Benefiting from Our Biases: Inducing Saving Increases among Thai Military Officers

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Abstract

Saving is the principal source of fund for most people after retirement. Saving too little today means lower quality of life after retirement. Most people know saving is important, but few succeed in saving enough. In this study, we conduct a field experiment using concepts from the well-known Save More Tomorrow™ program to enhance saving among military officers in the Royal Thai Army. Subjects in a treatment group are automatically enrolled to the program unless they opt out, and the source of saving increases only come from their future salary increases, rather than total future income. The initial findings from the implementation suggest a high chance of success in increasing saving. The majority of the subjects in the treatment group (98 percent) remain in the program after four pay raises, and their saving rate is going up. On the other hand, saving rate of subjects in the control group is declining even their salaries are also on average equally increased. Our study serves as further evidence that insights from behavioral economics are vital as a policy tool, and that they are widely applicable even across cultural and economic settings, as these primary results have shown.

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Introduction

Household saving rates in Thailand has been declining during the past decade. Currently about 83 percent of households do not save regularly[1], and when they do, their saving rates are very low, less than 10 percent of their income (Soonthorndhada and Chindakum, 2014). This group of people is at risk of having inadequate funds to maintain their lifestyle after retirement. Inadequate saving has long been well-recognized and several methods have been proposed to solve the problem. For example, user-friendly financial literacy toolkits have been developed to provide information and educate people on how to manage their wealth, including saving, has been in practice for decades. However, the problem still remains and seems to be growing. We are still in need of additional effort or different methods to increase household saving in Thai households.

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 could 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 problem, which prevent households from saving enough because they may be reluctant to limit current consumption in favor of future consumption (saving today) (Thaler and Benartzi, 2004). In addition, present-biased preferences create procrastination in which people (mistakenly) think that current and near-term consumptions are more important than future consumption (O'Donoghue and Rabin, 2001). This implies that current consumption is heavily weighted in their utility function, and they will consume more today and save less for future consumption. This behavior would result in a saving rate that is too low leading to insufficient future consumption. To overcome 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 from behavioral economics to design a program to help people to save more. Our program targets people who want to save more than they are doing now (or do not realize they are saving less than they should),

[1] There is about 26 percent of household that actually have no saving at all (Patmasiriwat and Hengpatana, 2014).

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 Benartzi (2004). Our program, however, is slightly different in three dimensions. First, unlike in the original program, every subject is automatically enrolled, though they can opt out from the program at any time. We apply opt-out mechanism due to limited resources in providing the subjects with one-on-one financial consultant. Furthermore, using only direct-mail campaign, as we did in this study, is unlikely to convince them to join the program.

Second, for our program increases in saving come from future salary increases alone instead of from the entire future salary after the raise. We use this design because many workers in our study live paycheck-to-paycheck and often can barely make ends meet. Cleary announcing that deductions toward saving come from only the salary increases would make them feel more positive toward the program as the current salary is untouched. Third, we can apply field experiment where treatment and control groups are established to clearly test the impact of program on saving rate.

We note here that traditional economic theory would predict that the saving rate between the subjects in treatment and control groups would not be different because if the subjects decided on the optimal life cycle saving rate, they would have no interest in staying in the saving program. However, behavioral economic principles applied in this study would predict that the majority of the subjects in the treatment group will find this program attractive and will stay in the program, resulting in a significant increase in saving rate compared to those in the control group.

Our program has been implemented in the saving cooperative of the 8th infantry regiment consisted of three battalions.[2] To reduce spillover effect, randomization unit is at battalion level where subjects in one battalion are randomly assigned to receive the saving program. Subjects in the other two battalions serve as the control group. The subjects in the treatment group received letter provided them the details of the program in the first week of February 2017. After four pay raises occurred in April and October of 2017 and 2018, 156 out of 158 subjects in the treatment group are still in the program, and their saving rate is increasing. The saving

[2] Even though, 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 kilometer.

rate of subjects in the control group is declining even though their salary is equally increased on average.

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

The Saving Situation of Subjects

Our study took place at a saving cooperative of the 8th infantry regiment consisted of three battalions. Even though these battalions are under the same regiment, their barracks are in different locations where the average distance from one barrack to another is about 80 kilometers. To provide convenience for the cooperative's members, each battalion has a cooperative office that provides the same services for the members.[3]

The main purposes of the saving cooperative are to provide credit and saving services to the members. The cooperative has two types of members. The first one is temporary member who is drafted to serve in the army for two years. Due to relative short time in military service, this group is not eligible for getting credit from the cooperative. Only saving service is available for them, and it is voluntary. The second group of members is noncommissioned officers who serve in the army until retirement at age 60.[4] They are eligible for both credit and saving services from the cooperative. At time of the study, all noncommissioned officers of all battalion are the members of the cooperative, and they are the targets of our saving program.

The cooperative offers three types of saving account for the members.[5] The first saving account is a common saving account where the interest rate is 3 percent per year. The second saving account is a special saving account where the members could get 4 percent interest rate annually, but it has lower liquidity than the common

[3] Even each office reports to the regiment's cooperative, they can set up their management rules that are not conflict to those of the regiment.

[4] There is no requirement for this group of soldiers to be a member of the cooperative.

[5] Another source of saving is government pension fund. This saving is requirement, and 3 percent of their salary is automatically deducted to this fund with another 3 percent matching from the government.

saving account because account owners can only withdraw money from the account once a month.[6] The third option for saving is buying shares of the cooperative. This saving option is different from the first two options in two dimensions. First, while the first two saving accounts are voluntary, this saving account is required for members. The minimum requirements of saving per month for this account are different among battalions. For example, the minimum requirements for the first battalion and the third battalion are 500 Baht (about 15 US dollar) and 700 Baht (about 21 US dollar), respectively. The minimum requirement for the second battalion is slightly different in which it depends on the rank of the officers. The monthly requirement for officers with sergeant and lower ranks is 500 Baht, while that of the master sergeant is 700 Baht. The requirement saving is directly deducted every month from their monthly salary in all battalion. The second difference is the principal could not be withdrawn until retirement or resignation from membership. The return of this saving account, however, is paid every year to the account owners. The annual return of this saving form in the past ten years ranges between 5 to 6.5 percent depending on the annual profit of the cooperatives.[7]

The interest rates from these three saving accounts are generally higher than those in the market as the annual interest rates from similar accounts provided by other financial institutes (at the time of study) range between 0.75 to 2 percent. However, the saving of the cooperative's members is quite low. Among 510 members in these battalions, only about 30 percent of the subjects own more than one saving account, and most of their saving is actually in the forced saving account.[8] For the forced saving account, there are 446 from 510 subjects, which is about 87 percent, who save at the minimum requirements. We then calculate saving rate of the subjects from 2014 to 2016 before the saving program started. The saving rates of three battalions are presented in figure 1.

[Figure 1 about here]

[6] They actually can withdraw money more than one time a month but the interest rate will be dropped to 3 percent after that.

[7] The main profit of the cooperatives comes from interest earnings from loans provided to the members. The interest rate on a loan is fixed at 8 percent per year.

[8] The 1st, 2nd, and 3rd battalions have 168, 184, and 158 members, respectively. The proportions of members owning more than one account in each battalion range between 27-31 percent.

Note that the salary of the subjects is increased every year.[9] The average increase of salary in the past three years (2014-2016) was about 4.5 percent. Information from figure 1 therefore suggests that even though their salary has increased, they do not save more resulting in a continuous decline in their saving rate.

To better understand our subjects, we conducted a short survey in the second week of January, 2017 during the cooperative member meeting of all 3 battalions.[10] [11] Overall, the majority of subjects (98 percent) indicate that saving for retirement is important to them. Most of them (79 percent) also 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 mostly due to current expenditure and lacking willpower.

We also check whether they behave as time-inconsistent agents. Time-inconsistent behavior occurs when an individual weights current or near-term consumption significantly heavier than that in the far future (O'Donoghue and Rabin, 2001; Thaler and Benartzi, 2004; Lien and Zheng, 2018).[12] We check such bias using two questions in our questionnaire. The first question asked the subject to choose between getting 200 Baht today or 220 Baht tomorrow. The subjects were then asked in the second question to choose between the same amounts of getting 200 Baht in the next 60 day or 220 Baht in the next 61 day. More than half of the subjects in all battalions shown sign of time-inconsistency in which they prefer 200 Baht today in the first question but turns to prefer 220 Baht in the next 61 day in the second question and vice versa.

We next regress saving rate before the program implemented on subject's characteristics collected from the survey using the following specification:

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[9] Their salary is usually raised twice a year, the end of April and October. The main rise is usually on October accounted about 3 to 3.5 percent of 4 to 5 percent total annual rise.

[10] During the annual meeting, the cooperative office has educated members about financial literacy every year since 2014. However, the knowledge and information provided by the course would not be enough to encourage the members to save more.

[11] There were some members who cannot join the meeting because they were deployed to field operation. The questionnaire was directly mailed with return envelop to them using military mailing service.

[12] 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).

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

where $s_{i,16}$ is the 2016 saving rate of subject i. Bat_2 is coded as 1 if subjects are the members of battalion 2 and 0 otherwise. Bat_3 is coded as 1 if subjects are the members of battalion 3 and 0 otherwise. Battalion1 is used as reference. $\mathbf{X_i}$ is the vector of subject's characteristics. Table 1 reports the results of four model specifications.

[Table 1 about here]

The results clearly show that the saving rate 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 force saving account of battalion 1 is the lowest. The higher income turns to the lower saving rate as the coefficient of *Ln*(Salary_2016) is negative and statistically significant. This pattern is also captured when the rank variables, Middle rank and High rank variables, are employed as independent variables in Model 2 and Model 4.[13] The saving rate of the middle rank and high rank subjects is on average lower than that of the low rank subject. Since, the rank variables highly correlate with income these results lead to two points worth noting here. First, individuals do not save more even though their income increases regularly. Second, because the amount of monthly saving does not increase, the saving rate declines as the income increases. For other variables, we found no significant effects of them on saving rate, even the important score of saving and time (in)consistent preference.

A Framework for Increasing the Saving Rate

From the information described in previous section, it seems the first obstacles causing low saving of the subjects could be the self-control problem and procrastination. This is due to most subjects indicating saving is important and want to save more. However, they could not do so. The famous method suggested by behavioral economics to overcome self-control problem and procrastination in saving is to use the "opt-out" mechanism. In such mechanism, when people are eligible for a saving plan,

[13] Low rank is used as reference.

they are automatically enrolled to the program unless they opt out. As predicted, automatic enrollment plans have shown remarkable success in increasing enrollment to saving programs (e.g. Madrian and Shea, 1999; Choi et al., 2004; Somville and Vandewalle, 2015; Blumenstock et al., 2016). However, there is a drawback of automatic enrollment because it could produce a strong tendency toward inertia or status quo bias (Samuelson and Zekhauser, 1998). If inertia exists even when participation rates in saving programs increase, it could also lower the saving rates of those who join the programs (Keller et al., 2011). This situation seems to also happen for our subjects as well because the majority starts saving with the minimum requirement for the forced saving account but made no changes to their saving amount at least over the past 3 year.

Other factors that were not directly investigated in our survey but should be considered in designing the saving program are reference point and changes in the gain and loss domains. These factors would help us to overcome inertia. Since the development of prospect theory by Kahneman and Tversky (1979), there are many studies suggesting that people seem to weight changes in loss domains significantly more than those occurring in gain domains, a phenomenon commonly known as loss aversion (e.g. Kahneman et al., 1990; Tversky and Kahneman, 1992; Pope and Schweizter, 2011; Viscusi and Huber, 2012; Lien and Zheng, 2015; Zhang and Zheng, 2017). What determines whether the change occurs in gain or loss domains is the reference point. In the case of saving, people should see their current consumption as their reference point. Deducting some 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 avoid this loss. On the other hand, an increase in future income, which is not in hand or pocket now, would be seen as gain for most people. Forgoing some such future gain seems to not be treated as a loss by most people (Knetsch, 2010; Knetsch and Mahasuweerachai, 2015). 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 forgone gain as heavily as they do with the loss of current salary (Knetsch and Mahasuweerachai, 2015).

The above analysis of our subjects' retirement saving behavior suggests simple and obvious solutions to the current inadequate saving problem. Procrastination and time-inconsistent preferences, such that the present is more important than the future,

leads 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 the forgoing of some of their future income increases as a loss, which implies that drawing more saving from future salary increases would be easier than from the current salary. Finally, procrastination and inertia shed light on using automatic enrollment that would guarantee that when our subjects join the program, they would remain in the program until they opt out, which would rarely happen.

The Program and Implementation

From a principle to increasing the saving rate, we design a program to help our subjects who would like to save more but find it difficult to do so. We propose a program that contains ingredients as follows. First, the source of saving comes from the future salary increases alone to avoid the impact of loss aversion and make them feel positive toward the program as their current salary will never be touched. Second, the subjects are approached about increasing saving rate by contributing more from their future salary increases two months before their 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 far into the future (Thaler and Benartzi, 2004).[14] Third, every subject is automatically enrolled to the program, and the increase in contribution rate is continued unless the subjects opt out of the program. In this way, procrastination and inertia would work toward keeping subjects in the program. Fourth, the subject can opt out from the program at any time. This is to make them feel comfortable because they know that they can always opt out if they want.

Since, the 8th infantry regiment has three battalions, and each is located in different locations, the randomization unit is at the battalion level to avoid spillover effect. We randomly selected one battalion to be a treatment group where the saving program is implemented. Another two battalions serve as a control group.[15] From randomization process, the third battalion was selected to serve as a treatment group, while the first and second battalions serve as a control group.

[14] Every one knows there are increases in salary twice a year. However, its increase is relatively low in each period compared to their current salary, which would make it less salient. We therefore believe there would be no change of reference point toward new salary before schedule pay increase.

[15] If the saving program succeeds it will be implemented in two battalions served as control group in 2019 and 2020.

We analyzed the characteristics of all subjects to access how the characteristics of subjects in treatment and control groups differed. Table 2 presents the result.

[Table 2 about here]

The characteristics of subjects in the third battalion are generally similar to those in the first and second battalions. Their marital status and number of children are not different among subjects in these battalions. They also provide the similar score for the importance of saving and are not different in their responses to time (in)consistent questions. The salary of the subjects in the third battalion is on average higher than that of subjects in the second battalion. This would be due to the high proportion of low rank in the second battalion. This group of noncommissioned officer has the lowest salary.

We then estimate logit regression to ensure there would be no covariates that predict membership in the treatment group. The dependent variable is coded as 1 if the subject is assigned to treatment group and 0 otherwise. The independent variables are subjects' characteristics. Result presented in table 3 convinces us that no covariates predicted the membership of the treatment group because all independent variable is not statistically different from zero.

[Table 3 about here]

We start implementing the program on the first week of February, 2017, two months before the first salary increase.[16] A letter containing information about the program was sent to every subject in the treatment group.[17] There were three main parts in the letter. The first contains an explanation of the importance of saving for retirement. Then, we start to describe the details of the program including deduction rate (saving rate) from their future raises. Note that, to increase the robustness of testing whether increases in future salary are potential source for increasing saving, we

[16] To enhance household financial management of the members, the cooperative office has developed financial literacy course, which has been presented to all member during cooperative meeting every year. Saving is the major topics of the course.

[17] Some subjects have been deployed to field operations. We again sent the letter using military mailing service. To make sure they receive the letter, we asked the recipients to sign when they get it. All recipients acknowledged receiving the letter.

randomly assign different saving rate from increasing in future salary to subjects. Namely, there are three different deduction rates of 10, 15, and 20 percent, from their future salary increases, and these rates were randomly assigned to each subject in the treatment group.[18] The letter also contains information that when the program starts, every raise will be automatically deducted according to their deduction rate, and will continue every month. Such deduction will be automatically transferred to their retirement (forced) saving account every month. In the final part of the letter, we provide information that this program is voluntary, and they can opt out at any time if they want by filling out a very short form, which is available in the cooperative office.

The Results

After the letter was sent to every subject, we asked the cooperative officers of the third battalion to record the number of subjects who come to ask for the details of the program and those who come to opt out from the program. Up until now, no subject comes to ask for the details. However, two subjects (1.2 percent) dropped out from the program. The first one was in the 10 percent deduction rate, and he dropped out from the program almost instantly after getting the letter.[19] The second subject who was in the 15 percent deduction rate group dropped out from the program a week before the first pay raise. Since the attrition is similarly low across three different saving rates, it seems that when subjects know their current salary will not be touched, a deduction from future salary increases as high as 20 percent for saving does not bother them at all. This would be the supportive evidence that convincing people to save more from their future salary increases would succeed.

The first pay raise after the program was implemented took place on April 2017. The increase in the first pay raise was 1.5 percent on average. The second, third, and fourth pay raises took place on October 2017, April 2018, and October 2018. The average increases in salary for second and fourth pay raises were about 3 percent,

[18] There are 52, 51, and 55 subjects in 10, 15, and 20 percent saving rates, respectively. We expect that if the increase in future income is not the appropriate source for increasing saving, we would see a higher opt-out rate from the high saving rate, such as 20 percent, than that from the lower rate, such as 10 percent. However, if the opt out rate among those with different assigned saving rates is insignificantly different, it would be another supportive evidence that convincing people to save more from their increase in future income would be likely succeed.

[19] We expect that one would not see any benefits from staying in the program because he will retire from the military in the next three years.

while that of the third pay raise was about 1.5 percent. Convincingly, almost all of the subjects in the treatment group, 156, is still in the program after the fourth pay raises, and the deductions from their salary increases have been employed every month. To test whether our program could increase saving rate of the subjects in treatment group, we estimate change in saving rate between the December 2016 and November 2018, $s_{i,18} - s_{i,16}$ where $s_{i,18}$ is the saving rate of subject *i* at November 2018, using the following specification:[20]

$$\Delta s_i = \alpha + \beta_1 Bat_2 + \beta_2 Bat_3 + \beta_3 Ln(Salary\_2018_i) + \beta_4 dr_{15\%} + \beta_5 dr_{20\%} + \varepsilon_i \quad (2)$$

where Δs_i is change in saving rate of subject *i* between the December 2016 and November 2018, $s_{i,18} - s_{i,16}$. $Salary\_2018_i$ is November 2018 salary of subject *i*. $dr_{15\%}$ is dummy variables equal to 1 if deduction rate is 15 percent and 0 otherwise. $dr_{20\%}$ is equal to 1 if deduction rate is 20 percent and 0 otherwise. Note that 10 percent deduction rate is used as reference. We estimate this specification using OLS regressions. Table 4 presents the regression outputs.

[Table 4 about here]

The immediate effect of the program on saving was similar to what might be expected. The coefficient of variable "Battalion3" is positive and strongly significant in all model specification suggesting the saving rate of subjects in the treatment group, battalion 3, is increasing. The increase of saving rate of subjects in the treatment group ranges between 0.68 percent for subjects with 10 percent deduction rate to 1.46 percent (0.68+0.78) for subjects with 20 percent deduction rate. The saving rate, on the other hand, of subjects in the control group (Battalion1 and Battalion2) is declining, which can be seen from negative and strong significant coefficient of Battalion2 variable and "Constant" term, representing the change in saving rate of subjects in Battalion1. The significant increase in saving rate of subjects in the treatment group would again confirm that future salary increases could persuade

[20] We also include important score for saving and responses to time (in)consistent questions. However, we found no significant impacts of these variables on change in saving rate.

people to save more as the majority of the subjects in the treatment group is still in the program even after the deductions that occur every month.

If the experiences of these four pay raises are repeated with very few or no subjects dropping out of the program, the saving rate will continue to increase with every salary increase. To make it easy to follow and to see the effect of the program more clearly, we make a calculation using data from subjects in the treatment group who have at least 20 years left before retirement with 4.5 percent annual income increase. We calculate savings for those subjects with 10, 15, and 20 percent saving rates from every raise for 20 years. Table 5 presents the patterns of saving rates of these subjects. The projections clearly show that if the subjects stay in the program their saving rates will continuously increase, while the saving rate of the subjects in the control group would continuously decrease.[21]

Some may want to know whether the subjects in the treatment group reduce other savings as they know that their saving is increasing due to joining our program. If the subjects reduce other saving it means that our program does not increase total savings. It is just the case where the subjects switch source of savings. To answer this concern, we compare the subjects' monthly savings from saving account and special saving account before the program implemented and after the program implemented (end of November 2018). From the limited data we have, there is no statistically significant difference of monthly savings in both accounts before and after the program implemented (p>0.05). In particular, our program does not reduce subjects' savings in other sources, at least in these two saving accounts. Up until now, we can conclude that our program would help to increase total savings of our subjects.

Potential of the Program to Increase Saving

In this section we discuss the potential of the program to increase saving. We do not attempt to ask whether this kind of program could be transitioned to policy. We instead ask whether we can increase saving rate if this kind of program was widely adopted.

To determine the potential impact of the program if it were widely adopted, we create a simulation that predicts the impact of the program on saving. The simulation

[21] The saving rates would actually be higher than those presented in table 5 if we account for return from the interest rate, which is about 5.5 to 6 percent per year.

starts with the current average salary of employees in formal sector with college degree in Thailand. This group would be the potential target of our program as they are eligible for provident fund.[22] The National Statistical Office reports the average monthly salary of this group is 16,423 Baht (about 470 USD) (National Statistical Office, 2013). We also assume that the average salary increase is 5.5 percent per year.[23] We use this baseline salary to calculate changes in saving rate over a 20-year period where the increasing in savings rate comes from the 10, 15, 20 and 25 percent deducted from each pay raise.[24] The results of our simulations are displayed in table 6.

[Table 6 about here]

Assuming that there is no saving when they start joining the program. Over the course of five years, the saving rates will increase from nothing to 2.90-7.25 percent depending on the deduction rates. The saving rate will continuously increase and will reach 10 percent in year 10 if the deduction rate is just slightly above 20 percent for every pay raise.

In terms of how large these numbers mean in dollars, we make calculations of the impact of the program on change of total saving. We use the number of employees who already enroll in the provident fund, which is about three million, as the baseline for calculations.[25] We use the same implementation strategy of the program as we did in this study where eligible employees will be automatically enrolled to the program. We also assume that in each year 5 percent of employees drop out of the program. The

[22] For the member of provident fund, currently their salary has been automatically deducted according to the designed deduction rate every month (https://www.thaipvd.com).
[23] The average salary increase was calculated from changes of salary in private sector between 2007-2013 (National statistical office, 2013).
[24] For simplicity, our calculations exclude the effects of employer contribution and employee turnover. In addition, the calculations do not include the return from fund investment. These omissions create biases, both downward and upward. Excluding the effect of employer contribution and return from fund investment would result in downward bias because increasing employee contribution would trigger higher employer matching. In addition, provident fund is usually invested in financial assets such as bond and stock, and the returns from the investments are incorporated to the employee's provident fund. On the other hand, turnover of employee could decrease the effect of our program unless the employee moves to another company with the program in effect.
[25] Total saving from this calculation would downward bias because we do not account for the new graduations who enter to job market every year. In addition, the number of employee who would be able to access provident fund will increase as the government have plan to pass the law in 2018 that requires every firm with at least 100 employees to provide provident fund to their employees.

total additional savings over a 20-year period from various saving rates are presented in table 7.

[Table 7 about here]

Assuming that national income will increase 4 percent per year, the additional amounts of saving reported in table 7 will reach 1 percent of national income in year five for the 20 and 25 percent deduction rates.[26] Further, as mentioned earlier that current saving rate is declining and about a quarter of households report no saving, this increase in saving is substantial. In addition to that, even in our sample there are strong indications that if this kind of program were widely implemented, the majority of eligible employees who are currently saving little (as our subjects) or not at all would join or stay in the program. This means that the increase in saving projected in this study is probably not too far or at least not misleading from what would actually happen.

Conclusion

The initial results reported in this paper show signs of success for the program to encourage more saving that applies psychological factors in its design. The majority of subjects automatically enrolled to the program stayed with it. This indicates that as predicted, inertia works well to keep them in the program as very few opted out. We use this behavioral tendency to postpose saving to conversely help them to save. Further, the rate that would be deducted from their future raises to increase saving does not seem to matter, as the rates of op-outs are vey small and similar across deduction rates. This would suggest if people know their current income will not be touched encourage them to save more would be highly possible. Therefore, saving more from future income increases only, rather than total future income, may be an important consideration for future saving programs especially when the targets are low income earners. These results hint at the power of loss-aversion and reference point in determining how much to save. Present-biased preferences and loss aversion together

[26] The 4 percent national income growth was calculated based on growth of gross domestic product between 1994-2017 from Office of the National Economic and Social Development Council.

could therefore turn the wheel from preventing people from saving to help them to save more if we know how to use them.

Even though the program seems to work for encouraging more saving, there are issues one needs to consider to help the program work better. The first relates to the impacts of automatic enrollment and loss aversion on saving. Our design could not clearly separate the effects of these factors on the rate of joining (staying in) the program. Specifically, we do not know whether the rate of taking up the program will be significantly different if the program were offered as an opt-in option. It would be more appropriate to answer this question with a controlled experiment.

In addition, in our program the rates of saving more from future salary increases were assigned randomly among the subjects in the treatment group, meaning that the subjects could not choose such saving rate. If we want to apply this program more broadly, randomly assigned saving rates from the raises would not be a good or ethical way to do so. We might consider at least two options. The first is offering a single saving rate. The second is providing them choices of saving rates and allow them to pick one. One question that arises is which one the better option is.

There are pros and cons of offering them choices, as opposed to just giving one single rate. The advantage of offering choices is that participants can pick the saving rate they like most. In addition, letting them make decision would bring greater commitment, as it is the choice they make (Keller et. al, 2011). The disadvantage of offering choices is that it forces them to make a hard decision, which would add more complexity to their lives, and discouraging some of them from joining the program. In addition, most of them may end up choosing the lowest rate offered. Deciding on the better option is an important question to answer before expanding this program. Again, only a controlled experimental study would be more suitable in providing us the answer.

In sum, this study sheds light on the fact that there is a practical way to make progress on helping people, especially low-income earners, to increase their saving. The success of the program mainly comes from an insight that make an adjustment in the way we view people and thereby make predictions about their behavior. Viewing HUMANS as ECONS as we have done for several decades prevented our progress considerably. Being more realistic about human nature in our subjects (and the economists') hold promises to help them and us to overcome what we have struggled for decades.

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Table 1. Saving rate before the program implemented

Variable	Model1	Model2	Model3	Model4
Battalion2	0.577***	0.677***	0.583***	0.685***
	(0.124)	(0.140)	(0.124)	(0.140)
Battalion3	1.830***	1.787***	1.835***	1.792***
	(0.128)	(0.144)	(0.128)	(0.144)
Ln(Salary_2016)	-2.961***		-2.902***	
	(0.169)		(0.172)	
Married			0.052	0.117
			(0.150)	(0.67)
Widowed			-0.192	-0.081
			(0.315)	(0.3510
Divorced			0.417	0.316
			(0.263)	(0.293)
Number of children under 18			-0.032	-0.026
			(0.071)	(0.079)
Middle rank		-0.823***		-0.796***
		(0.157)		(0.162)
High rank		-1.911***		-1.844***
		(0.162)		(0.167)
Important of saving			0.121	0.161
			(0.101)	(0.113)
Time_consistency			0.107	0.221
			(0.199)	(0.223)
Constant	32.141***	4.481***	31.357***	4.120***
	(1.645)	(0.165)	(1.711)	(0.262)
R^2	0.497	0.379	0.501	0.383
N	510	510	510	510

Note: Standard errors are in parentheses. *, **, and *** are $p<0.1$, $p<0.05$, and $p<0.01$, respectively. Married, Widowed, and Divorced are coded as dummy variables. Single is used as reference. Important 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 variable is coded equal 1 if respondents select the same choice in both questions and 0 otherwise. Battalion1 is used as reference.

Table 2. Differences in characteristics of the subjects

Characteristics	Battalion1	Battalion2	Battalion3	*p-value* Bat1=Bat3	*p-value* Bat2=Bat3
Salary_2016 (Baht)	17,584.52	15,465.11	17,909.05	0.65	0.00
	(510.46)	(333.21)	(513.22)		
Salary_2018 (Baht)	19,202.74	16,888.29	19,557.13	0.63	0.00
	(557.44)	(363.88)	(560.45)		
Proportion of low rank	0.11	0.29	0.18	0.01	0.03
	(0.02)	(0.03)	(0.03)		
Proportion of middle rank	0.55	0.42	0.42	0.00	0.60
	(0.03)	(0.03)	(0.03)		
Proportion of high rank	0.34	0.29	0.40	0.11	0.01
	(0.04)	(0.03)	(0.04)		
Marital status	1.77	1.72	1.79	0.77	0.37
	(0.06)	(0.05)	(0.06)		
Number of children under 18	0.95	0.88	1.01	0.62	0.23
	(0.08)	(0.07)	(0.08)		
Important of saving	1.58	1.56	1.58	0.97	0.77
	(0.04)	(0.03)	(0.04)		
Time_consistency	0.08	0.09	0.05	0.32	0.14
	(0.02)	(0.01)	(0.02)		
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. Important 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 variable is coded equal 1 if respondents select the same choice in both questions and 0 otherwise.

Table 3. Testing covariates that can predict membership in the treatment group

Variable	Coefficient
Ln(Salary_2016)	0.832 (0.559)
Married	0.162 (0.285)
Widowed	0.098 (0.589)
Divorced	0.101 (0.505)
Number of children under 18	0.043 (0.133)
Middle rank	-0.483 (0.301)
High rank	-0.299 (0.469)
Important of saving	0.103 (0.193)
Time_consistency	-0.485 (0.422)
Constant	-8.830* (5.261)
Log likelihood	-309.854
N	510

Note: Standard errors are in parentheses. *, **, and *** are $p<0.1$, $p<0.05$, and $p<0.01$, respectively. Married, Widowed, and Divorced are coded as dummy variables. Single is used as reference. Important 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 variable is coded equal 1 if respondents select the same choice in both questions and 0 otherwise.

Table 4. Change of saving rate between December 2016 and November 2018

Variable	Model1	Model2	Model3
Battalion2	-0.075***	-0.059**	-0.061***
	(0.013)	(0.023)	(0.012)
Battalion3	0.683***	1.055***	0.681***
	(0.019)	(0.023)	(0.018)
Ln(Salary_2018)		0.143***	0.136***
		(0.031)	(0.017)
Deduction rate_15%	0.319***		0.320***
	(0.024)		(0.023)
Deduction rate_20%	0.782***		0.780***
	(0.023)		(0.022)
Constant	-0.283***	-1.688***	-1.616***
	(0.009)	(0.307)	(0.165)
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.

Table 5. Projected average saving rate of subjects

Deduction from pay raise (%)	Projected saving rates in year (%)			
	5	10	15	20
	Treatment group			
10	6.03	6.81	7.44	7.95
15	7.01	8.59	9.86	10.87
20	8.00	10.37	12.28	13.80
	Control group (1st Battalion)			
0	2.84	2.28	1.83	1.47
	Control group (2nd Battalion)			
0	3.33	2.67	2.14	1.72

Table 6. Projected saving rates

Deduction from pay raise (%)	Projected saving rates in year (%)				
	0	5	10	15	20
10	0	2.90	4.70	6.07	7.12
15	0	4.35	7.04	9.11	10.68
20	0	5.79	9.39	12.14	14.25
25	0	7.25	11.74	15.18	17.81

Table 7. Projected additional total savings

Deduction from pay raise (%)	Projected increases in total savings in year (Billion Baht)				
	0	5	10	15	20
10	0	56.14	150.37	265.21	387.27
15	0	84.21	255.55	397.82	580.90
20	0	112.28	300.74	530.43	774.53
25	0	140.34	375.92	663.03	968.16

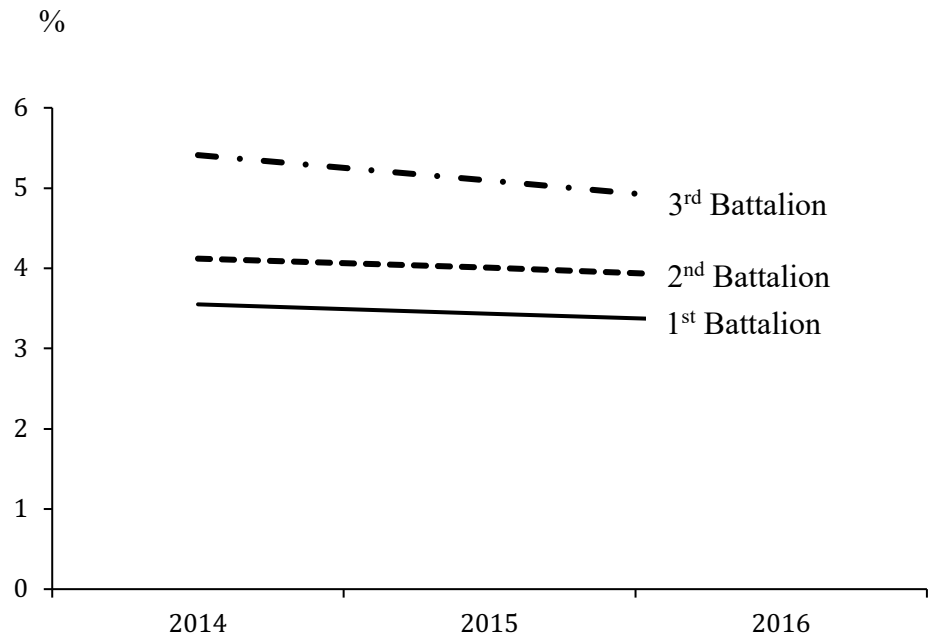

Figure 1. Average saving rate by battalions