their own needs and preferences. Also, letting them choose could bring greater commitment, as it confers a sense of control (Keller et al., 2011). The disadvantage of offering a choice is that it forces prospective participants to make a hard decision, adding complexity to their lives and perhaps discouraging some from joining the program. A further concern is that most participants may end up choosing the lowest rate offered. This aspect of program design bears importantly on outcomes and should be given careful consideration before the program is expanded. Again, a controlled experimental would be instructive.

In sum, this study sheds light on a practical approach to helping people save, especially for low-income earners. The success of our experimental program derives largely from an insight into the way we understand behavior. Viewing people as ECONS rather than HUMANS, as we have so long done, has impeded our progress considerably. Being more realistic about human nature holds promise for better policy design to achieve what we have heretofore struggled to achieve.

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