

The Factors Influencing Saving in a Matched Savings Program: The Case of the Australian Saver Plus Program

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Abstract

This paper explores the saving behaviour of the group of low-income households that have participated in the Australian Saver Plus matched savings program. The paper finds that a dynamic panel model represents a good technique for modelling the savings account balances of such participants. We find that, even after controlling for the unobservable individual response to the program incentive, the saving goal and education/financial literacy variables play a positive role in encouraging saving behaviour. More importantly however, we also find that programs such as Saver Plus are able to modify the saving behaviour of individuals to the point where their prior behaviour and their inherent attitude towards saving no longer play a significant role.

JEL Codes: D140, C230

Keywords: household savings, matched savings, panel data

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Abstract

This paper explores the saving behaviour of the group of low-income households that have participated in the Australian Saver Plus matched savings program. The paper finds that a dynamic panel model represents a good technique for modelling the savings account balances of such participants. We find that, even after controlling for the unobservable individual response to the program incentive, the saving goal and education/financial literacy variables play a positive role in encouraging saving behaviour. More importantly however, we also find that programs such as Saver Plus are able to modify the saving behaviour of individuals to the point where their prior behaviour and their inherent attitude towards saving no longer play a significant role.

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1. Introduction

Matched savings programs are becoming increasingly popular as means of assisting those on low incomes to learn how to save and increasing their levels of general financial capabilities. Developed from principles of asset building (see Sherraden, 1990) the focus of matched savings programs is on savings and increasing assets rather than on income generation. There are a number of institutional variables that encourage asset accumulation and impact on saving, including, access to purposefully developed saving opportunities, financial education, appropriate incentives and mechanisms geared towards facilitating saving (see Sherraden, 2001). While matched savings programs may differ in structure, eligibility criteria, spending criteria, duration and sponsorship, the core component is the incentive i.e. the matching of individual's savings efforts. In the range of programs available internationally, matched rates vary from \$0.50:1 to \$7:1, although most programs seem to have a \$1:1 matched ratio. Programs should ideally also offer a financial education component. Most programs provide the opportunity for education, either as a compulsory requirement of participation while others offer the service on a voluntary participation basis.

Matched savings programs were initiated in the USA in the early 1990s and have since grown rapidly in number throughout the USA, Canada, UK, Singapore, Africa and China and now in Australia. The USA programs are called Individual Development Accounts (IDAs) and are funded indirectly by the government through grants being given to community or philanthropic organisations to implement a program that addresses specific needs of a community. The UK government funds the Saving Gateway program as it too moves towards embracing asset-building policies. Unlike the USA and the UK, Saver Plus, the Australian program is funded privately from the ANZ Banking Corporation and is implemented through non-government organisations. However, in 2005 the Victorian State Government has committed significant resources to supporting the post-pilot Saver Plus program.

Globally, matched savings programs have been deemed successful in assisting low-income individuals and families to realise the importance of saving and to reach a

savings target. Evaluations that have been conducted to measure the effectiveness of matched savings programs have all shown positive results. The American Dream Demonstration, the most comprehensive study, included research on 14 programs in the USA that ran from 1997 – 2001 (with the research being conducted over seven years – 1997 – 2003) and involved 2,364 participants (see Schreiner, Clancy and Sherraden, 2002). The UK research on Saving Gateway was conducted on an 18-month pilot with 1,478 participants in 2002-2003 (see Emmerson and Wakefield, 2003 and Kempson, McKay and Collard, 2005). Both these large-scale evaluations point to the success of matched savings programs in helping people to save.

While it has been established that matched savings programs encourage people to save and reach a savings target across a range of countries (see Schreiner, Clancy and Sherraden, 2002; Kempson, McKay and Collard, 2005; Russell, Brooks, Nair and Fredline, 2005, 2006) there remains a lack of knowledge about the factors that influence saving behaviour of the low-income households that typically participate in such programs. This paper contributes by analysing household saving behaviour in an under-researched group, *during* the course of their participation in a structured program involving both financial education and incentives. Due to the presence of a non-random program selection mechanism and absence of a control group, we do not however attempt to draw any conclusions regarding the general population of low income households. Our focus is solely on answering the question of what determines/influences the saving behaviour of individuals in institutionalised incentive based environments.

The plan of this paper is as follows. Section two details the operation of the Saver Plus program in Australia. Section three outlines the data to be used in the analysis and the modelling framework to be adopted. Section four presents the results of our empirical analysis. Finally, section five contains some concluding remarks.

2. Saver Plus: Australia's first matched savings program

Saver Plus is Australia's first matched savings program aimed at assisting families on low incomes to improve their financial knowledge, build a long-term savings habit, and save for their children's education. The program has been developed through a

partnership between one of Australia's major financial groups the ANZ Banking Corporation and a prominent community organisation, The Brotherhood of St Laurence. The program is implemented across four sites across Victoria, New South Wales and Queensland through subsequent partnerships with other community organisations such as Berry Street Victoria, located in Shepparton, a rural town in Victoria; The Benevolent Society, an outer region of the New South Wales state capital city, Sydney; The Smith Family in Brisbane, capital city of Queensland and in Frankston a suburb of Melbourne through the Brotherhood of St Laurence. The first savings period of the pilot was from July 2003 to December 2004. The work presented in this paper is using the data from the first phase of the pilot that included three sites – Frankston, Campbelltown and Shepparton.

Eligible participants were low-income earners according to criteria used by the Australian government welfare provider, Centrelink, have some paid work, a capacity to save, and a child attending secondary school. Eligible participants were typically approached by their community/welfare organisation. The participants were directed to save for an educational product for their child at secondary school. The period of saving varied from 9 months to 18 months.

The Saver Plus program consists of three components: matched savings, financial education and coaching. The savings are matched at a ratio of \$2:1 (capped at a maximum matched amount of \$2000). Every participant has the opportunity to receive \$2000 to 'match' his or her \$1000 saved. It should be noted that each participant can save more than \$1000 over the course of the program but matching is capped at the \$1000 balance. It should also be noted that the participant has access to their savings throughout the entire program. However, there are some measures in the program design that deters excessive withdrawals and any potential to undermine the program terms and conditions. In order to receive the maximum benefit from the matched savings, participants need to demonstrate that they have saved regularly. The first savings period accounts matured in December 2004 and matching took place between December 2004 and February 2005.

Participants of Saver Plus were supported and encouraged throughout the program by a Relationship Manager. There was a Relationship Manager for each location and

they were responsible for the recruitment of participants, administration and maintenance of participant files, the delivery of the financial education and disbursement of the matched funds.

The third element of the program is financial education. The Saver Plus Financial Literacy Program was developed to support participants throughout the program and to encourage a saving habit for the future. The program includes five modules of approximately 2 hours each. Classes were held in small group settings, were interactive and participant centred. Module topics included the benefits of saving and strategies to develop a saving habit; how to identify barriers to saving; how to budget; how to establish effective goals, as well as providing useful and relevant information about services offered by financial institutions and how best to utilise them. Furthermore, upon joining the program, the participants were encouraged to set both a savings target and identify a product to save for. The participants were able to change their goals during the program depending upon their progress.

A range of data was collected for the purpose of evaluating the first savings period of Saver Plus. The primary aim of the evaluation was to assess the degree to which the program participants were able to achieve their savings target. The quantitative data collection consisted of the participants' bank account data, as monitored by the ANZ bank, as well as of several questionnaires. In the first questionnaire, which was completed at the time of joining, participants were asked about their demographics, their prior saving behaviour and the savings goal. The second questionnaire, designed to capture baseline data on participants' current levels of financial knowledge and money management skills, was completed prior to undertaking the education program. A final questionnaire was distributed upon completing the program to assess levels of success in achieving the savings goals, knowledge acquired during the program and future plans for savings goals.

A preliminary statistical analysis of this data using contingency tables and analysis of variance is reported in Russell and Fredline (2004) and Russell, Brooks, Nair and Fredline (2005). This analysis demonstrates the high levels of savings goal attainment by participants. Russell, Brooks, Nair and Fredline (2006) conduct a follow-up analysis of the initial impacts of the Saver Plus program via a descriptive comparison

of household saving patterns to those reported in Beal (2000a, 2000b) and Harris, Loundes and Webster (2002).

3. Modelling account balances

3.1 Model specification

In this section we describe how we study the saving behaviour of participant households using a formal econometric model. We begin by postulating that, in accordance with their individual characteristics and/or circumstances, for each Saver Plus participant there exists an optimal amount that they could/should have accumulated in savings at each point in time. That is to say that we specify the following relationship:

$$OS_{it} = X_{it}'\beta + \alpha_i + u_{it} \quad (1)$$

According to this specification, the optimal *level* of savings of a participant i at time t , OS_{it} , is driven by a set of explanatory variables, contained in X_{it} , as well as by the unobservable individual-specific characteristics, α_i . The random shocks, representing the unforeseen events, enter the model through the idiosyncratic error term, u_{it} .

Clearly, a problem with this specification arises from the fact that OS_{it} is unobservable. Although we do have information regarding the savings goal of every participant, these goals do not accurately represent their optimal level of savings. Whilst we know the amount that each participant stated that they wanted to save by the end of the program, we do not know the amount that would have been optimal for them to save each month. Thus, even if the savings goal was representative of the optimal end-of-program level, which is unlikely to be the case, we cannot tell how it translates into month-by-month level of savings.

Secondly and more importantly, the respondents' goals were strongly influenced by the maximum amount that ANZ was willing to match, with an initial 78.5% of participants setting their goal at \$1000. According to Schreiner and Sherraden (2005), in their study of Individual Development Accounts in the USA, this may be taken to

imply that participants interpret the match caps as goals prescribed to them by other ‘wiser minds’ and, as a result, they might ‘mentally’ turn them into their own saving targets. Conversely, the participants may merely be trying to maximise the matched amount that they would be receiving at the end of the program (Beverly and Sherraden, 2005). This would explain why not a single goal exceeded the capped amount. Thus, the savings targets may not necessarily be equal to the amount that would have been optimal for them to save, given their characteristics and/or circumstances.

From a time preference perspective, the Saver Plus presents the participants with a choice between consumption now and consumption later. Thus, with the ‘reward mechanism’ in place, the participants are induced to postpone their consumption with a view that their \$1000 worth of savings will yield another \$2000 that they can consume later¹. Since 88.2% of participants stated that the matched savings was their main motivation for joining the program, the savings goal of any Saver Plus participant is more likely to be a proxy for the incentive provided by the program than a representation of their optimal level of savings at the completion of the program. Thus the savings goal enters our model as an explanatory variable.

Given that OS_{it} is unknown to us; we use the partial adjustment hypothesis, as given by Nerlove (1958), and propose the following relationship:

$$AB_{it} - AB_{it-1} = \gamma(OS_{it} - AB_{it-1}) \quad (2)$$

In other words, we postulate that the actual change in savings of an individual i at time t , as measured by the change in that individual’s Saver Plus account balance (AB), is proportional to the optimal change. The coefficient of adjustment, γ , measures the rate of adjustment to the optimal level of savings and is such that $0 < \gamma \leq 1$ (Nerlove, 1958). Substitution of (1) into (2) leads to the simple dynamic panel model given by (3):

$$AB_{it} = \delta AB_{it-1} + X_{it}'\theta + \varepsilon_{it} \quad (3)$$

¹ We wish to thank Heath Spong for his insightful comments and suggestions regarding this matter.

where $\delta = (1 - \gamma)$, $\theta = \gamma\beta$ and ε_{it} is the composite error term such that $\varepsilon_{it} = \gamma\alpha_i + \mu_{it}$. Thus, our model involves modelling the Saver Plus account balance at time t as a function of its lag and a set of variables contained in X_{it} . Under the assumption that the actual level of savings will eventually converge, or adjust, to the optimal level, (3) can be viewed as representing the short-run model for the savings level. Equation (1) then represents the long-run version of the model. In the next section we discuss this empirical model in detail and turn our attention to the components of X_{it} .

3.2 Choice of variables

Our dependent variable was created from the monthly banking information that we have for each of the participants. That is we construct the end-of-month Saver Plus account balance for each individual using the available information regarding monthly deposits and withdrawals. This variable is a time-varying, panel-type variable. The majority of our other variables are time-invariant and come from the pre-program survey. A drawback of this is that we do not know whether or how any of the characteristics changed during the program. However, the savings period under consideration here was not long enough for any major changes to occur and therefore, on average we can expect that these variables remained roughly constant.

At the beginning of the program the participants were asked to specify how much they were aiming to save during the program. We include this savings goal as an explanatory variable for two reasons. Firstly, the savings goal is expected to play an important role in how much is saved at each point in time. Secondly, meeting one's goal and receiving the matched amount was an integral part of the Saver Plus program. This also leads us to believe that the savings target also plays a role of a proxy for the incentive provided by the Saver Plus program. This viewpoint was explored by Schreiner and Sherraden (2005) who suggest that, since these goals are heavily influenced by the match cap, increasing the match cap should in turn discourage the participants to withdraw by increasing the opportunity cost of dropout. In other words, the saving behaviour of an individual aiming to save \$1000 may not

only be influenced by the target amount itself, but also by the fact that he/she would be receiving an extra \$2000 on top of the saved target amount.

Consistent with the ‘traditional’ saving behaviour studies (see Browning and Lusardi, 1996), we also include a number of demographic variables such as age, gender, education as well as those relating to the participant’s household characteristics. In terms of accounting for the household composition, we include controls for the number of dependent children, age of the youngest child and an indicator of whether the participant is a sole parent. Presence of children, particularly while they are young has been found to have a significant negative effect on one’s saving behaviour (see Pashardes, 1991; Wang, 1994; Browning and Lusardi, 1996; Harris, Loundes and Webster, 2002; McKay and Kempson, 2003), especially in single parent households (Avery and Kennickell, 1991; Wang, 1994).

Additionally, we also include several income-related controls. These consist of each individual’s monthly income, as given in the pre-saving period survey, as well as of two indicators recording whether the participant’s income increased or decreased during the program. Given that, due to the program entry criteria, the participants of the Saver Plus program are fairly homogenous in terms of their pre-program income, we do not expect this variable to have a very significant impact on their saving behaviour. However, the two indicators, capturing the changes in income, may on the other hand pick up the income-related heterogeneity that might have appeared during the program.

The empirical specification also includes variables relating to each individual’s saving behaviour prior to their participation in the program. These variables consist of two indicators capturing whether the participant saved regularly or sometimes prior to the program. The purpose of this is not only to control for those participants, who were already in the habit of saving, but also to try and examine whether prior behaviour has an impact on how an individual behaves in such institutionalised incentive-based programs.

Finally, following the more recent surge in literature emphasising the importance of financial education (Fox, Batholomae, and Lee, 2005; Braunstein, and Welch, 2002;

Bernheim, Douglas, Garrett and Maki, 2001), the empirical specification also includes several measures of financial literacy. Firstly, we include a measure of one's basic financial knowledge or in other words a variable capturing whether the participant is involved in his/her household money management. We postulate that those individuals who are responsible for money management either solely or jointly with their partner, gain greater exposure to financial institutions and instruments, and thus tend to be more financially sophisticated than those not involved in money management. Given they are responsible for the household money and in control of daily allocation of the household budget; these individuals are then also more likely to commit to the program and thus save.

The other measures of financial literacy were constructed from the pre-training survey where each participant was asked to rate their knowledge of fees and charges of several payment methods and financial products. These ratings were then turned into four factors of financial literacy via factor analysis. The results are shown in Table 1.

TABLE ONE about here

The results have a clear interpretation. The first factor relates to the knowledge regarding the every-day banking fees and charges. The second factor captures the knowledge about the recent and more 'convenient' banking facilities. The third factor relates to the knowledge about investment and credit and the fourth seems to be card related. To represent these factors we include in our model the factor scores associated with the four measures of financial literacy namely, the 'Day to day banking', 'Convenience banking', 'Investment and credit' and 'Card' literacy.

While the variables discussed in this section have been found to have a significant effect on one's saving in the 'usual' circumstances, it will be interesting to see which, if any, would significantly affect someone's saving behaviour in an institutionalised saving environment such as the Saver Plus program.

4. Results

4.1 Descriptive analysis

The descriptive statistics associated with the dependent and explanatory variables that we include in our model are presented in Table 2.

TABLE TWO about here

Consistent with the findings in Vonderlack and Schreiner (2002) and Schreiner and Sherraden (2005) and characteristic of most micro-finance programs, nearly all of the participants were female (92%), with an average age of about 41 years. Approximately 63% of participants were sole parents. As can be seen, the number of dependent children in households ranged from 1 to 6, with 50% of participants having two children or more. The age of the youngest child varied considerably from less than half a year to about 17, with the average age being about 10.

Collectively, the participants held a range of education levels with the average number of years of schooling being around 11. Most commonly, however, the participants were high school graduates with 58% having completed a TAFE or a University course. The average income was about \$2978 per month and income remained constant throughout the program for about 59% of the participants. However for 20% and 21% of participants respectively, income either increased or decreased during the saving period. Furthermore, 97% of the participants stated that they were responsible for the money management in their household either solely or jointly with their partner. As can be seen, prior to the program 39% of participants stated that they saved regularly and 36% stated that they saved sometimes.

During the program, the overall account balances ranged from -\$11.06 to \$6611.32, with the average being \$538.38. These overall minimum and maximum account balances are actually also the minimum and the maximum of the end of the savings period balances (i.e. December 2004 balances). At this point it is important to note that the December 2004 balances do not necessarily represent the actual, final amounts saved. For instance, around 26% of participants reached their stated goal

before the end of the savings period and withdrew some or all of their money during December 2004. Thus, in these cases, the final Saver Plus account balance does not represent the actual amount saved during the program. Additionally, given that individuals were on the program for different lengths of time, the number of observations that we have for our dependent variable varies across individuals. As a result, our panel dataset is unbalanced.

The initial goals ranged from \$174 to \$1000 with the most frequent target amount being \$1000. Since the participants were permitted to change their savings goal, by the end of the program the average goal increased slightly from around \$925 to \$947. However, \$1000 still remained the most frequently chosen savings target and by the conclusion of the program, the percentage of individuals aiming to save that much rose to 83%.

4.2 Estimation results

Estimation of dynamic panel models is always somewhat problematic due to the presence of the lagged dependent variable on the right hand side². In our case, the majority of our explanatory variables are also time-invariant. This means that the appropriate estimator cannot involve first differencing of the estimating equation as that would eliminate the effects of those time-invariant characteristics. Thus the obvious choice is to use the Blundell-Bond estimator (Blundell and Bond, 1998)³.

In addition to the problem of the lagged dependent variable, we conjecture that there might be other potential sources of endogeneity in our model. Katona (1951, 1975), for example, argued that saving is a function of two factors: ability to save and willingness to save. It seems reasonable to suspect that the unobservable individual effect in our model contains both of these latent factors. Given the structure of our

² In the levels, the lagged dependent variable is correlated with the composite error term through the unobservable and time-invariant individual effect.

³ Blundell-Bond estimator uses a “stacked model” which contains both the equation in first differences

and in levels and has the following form:
$$\begin{pmatrix} \Delta AB_{it} \\ AB_{it} \end{pmatrix} = \delta \begin{pmatrix} \Delta AB_{it-1} \\ AB_{it} \end{pmatrix} + \dots + \begin{pmatrix} \Delta \varepsilon_{it} \\ \varepsilon_{it} \end{pmatrix}$$

Predetermined variables are instrumented using their own lags in levels in the differenced equation and own contemporaneous first differences in the levels equations (Blundell and Bond, 1998).

model, many, if not all, of the explanatory variables could potentially be correlated with the individual effect and thus are endogenous. While the two most obvious candidates are the savings goal and the saving behaviour prior to the program, other variables may also be problematic. For example, an additional child is likely to have a negative impact on a family's ability to save while, on the other hand, it may increase the parents' desire to save more (i.e. for education etc). As a result, a family with three dependent children may be less able, but more willing, to save than a family with two children. The end result regarding which family saves more is ambiguous illustrating that, if the correlation between the explanatory variables and the unobservable ability and desire to save is not accounted for appropriately, our estimates will be biased and unreliable.

Furthermore, there is also the issue of each individual's unobservable response to the program incentive in form of the matched savings. It is reasonable to expect that the existence of the matched savings component will influence an individual's saving behaviour, as well as be correlated with their savings target. It is also reasonable to assume that this response to the incentive will vary across individuals, but not necessarily over time, and thus be subsumed in the individual effect. While this will effectively allow us to control for the existence of the matched savings and the impact that it has on the saving behaviour of the participants, it also means that we are faced with another potential source of endogeneity.

The results of our modelling are reported in Table 3.

TABLE THREE about here

Experimentation with different instrument matrix structures revealed that it was the savings goal that was the only source of the endogeneity bias. Initially it was thought that the goal was only correlated with the individual effect, however experimentation indicated that it was still endogenous in the differenced equation as well. A plausible explanation is that the savings goal is correlated with both, individual effects and the random shocks from the previous period, but not with the contemporaneous

disturbances⁴. Once the goal was treated as a predetermined variable and instrumented appropriately, the Hansen test of over-identifying restrictions indicated that our instruments as a group are valid. Given that all other variables, including those relating to the prior saving behaviour, were treated as exogenous and thus served as instruments for themselves, this indicated that the savings goal was the only other source of endogeneity.

At this point, it is also important to note that the Arellano-Bond test for AR(1) in levels rejects the presence of autocorrelation at 5% level of significance but not at 10%. This, in combination with the validity of our instruments, has some interesting implications. Firstly, while the Arellano-Bond test result adds credence to our dynamic panel specification, it also implies that the presence of the individual effect is not very strong. In other words, if there were a strongly significant time-invariant individual effect, we would expect to find highly significant autocorrelation in the composite error term. Secondly, given that we would expect an individual's ability and willingness to save to be correlated with at least some of his/her other characteristics, the validity of our instruments suggests that it is unlikely that the individual effect contains these two latent factors. It seems improbable that variables such as the income-related controls or even those relating to the household composition are uncorrelated with someone's ability and desire to save.

This does not necessarily mean that these unobservable factors are not present in our model, but rather that they do not vary significantly across the Saver Plus participants⁵. This could either imply that individuals become equally willing and/or able to save once they join the program, or that the program itself 'attracts' individuals with a particular level of ability and desire to save. In this regard, it is worth noting that Engen, Gale and Scholz (1996) argued that eligibility/participation in 'saving incentive plans' is endogenous, since participants 'have systematically stronger tastes for saving' than non-participants. While we are not making any

⁴ In other words, random shocks have a lagged effect on someone's savings goal.

⁵ Recalling that the individual effect essentially serves as an intercept shift for each individual i , any unobservable factor that does not vary sufficiently across individuals would then be subsumed into the common intercept.

statements about the non-participants, our findings do suggest that the Saver Plus participants share a common ‘taste for saving’.

Lastly, and most importantly, we know that whatever it is that the individual effect contains, it is correlated only with the savings goal. Based on our earlier speculation regarding the goal variable as a proxy for the incentive provided by the Saver Plus program, this provides evidence that the individual effect does indeed contain the individual unobservable response to the program incentive. This, in turn suggests that while the idea of receiving matched funds is a driver behind the participants’ level of saving, its role is not as significant as might have been thought. Furthermore, if the goal variable was in fact a proxy for the incentive, then by instrumenting it we have essentially removed the effect of the incentive component. As such, this variable then solely represents the importance of ‘goal-setting’.

The significance of the savings goal variable was to some extent expected, although its interpretation is now much clearer. We can see that even after controlling for the program incentive, this variable still has a positive and highly significant effect on the savings level. The z statistic of 2.51 suggests that while the statistical significance of the savings goal is strong, it is not nearly high enough to warrant further suspicion regarding the exogeneity of this variable. As stated before, this points towards the importance of ‘goal-setting’ as part of the saving process. In other words, it implies that one of the essential components of saving involves setting a target and knowing how much to save and perhaps even what to save for. Our result adds to the credibility of the program itself, as it confirms that this aspect is an important part of the overall structure.

The evidence that the participants’ prior saving behaviour has no significant impact on their saving once they are in the program seems to imply that these individuals tend to behave differently in such programs. This is perhaps the most interesting finding of our study as it suggests that programs such as Saver Plus are able to modify the saving behaviour of individuals to the point where their prior behaviour and their inherent attitude towards saving no longer play a significant role. Our findings imply that there is some aspect of the Saver Plus program, other than the matched savings component, which drives the individuals to behave differently during the course of

participation. Is it the idea of being formally committed to a savings program or the knowledge that their behaviour is being monitored, or perhaps both? How much of it is due to the structure of the program itself? Although these are all interesting questions that cannot be answered conclusively without further study, it is important to note that our finding is contrary to the belief that the success of programs such as the Saver Plus is solely due to the existence of a reward mechanism.

On the other hand, while it is encouraging to find that the act of participation in the program is able to modify participant saving behaviour while they are in the program, this does not answer the important public policy question as to whether this modification in behaviour is permanent and continues to operate after the conclusion of the program. Given that the purpose of such programs is to encourage the development of a saving habit amongst the low-income households, this is clearly a matter that is worthy of further longitudinal research on Saver Plus participants.

Consistent with the evidence from the 'usual' savings literature (Avery and Kennickell, 1991; Wang, 1994), our results show that single parents have reduced account balances and saving levels. This signals that this particular group of low-income earners should perhaps receive extra attention and support during their participation in the program. Interestingly however, the number of dependent children and the age of the youngest child are insignificant which is contrary to the evidence from the 'traditional' savings literature. It seems that by virtue of participating in the Saver Plus program, the participants' behaviour is not affected by how many children there are in the household or by presence of young children. At this point it is important to recall that having a child who is attending secondary school was one of the program eligibility criteria, meaning that all individuals in our sample had at least one (dependent) child. Consequently, our result suggests that while the presence of children per se, may play an important part in influencing the savings behaviour of the participants, the number of children and the age of the youngest child do not seem to play a significant role.

Furthermore, while given the preliminary analysis the females are by far more likely to participate in the Saver Plus program, they do not appear to save more than the male participants. This is not altogether contrary to the microfinance literature, which

suggests that women have a greater motivation to save and as a result, they tend to save more than males (Vonderlack and Schreiner, 2002; Rutherford, 2000). Our study, where we have essentially controlled for the observable and unobservable characteristics of the individuals, supports this and indicates that the greater saving among women is attributable to other characteristics and not to gender itself. In this regard, it is even more interesting to recall that we have also found that there is no significant discrepancy in the desire and/or ability to save between any of the Saver Plus participants. In other words, while it may be the case that women are more likely to participate and less likely to drop out from such programs (Schreiner and Sherraden, 2005), our finding implies that in an institutionalised saving environment women may not necessarily be characterised by ‘the greater motivation to save’ and may not excel at saving itself.

We stated earlier that we do not expect the participants’ pre-program income to have a significant effect on their savings level due to the reduced heterogeneity resulting from the eligibility criteria. Thus, it is unsurprising that we find the impact of income to be insignificant. Interestingly however, we also find that the saving level is not affected by whether the participant’s income increased or decreased during the program. This suggests that, in terms of institutionalised saving, the saving levels of low-income participants are not very responsive to changes in income.

Unsurprisingly, the results also show a positive effect of education and financial literacy on account balances. This holds true for different dimensions of formal education and financial literacy. Formal educational attainment can be measured through the completion of post-secondary school education, either through TAFE (vocational education) or university study, and such completion is found to impact positively. Alternatively financial literacy might be measured through financial product usage, and/or responsibility for daily household money management. These variables are also found to impact positively, demonstrating the benefits of experiential learning in this context. Indeed, a one unit increase across all three dimensions of financial literacy yields an equivalent increase in savings to the completion of post-secondary school education. This finding has a practical implication as it suggests that programs to enhance financial literacy may be effective ways to improve savings behaviour.

5. Conclusion

This paper has explored the saving behaviour of the group of low-income households that have participated in the Australian Saver Plus program. The paper has found that a dynamic panel model represents a good technique for modelling the savings account balances of such participants. Apart from the dynamic role played by the lagged account balance we also find that the savings goal and education/financial literacy variables play a positive role in encouraging savings. Our findings are important for the design of programs such as Saver Plus in encouraging the development of a saving habit and behaviour amongst low-income households. The key design features of such programs typically include goal setting, and a structured and experiential financial education program and we find that these factors play a significant role. The other key design feature of such matched savings programs is the incentive component in the match rate. Unfortunately our sample does not include any variability in the match rate, and as such we are unable to comment on the role that it may play.

We find that ‘goal-setting’ and education, financial and otherwise, play a significant role in influencing the saving behaviour of the participants. This furthermore serves to substantiate the appropriateness of the program structure, which includes setting a savings target, and financial education as two of its key components. However, perhaps the most important finding of our study is that even after controlling for the presence of the incentive, we find that the individuals behave differently during the course of participation. Unfortunately, we are unable to determine how, if at all, the act of participation modifies their savings behaviour outside the program. This should not undermine the importance of such programs, although as stated earlier, it does point towards the need for further longitudinal research. On the other hand, our result also means that the question of why we are seeing such results remains largely unanswered. We do however posit that this change in behaviour may be due to some other aspect of the program or even due to the act of participation itself.

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Table 1: Factor Analysis – Rotated Component Matrix

	Component			
	1	2	3	4
Bank accounts knowledge level re: fees and charges	.809	.146	.254	.219
Debit Cards knowledge level re: fees and charges	.496	.093	.080	.639
Credit Cards knowledge level re: fees and charges	.323	.140	.349	.634
Store Cards knowledge level re: fees and charges	.027	.237	.228	.809
Your own bank's ATM knowledge level re: fees and charges	.825	.152	.258	.150
EFTPOS knowledge level re: fees and charges	.770	.327	.144	.120
Bpay knowledge level re: fees and charges	.239	.846	.123	.053
Telephone Banking knowledge level re: fees and charges	.198	.714	.236	.323
Superannuation knowledge level re: fees and charges	.184	.292	.651	.166
Mortgage knowledge level re: fees and charges	.192	.070	.770	.196
Loans knowledge level re: fees and charges	.199	.200	.778	.160
Internet Banking knowledge level re: fees and charges	.118	.773	.180	.135

Table 2: Descriptive Statistics for Saver Plus data

Variable	Min	Max	Mean	Mode	Median	Std. Dev.
Account Balance: Overall	-11.06	6611.32	538.38		482.72	416.46
Account Balance: End	-11.06	6611.32	881.41		1009.36	648.25
Goal - Initial	174	1000	924.96	1000	1000	177.19
Goal -End	240	1000	947.24	1000	1000	152.28
Age	27	74	40.89	41	41	6.16
Female (Y/N)	0	1	0.92	1	1	0.26
Number of Dep. Children	1	6	2.55	2	2	1.13
Age of Youngest Child	0.233	17	9.68	10	10	3.59
Single Parent (Y/N)	0	1	0.629	1	1	0.48
Yrs of School	1	12	10.64	12	11	1.51
TAFE/Uni course (Y/N)	0	1	0.58	1	1	0.49
Responsible for H/hold Money Management (Y/N)	0	1	0.97	1	1	0.18
Monthly Income (\$)	866.7	5393.2	2977.8		2972.7	659.7
Income Increased During Program (Y/N)	0	1	0.20	0	0	0.41
Income Decreased During Program (Y/N)	0	1	0.21	0	0	0.41
Saved Regularly (Y/N)	0	1	0.39	0	0	0.49
Saved Sometimes (Y/N)	0	1	0.36	0	0	0.48
Day to Day Banking	-2.381	2.104	0		0	1
Convenience Banking	-1.909	2.652	0		0	1
Investment and Credit	-2.626	2.719	0		0	1
Cards (Debit, Credit and Store cards)	-2.826	2.290	0		0	1

Table 3: Estimation Results

Variable	General	Restricted
Account Balance Lagged	0.8685 (19.3)	0.8754 (20.53)
Goal	0.3372 (2.28)	0.3573 (2.51)
Age	0.8104 (0.71)	
Female (Y/N)	8.3913 (0.37)	
Number of Dep. Children	-6.6730 (-1.04)	
Age of Youngest Child	-1.2634 (-0.59)	
Single Parent (Y/N)	-14.9000 (-1.12)	-16.1979 (-1.47)
Yrs of School	1.9356 (0.47)	
Completed TAFE/Uni course	25.6989 (2.38)	22.9973 (2.18)
Responsible for H/hold Money Management (Y/N)	56.3838 (2.14)	69.0519 (3.06)
Monthly Income	0.006271 (0.64)	
Income Increased During Program (Y/N) ¹	-1.1356 (-0.08)	
Income Decreased During Program (Y/N)	2.1744 (0.17)	
Savings Behaviour Prior to SaverPlus		
Saved Regularly (Y/N)	8.6145 (0.61)	
Saved Sometimes (Y/N)	16.0445 (1.06)	
Financial Literacy		
Day to Day Banking	8.4287 (1.65)	7.2286 (1.48)
Convenience Banking	7.1186 (1.22)	7.8116 (1.38)
Investment and Credit	-0.3623 (-0.07)	
Cards (Debit, Credit and Store cards)	6.5636 (1.21)	7.45612 (1.38)
Constant	-325.2283 (-1.95)	-293.6129 (-1.94)
Number of Instruments	163	154
Number of Observations	1240	1304
Number of Individuals	193	207
Number of Observations per Individual		
Minimum	1	1
Average	6.42	6.3
Maximum	16	16
Wald Test	417.27	459.21
Hansen Test of Overidentifying Restrictions	152.87	155.61
Arellano-Bond Test for AR(1) in levels	1.75	1.93