

**How to Save More:**  
**Individual Financial Structures as Tools for Self-Control**

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## **How to Save More: Individual Financial Structures as Tools for Self-Control**

### **Abstract**

Past decades have shown that a large proportion of individuals show inadequacies in their retirement planning if provided with a higher degree of freedom in their savings allocation. Issues of a 'savings gap' and 'planning for old age' are repeatedly discussed in the public (i.e. Cable New Network, 2000; Monthly Review, 2000). Behavioral analysis showed that this failure results from motivational and temporal distortion. Over-discounting the future and arbitrary mental accounting hinders optimal saving decisions.

A new method of visualizing existing saving concepts is introduced, which shows that individuals apply different saving strategies to organize their finances. Features for self-control differ across subjects and distinctive financial structures can be isolated. Based on a financial personality survey it is shown how external as well as internal control can be improved systematically. The main issues so far mainly neglected by financial service institutions include awareness of the overall financial situation, involvement into financial solutions, and flexibility of financial structures. It is proposed that product ergonomics, individual tailoring, and product evolution can support cognitive mechanisms to overcome the lack of behavioral control.

The interaction between individual and environmental factors strengthen the demand for more elaborate savings products and have strong macroeconomic implications. An accordingly revolutionized financial service could enable working-class households to develop their own suitable financial structure and would help them to cope with the savings task.

Keywords:

Self-Control, Saving Strategies, Mental Discounting, Mental Accounts, Asset Allocation

When thinking about the use of specific wealth like a Christmas bonus we often decide to distribute consumption and thus keep something for a later point in time. But once the time approaches and the fund becomes available we tend to spend the whole lot. This can be seen as a momentary failure and a lack in providing means for the future. In this article we investigate the different aspects of saving and how self guiding tools can be used to improve individual commitment.

Saving behavior is a universal activity of ensuring that demands are met in the future. Humans apply different strategies to achieve this goal of uncertainty reduction. Most prominent herein is the delay of gratification, namely the issue of self-control in favor of future consumption. To cope with the lures of the moment Ulysses binds himself to the mast of his ship. More generally, environmental structures can help to achieve self-control.<sup>1</sup>

### **Economic Rationality versus Self-Control and Mental Accounting**

Since Strotz (1955) the standard economic model of wealth distribution over the lifecycle as an overall utility maximization (Friedman, 1957; Modigliani, 1966, 1986) has been challenged repeatedly (i.e. Cordes 1990; Bernheim, Skinner, & Weinheim, 2001; Levin, 1988; Loewenstein, 1987; Loewenstein & Prelec, 1992; Thaler, 1980, 1985; [xxx: add DeBondt; Harvey 1994]). The two main observations contradicting the integration into one category of total discounted wealth are the additional utility of direct or anticipated consumption (self-control) and the segregation into financial categories (mental accounting). Different models to capture these behavioral characteristics have been proposed.

<sup>1</sup> For a detailed discussion of the different aspects of pre-commitment and the relation to freedom of will and autonomy compare Jon Elster (1979) and Alfred R. Mele (1995). In the economic literature the problem of intertemporal inconsistency first appears with Robert H. Strotz (1955) as 'spendthriftiness' followed by a general overview by George Ainslie (1975) labeled 'impulse control'. Theoretically although, the case of over-evaluating the present or of hyperbolically discounting the future can be dated back to the formulation of the St. Petersburg Paradox by Nicholas Bernoulli (1738/1967; Savage, 1954; Lopes, 1981) when interpreting the repetition of the game as different instances over time.

Hersh M. Shefrin and Richard H. Thaler (Shefrin & Thaler, 1988, 1992) propose a Behavioral Life Cycle model which generates these two effects. David Laibson (Angletos, Laibson, Repetto, Tobacman, & Weinberg, 2001; Laibson, 1997; Harris & Laibson, 2001) incorporate hyperbolic discounting functions to capture dynamically inconsistent preferences and asset specific spending. In contrast to the standard lifecycle model it predicts that spending tracks income. Other models were introduced which capture the immediacy effect due to a 'reference point' (Loewenstein, 1988), 'dynamic self control' (Gul & Pesendorfer, 2001, 2004), or 'temporal construals' (Trope & Liberman, 2003).

Inherent in the models is a separation into two distinct intrapersonal mechanisms which goes back to Descartes and entered modern sciences by Freud (1914/1956) who distinguished between primary processes (pleasure principle) and secondary processes (reality principle). Later this was described (i.e. Schelling, 1984; Thaler & Shefrin, 1981) as a conflict between multiple selves. All the models in common is the assumption of a conflict between different selves or the now and the future, reflecting a struggle between 'a myopic doer' versus 'a farsighted planner'. Implicitly this follow a deficit orientation which can be seen as individual self-regulation failure (for an overview see Baumeister, 2002; Mischel, 1966 [xxx: check last]). We postulate a different conceptualization of self-control which stresses its potential of integrating the construct of the self via action (compare Rachlin, 1995; Kivetz & Simonson, 2002; [xxx: and others in Heil & Mele?]). Self-control (SC) as an activity therefore can serve to foster long term saving (utilitarian goals) as well as impulsive spending (hedonistic goals). This opens a broader meaning for self-control namely as a mechanisms of integrating the different behavioral drives.

## **Strategies for Self-Control**

Various patterns of SC have been described in the literature of financial behavior. In line with Thomas C. Schelling (1984[xxx: check]) and George Ainslie (1975) these can be categorized into three different types.

First there is the physical or mental restriction of the decision space. Direct acts of precommitment or personal rules like budgeting describe this category. One sort of self restriction is the a priori elimination of behavioral alternatives (i.e. virginity principle). A weaker restriction is the reduction in liquidity. This describes active limitations of possible future behaviors (Carol C. Bertaut & Michael Haliassos, 2002; Gross & Souleles, 2002 [xxx: others can replace the last?]) or mental structuring of event categories (Bernartzi & Thaler, 2001; Heath & Soll, 1996; Moon, Keasey, & Duxbury, 1999).

A second way of controlling future behavior is the manipulation of the environmental structure. Here the likelihood of the demanded activity is increased by adding situational components which support this activity or vice versa removing deviation evoking stimuli. Various changes concerning the perception of the events' cost and benefit have been discussed. These concern the elaboration of events (Gourville, 1998), the grouping of events (Soman & Gourville, 2001), and temporal factors influencing the event evaluation (Gourville & Soman, 1998; Prelec & Loewenstein, 1998; Soman, 2001; [xxx: Thornton? (Greg do you have this reference?). Thornton for example describes the structuring of events as an 'orbit model' where the distance to specific events is increased to facilitate forgetting.]

The third and most reliable solution is to directly change the contingency structure. This can be done by side bets which include behavior contingent penalties or rewards. When altering the effect of an event, the specification of exceptions from the rule become important. The structure must be as restrictive as possible while being flexible enough to capture the respective behavior. Ainslie stresses that the exceptions have to be either rare uncontrollable events or controllable events with a high effort level (Ainslie, 1975, p.481).

Softer SC mechanism here are self manipulations which change the interpretation or the psychological meaning of an event. An individual standard can evaluate the behavior itself ([xxx: reference or regret in saving behavior evaluation?]) or the inclination to apply effort can serve as a SC tool to create costs to bolster against less wanted activities (Soman, 1998; Trope & Fishbach, 2000).

Many behavioral pattern use different mechanisms in combination to guide saving. Often external control goes hand in hand with internal preparedness and are therefore difficult to distinguish from each other. The categorization above illustrates the variety of possible alternatives which can be applied. In this paper we evaluate whether people actually use SC strategies to guide saving behavior.

A lack of saving sufficient amounts for retirement can be seen in the missing of available SC devices. Contrastingly it can simply be a result of limited control reflecting the human imperfection or akrasia (weakness of will). To evaluate these opposing views we provide a closer look at the demands in the domain of future savings and the ways with which people try to achieve them. The level of sophistication and differentiation in SC demand and SC strategy use will serve as an indicator of the willingness for saving.

Goal specification is often left apart in behavioral research and commonly the general aim of win maximization is assumed. We expect the specific goal to be essential for the selection of the SC strategy. To explore the definition and incentives people have for saving, we first analyze the dimensions of saving and the different saving structures people employ. Second, a systematic analysis of individual differences in saving behavior is provided. This can be seen as a bottom-up approach to improve the understanding of the SC problem.

## **1. Saving Concepts**

To evaluate the different approaches to the savings task it is necessary to know how people understand this problem and what their saving goal is. It has been shown that often diverse motives for saving exist (Horioka & Watanabe, 1997; Lindquist, 1981). So we understand saving behavior as a motivational configuration which can serve different goals. We also see the individual definition of the saving task as crucial for the decision processes. This includes the internal construction as well as the external structuring of saving.<sup>2</sup> The construal and mental representation are important for the various SC initiatives. For understanding the mental representation of saving it is useful to know how people structure their finances.

In this part we examine the understanding people have of saving by letting them describe their definition of saving and by visualizing their saving structures in place. This reveals peoples' dimensions for saving and illustrates what different SC mechanisms people use. The research question is twofold, covering saving construals and demands on the one hand and existing saving features and structures on the other.

## 1.1 Method

We used a one to one interview including a drawing board task. The participants were selected on the basis of holding a saving product which allows for several 'saving pots' and provides the possibility for different sorts of automatic transfers. In total 13 adults took part in the experiment: 4 male, 9 female, with an average age of 50 years, and of which 8 were full-time employed (1 part time, 3 retired and 1 unemployed). The interview deriving at the individual understanding of saving took approximately 20 minutes and the drawing board

<sup>2</sup> The assumption of concepts stresses the importance of cognition in behavior with the formation of situation specific scripts ([xxx: check, change, and add]Rotter, 1954; Bandura, 1971; H. Kelly, 19??) and following Fred Dretske (1993) 'mental events' can be understood as structuring causes of behavior. This can also be claimed for the domain of saving behavior and thus preliminary analyses of the individual structure of the saving concept have been proposed (Groenland, Bloem, & Kuylen, 1996).

procedure, to determine the individual saving structures, took approximately 40 minutes. The whole session was video taped. Compensation for the participation was £20 (\$35).

The first part consisted of questions regarding the understanding of saving (i.e. ‘What is saving?’), the motive for saving (i.e. ‘Why are you saving?’), and the aim of saving (i.e. ‘What are you saving for?’) in a semi-structured fashion. The duration was situation dependent and varied according to the verbal fluency of the interviewee, but at least one answer per question had to be given. The interview was transcribed and the answers categorized.

In the second part the participants visualized their existing saving structure on a drawing board. We started with explaining the task by describing different features they can use. Then they were provided with a large drawing board, different pens, and as many cards they need representing different ‘saving pots’. After possible questions were resolved they were left alone to complete the task. When finished, they were confronted with different scenarios to test their saving structure and, if necessary, missing elements were added. The scenarios consisted of general ‘what if’ questions clarifying the understanding and the functioning of the derived saving structures (like: ‘If you urgently need an extra £200 cash and your current account is empty, where do you take it from?’). The final structures were photographed and analyzed according to structure differences and featured details.

## **1.2 Results**

The sophistication of the understanding and structuring of the individual concept for saving strongly varies between participants. This variation demands a more systematic analysis of the differences in saving concepts which is focused in the next part. The individually driven description here provides the saving problem definition and isolates the first mechanisms used for SC.



### *Saving Dimensions*

All participants show a quite clear understanding of what saving behavior means to them and they come up with a clear definition capturing everything from security aspects (i.e. ‘Want to make sure that I do not run out of money.’) over purpose savings (i.e. ‘Save that I can afford something special in the future.’) to saving for growth (i.e. ‘Saving to generate wealth.’). This demonstrates that some sort of common understanding exists of what behaviors *saving* covers, as at least two of these were mentioned by most individuals (purpose = 100%; security = 58%; growth = 50%). But the definition of saving behavior and the motives for saving go together in the individual understanding of saving. The individual saving construals seems to be driven by motives rather than actual observations which underlines the prospective character of saving.

When asked for the aims of saving, subjects come up with an average of 3.0 purposes. These describe specific purposes like saving for child education, a new car, retirement, etc. or general purposes like ‘providing a buffer’ or ‘increase choices’. They can be specific in timing and prominence or rather diffuse. Further support for the variation in saving aims can be found when regarding all customers (350K) who hold the saving product where the different accounts (‘saving pots’) can receive individual names. The actual naming of the accounts can be seen as the labeling of this particular part of saving. Figure 1 shows the ten most frequent saving labels.

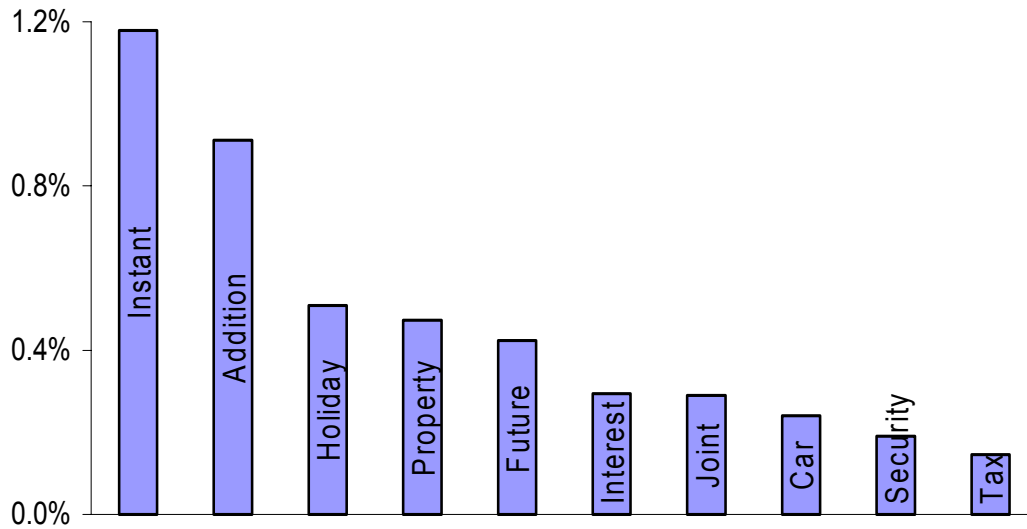


Figure 1: Saving naming frequency for the different accounts where the saving product allows the savings to be divided into a maximum of twelve parts. The percentages for different saving categories in a total of 1 MM account labels is shown. Only the 5.2% informative names which describe specific or general purposes are included in the graph.

Although the simultaneity of different saving categories is not illustrated these show the variety in existing saving aims.<sup>3</sup> The saving categories are representations of the general saving motives with a main interest in smoothing/security and specific purpose savings.

The formulation of several motives and the saving descriptions supports the diversity of the saving construal. Nevertheless it provides no information about how these goals are achieved.

<sup>3</sup> The average number of accounts per person is 2.8. But the number of accounts might only be an indicator for the number of different saving aims as only one provider is regarded and possible saving accounts with other providers are not captured. It also does not necessarily represent the number of accounts in use due to a large number of dormitory accounts.

### *Saving Structures*

All participants have some sort of financial structure in place to facilitate saving. But the general understanding of this structure is poor and is only revealed through the task.<sup>4</sup> The derived saving structures are given in Appendix A.

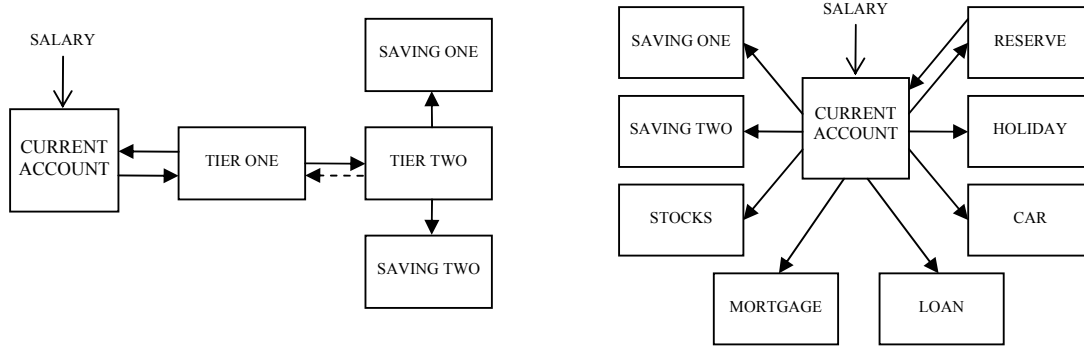


Figure 2: Tiered and radial structures for organizing financial flows and as two different types for separating savings.

Broadly the results divide into two categories ‘tiered structures’ and ‘radial structures’ (Figure 2). The tiered structures (46% of the cases) serve as a sort of buffer with different levels. In the radial structures (54%) the income is distributed between different saving accounts. In all cases a number of accounts are linked in specific ways by tools which control or guide the transfers. The corresponding SC mechanisms and other applied SC features are listed in Figure 3.

<sup>4</sup> As a positive side effect most participants were thankful that the experiment actually helped them to better understand their financial situation. You might try it for you self to see how complicated the picture can get.

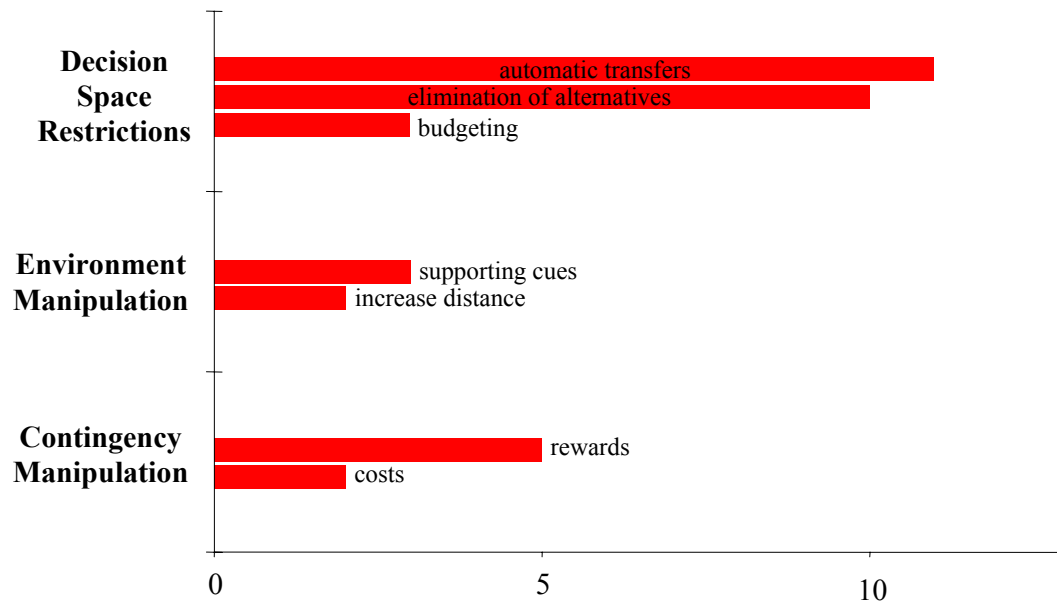


Figure 3: Number of participants out of all 13 applying each of the SC tools in their saving structure.

*Elimination of alternatives* covers limited access as well as liquidity restriction. Under *budgeting* falls only the explicit separation into several budgets.

A large proportion use automatic transfers to ensure the wanted monetary liquidity and to achieve demanded saving levels. Named features concern *penalties* as well as *bonuses*, *information restriction* as well as *lock away periods*. So methods of restricting the number of decision alternatives, of changing the environmental structure, and of manipulating the contingency structure itself are used. These features serve different levels of self restriction and often the maintenance of direct final control over the system is stressed. Also the explanation process in the guidance of the task might have supported the inclusion of these features. But the structures show typical everyday saving examples like building up a ‘rainy day’ reserve, keeping surplus separate, or imposing direct costs by the act of manually storing money. Although participants show quite sophisticated saving structures it is not clear if these are demand driven or rather a result of the availability of products. The low initial understanding of their own structures supports the assumption that they are a product of the individual historical process of taking up products. The actual market situation with its

homogeneity and limited flexibility of savings products on the other side restricts the complexity of the saving structures in place. The influence of individual demands and environmental conditions are not separated here.

### 1.3 Discussion

The different construals for saving behavior and the elicitation of the individual saving structures illustrates that multiple saving motives exists and that SC tools are used to achieve these goals. The definition of saving is mainly determined by the motives for this behavior and actual activities seem to be less influential. The saving motives named *security*, *growth*, and *purpose* correspond with the three main motives or behavioral forms which can be found in the literature (for example [xxx: check terminology] compare Keynes, 1936). The formulation of several motives, the existence of simultaneous saving aims, and the different accounts in the saving structures clearly support the existence of mental accounts and stresses the influence of mental accounting for SC. Also all other SC strategies found representations in the derived saving structures, although with a differing degree of retained control. The reluctance against relinquishing control appears more prominent. What variables do support the relinquishing of control, in favor of enabling SC, is not clear. The impression is that issues of trust and reliance have to be addressed to enforce SC mechanism.

While the relation between the derived structures and the saving motives is not established, the individual solutions indicate possible overlaps between the two. Where tiered structures are used to promote security issues and radial structures are more likely to serve specific purposes. But to support the assumption of the deliberate usage of SC tools, the relation between demands and saving structures has to be examined more systematically. Although different SC tools are in place their origin and purpose seem not to be assured. Also

the strong inter-individual variation demand for a further examination of the different factors influencing SC and threw SC the level of saving.

## **2. Behavioral Differentiation**

In this part we investigate the different variables influencing the application of SC tools in more detail. Individual characteristics are important on the one hand. The individual financial situation, demographics, and saving motives influence the way of saving. And also the sort of personal saving strategy forms the saving behavior (Romal & Kaplan, 1995; Veldhoven & Groenland, 1993; Wahlund & Gunnarsson, 1996). On the other hand the environmental factors like economic conditions and financial management influence the observable behavior. The availability of SC tools to guide saving and of support in setting up as well as maintaining self guiding structures seem equally important. Which means a clear distinction between personal demands and environmental structures.

We developed a questionnaire to tackle these different dimensions and to evaluate their relations. This allows to measure the demand level and the need for SC tools independent of the actual realization. Equally SC prospects and existing behavioral patterns are evaluated based on larger body of data, linking individual differences to SC demands and types. The questionnaire was designed in several incremental steps of constructing and evaluating suitable items, starting with the questions resulting from the interview above and generating as many as useful additional questions for the dimensions of personal motives, SC tool interests, and individual SC demands. The optimized and final questionnaire we used can be accessed at <http://www.xxx>.

## 2.1 Method

The SC survey was partly distributed in shopping areas and partly an online questionnaire linked to the BBC webpage. In total 173 people took part in the survey of which 89 people answered the questionnaire online.<sup>5</sup> The participation was honored by the inclusion in a prize draw over £400 (\$700). 54% in the sample are female, the average age is 36.4 years, and the average yearly household income is £32,000 (\$60,000).

The SC survey includes 24 items on demographics and the financial situation. 83 items concern the ‘saving personality’ at a five point Likert scale, with 15 items on personal motives, 12 items on SC tool interest, and 56 items on individual SC. Questions for the last two areas were generated in regard to specific and general SC issues. The answers are analyzed according to SC usage, personal differences, and group characteristics.

## 2.2 Results

Participants express high demand for general SC and specific SC tools. Items on overall need for SC are rated with averages above 3 (total average 3.29). The results on the SC tool interest questions also show a number of high specific demands (compare Figure 4).

<sup>5</sup> With the online data we broadened the area of the study and due to the mixture of retrieval methods we expect a higher representativeness of the sample (compare Birnbaum, xxx). Xxx: add sample comparison

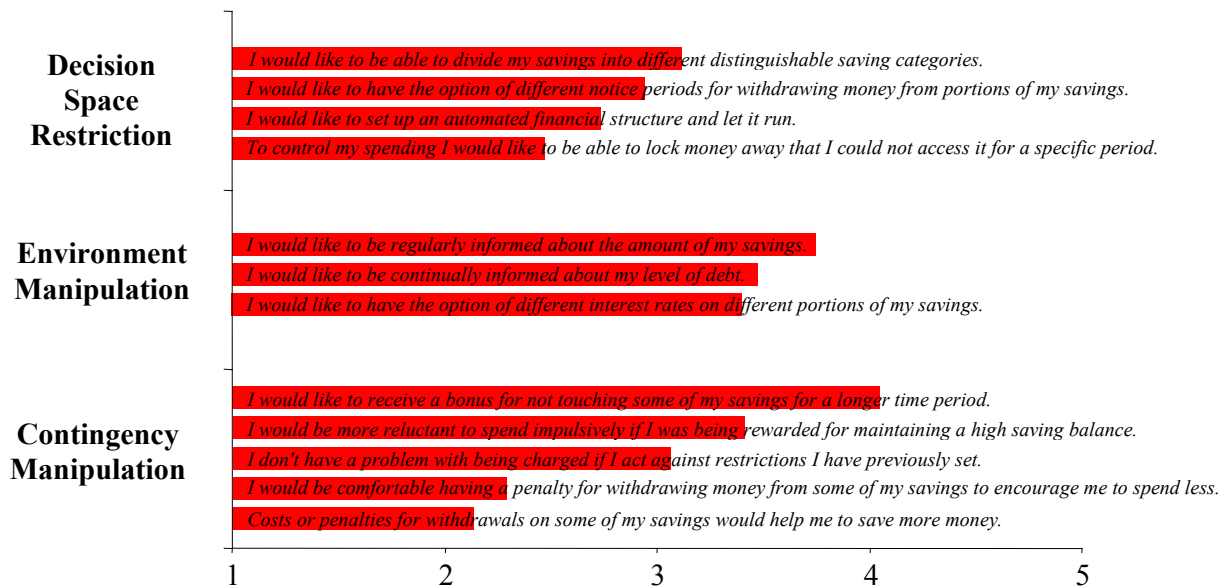


Figure 4: Interest in different SC tools on a scale from 1-5 (avg. 3.07) for the proposed SC dimensions.

Especially the manipulation of contingencies threw bonuses appears in high demand. Also the guidance by environmental cues is asked for, but only few interests in direct restrictions are shown. Answers on the personal saving motive questions are in line with the previous results with examples for the three main saving motives *security* ('I save to ensure my income meets my needs in the future', 3.81), *purpose* ('I save for a number of different goals', 3.64), and *growth* ('I would like to save an increasing amount over time', 3.72) receiving the highest averages.

A Factor Analysis conducted on the 56 SC demand questions results in 10 dimensions for the inter individual variation. The 10 factors account for 51.78% of the observed variance and though represent the best approximations for the captured differences in personal characteristics (Table 1).

FACTOR 1 SELF-CONTROL	
<i>Eigenvalue</i>	4.39
To control my spending I would like to be able to lock money away that I could not access it for a specific period.	0.83
I would like to have delayed access to some savings in order to decrease spending.	0.82
I would like to control my spending by limiting the ways in which I can get hold of my money.	0.82
I would like to structure my finances in such a way as to help me spend less.	0.58
I would be more reluctant to spend impulsively if I was being rewarded for maintaining a high saving balance.	0.57
I want to be sure I always have money at hand.	-0.13



I would like to link investments (ISA's, Bonds, or Stocks, etc.) within my financial structure.	-0.13
I feel uncomfortable if I do not have access to all my savings at any given time.	-0.13
Maintaining hands-on control over my finances helps me to ensure it is sufficiently flexible to cope with unforeseen events.	-0.19
I don't want to rely on one single company for all my finances.	-0.26
<b>FACTOR 2</b> <b>HANDS ON</b>	
<i>Eigenvalue</i>	3.06
I need to be constantly aware of my complete financial situation.	0.66
It would be important that my financial structure is stable over time.	0.64
I would feel uncomfortable unless I understood every single part of my financial structure.	0.60
I want to be sure I always have money at hand.	0.44
Maintaining hands-on control over my finances helps me to ensure it is sufficiently flexible to cope with unforeseen events.	0.42
Being less aware of some of my money helps me to spend less.	-0.21
I feel uncomfortable working out my financial situation on my own.	-0.33
I would like to have automatic transfers to make me less aware of some of my money.	-0.35
I don't enjoy taking care of my money.	-0.50
I want to be less involved with my finances.	-0.58
<b>FACTOR 3</b> <b>ADVICE</b>	
<i>Eigenvalue</i>	2.83
I would like to have independent external advice about my savings.	0.82
I would like to have regular financial advice about my financial structure.	0.81
I would like to have ongoing financial advice which helps me to save more.	0.72
I would like to be continually informed about my flows of money.	0.39
I like to have savings even if I am in debt.	0.34
I always want to keep a specific minimum amount of money in my current account.	-0.05
I do not care how much I save as long I do not go overdrawn.	-0.09
I want to keep the effort related to my finances low.	-0.10
I would like to have automatic transfers to make me less aware of some of my money.	-0.11
Being less aware of some of my money helps me to spend less.	-0.14
<b>FACTOR 4</b> <b>REGULAR SAVINGS</b>	
<i>Eigenvalue</i>	2.65
I would set up standing orders to save regularly.	0.74
I want a minimum percentage of my income to be paid into my savings accounts.	0.74
There is a minimum amount I would want paid monthly into my savings accounts.	0.71
I would like to automate regular payments to ensure they are paid on time.	0.37
I would be more reluctant to spend impulsively if I was being rewarded for maintaining a high saving balance.	0.34
I don't enjoy taking care of my money.	-0.07
A financial structure which was partially automated would be less secure.	-0.11
I save until I reach the amount needed for something I wish to purchase.	-0.13
I feel uncomfortable working out my financial situation on my own.	-0.18
I need to be constantly aware of my complete financial situation.	-0.29
<b>FACTOR 5</b> <b>AUTOMATION</b>	
<i>Eigenvalue</i>	2.54
I would like to automate regular transfers to save time.	0.83
I would like to automate regular transfers to savings accounts to overcome forgetfulness or laziness.	0.65
I would like to set up an automated financial structure and let it run.	0.60
I would like to automate regular payments to ensure they are paid on time.	0.60
I would like to have automatic transfers to make me less aware of some of my money.	0.35
I don't have a problem with being charged if I act against restrictions I have previously set.	-0.06
I restrict myself by only spending a certain amount on different types of purchases	-0.10
I would feel worried that I did not have complete understanding of my financial situation if it involves automated features.	-0.12
I would feel uncomfortable unless I understood every single part of my financial structure.	-0.14
A financial structure which was partially automated would be less secure.	-0.16
<b>FACTOR 6</b> <b>LOW EFFORT</b>	
<i>Eigenvalue</i>	2.08
I want the bank to do the work for me.	0.77
I would like to keep my finances as simple as possible.	0.73
I want to keep the effort related to my finances low.	0.54
I feel uncomfortable if I do not have access to all my savings at any given time.	0.37
I want to be less involved with my finances.	0.29
Maintaining hands-on control over my finances helps me to ensure it is sufficiently flexible to cope with unforeseen events.	-0.08
I would like to have automatic transfers to make me less aware of some of my money.	-0.10
I don't want to rely on one single company for all my finances.	-0.16
I would set up standing orders to save regularly.	-0.16
I would like to reach a specific saving level at a specified time.	-0.20

<b>FACTOR 7</b> <b>INTEGRATION</b>	
<i>Eigenvalue</i>	2.07
I would like to link all my finances into one integrated framework.	0.75
I would like to keep all my finances together.	0.70
I would like to link investments (ISA's, Bonds, or Stocks, etc.) within my financial structure.	0.58
I would like to set up an automated financial structure and let it run.	0.33
I would like to have automatic transfers to make me less aware of some of my money.	0.24
I want to be less involved with my finances.	-0.12
I don't want to rely on one single company for all my finances.	-0.13
It would be important that my financial structure is stable over time.	-0.15
I would like to keep my finances as simple as possible.	-0.17
I prefer my savings and my current account to be separate.	-0.35
<b>FACTOR 8</b> <b>SECURITY WORRIES</b>	
<i>Eigenvalue</i>	2.04
If I give the bank day to day control over my finances I would be worried that they might make errors that I never notice.	0.77
I would feel worried that I did not have complete understanding of my financial situation if it involves automated features.	0.73
A financial structure which was partially automated would be less secure.	0.53
I would like to be continually informed about my flows of money.	0.29
I restrict myself by only spending a certain amount on different types of purchases	0.21
I would like the savings I have available for leisure to be dependent on the overall savings I hold.	-0.10
I want to keep the effort related to my finances low.	-0.10
I would like to automate regular transfers to save time.	-0.10
I know exactly what I am saving for.	-0.16
I would like to set up an automated financial structure and let it run.	-0.18
<b>FACTOR 9</b> <b>PLANNED BUDGET</b>	
<i>Eigenvalue</i>	2.03
I restrict myself by only spending a certain amount on different types of purchases	0.74
I know exactly what I am saving for.	0.62
I feel uncomfortable if I do not have access to all my savings at any given time.	0.44
I need to be constantly aware of my complete financial situation.	0.44
I would like to be continually informed about my flows of money.	0.30
I would like to automate regular transfers to savings accounts to overcome forgetfulness or laziness.	-0.16
I would like to link investments (ISA's, Bonds, or Stocks, etc.) within my financial structure.	-0.17
I don't enjoy taking care of my money.	-0.17
It would be important that my financial structure is stable over time.	-0.22
I would like to automate regular payments to ensure they are paid on time.	-0.22
<b>FACTOR 10</b> <b>DISTRIBUTED SAVINGS</b>	
<i>Eigenvalue</i>	1.98
I would like to be able to distribute my regular savings between different accounts.	0.81
I would like to be able to divide my savings into different distinguishable saving categories.	0.68
I would like to link investments (ISA's, Bonds, or Stocks, etc.) within my financial structure.	0.34
I would like the savings I have available for leisure to be dependent on the overall savings I hold.	0.32
I would like to be able to specify maximum balances for specific savings accounts.	0.29
I would like to keep all my finances together.	-0.11
I would like to structure my finances in such a way as to help me spend less.	-0.13
I would like to have ongoing financial advice which helps me to save more.	-0.17
A financial structure which was partially automated would be less secure.	-0.20
I want to be sure I always have money at hand.	-0.21

Table 1: Factor description of the Varimax Rotated Factor Solution for the 10 dimensions with an initial Eigenvalue above 1.5.

The first two dimensions describe general control issues, followed by more specific descriptors of saving behavior differences. For a better understanding of the factors and their linkage to everyday behavioral patterns we can distinguish between different groups of people.

To form these illustrative samples we grouped the highest and lowest scorers on the first two factors resulting in 4 different groups with corresponding demographics and saving characteristics. Our intuitive understanding of the personality factors is reflected in the group differences. For example the ‘concerned’ group is the youngest with the lowest income with clear need for SC. Many people in the ‘assisted’ group already use Penalties and Bonuses in their Saving Accounts. The ‘controlling’ people as the oldest group with the highest income need the most time for their finances. ‘Unconcerned’ people are likely to simplify and integrate their finances, although keeping a number of saving accounts (Table 2).

	<i>concerned</i>	<i>assisted</i>	<i>controlling</i>	<i>unconcerned</i>	
<b>SELF-CONTROL HANDS ON</b>	high high	high low	low high	low low	<b>Total Avg.</b>
Sex (male)	48%	38%	41%	62%	46%
Average Age	28.4	31.6	44.7	39.2	36.3
Average Number of Children	0.19	0.64	0.91	0.91	0.71
Average Household Income (£'000)	23.1	32.3	34.1	32.3	31.7
Average Number of Savings Accounts	1.71	1.81	3.12	2.86	2.38
Saving with Bonuses	20%	22%	6%	11%	16%
Saving with Penalties	14%	19%	12%	13%	15%
Integrate Current Account into a Financial Structure	69%	82%	77%	94%	80%
Minutes Spent on Finances (monthly averages)	51.4	32.2	77.4	55.0	56.3

Table 2: Eight exemplary SC groups based on the first two personality factors and showing their financial characteristics. The 45% of the people with the highest respective lowest factor scores are grouped together (‘concerned’ = 31 people; ‘assisted’ = 39 people; ‘controlling’ = 34 people; ‘unconcerned’ = 35 people).

The realization of SC strongly depends on demographics, lifecycle, and individual variables. The way and level of SC varies according to financial status, life stage, and personal preferences. They are interconnected and together influence the application of SC tools and though the amount of savings.

The participants' high demands for SC leads to various sorts of SC and result in different SC tools needed. People are likely to impose specific SC strategies but the willingness for self restrictions or for relinquishing control strongly depends on the individual and corresponding environmental relations. Some people (i.e. 'assisted' group) might directly buy into SC tools, for others (i.e. 'controlling' group) it is only possible via a process of trust building.

### **2.3 Discussion**

The questionnaire reveals differences in SC demands and shows relations with the financial situation and product demands. SC as a guiding factor for saving behavior is though supported. But the relation between SC demand and the actual application of SC tools needs further support. The research design here can not proof that people in the end are actually more controlled when provided with their specific SC tools, which is crucial for understanding and bridging the discrepancy between planning and behavior. The existence of a high need for SC is in line with the postulation of a savings gap, which is equally claimed for the individual level by Bernheim (1995) or Farkas & Johnson (1997) and stresses the importance of saving product designs to support SC mechanisms. This lets one assumes that specific features like lock away periods or channel restrictions, but also the general service including individual planning, involvement, support, and flexibility, increases SC and enables saving. (xxx: for a specification of product derivations, financial support services and their micro-/macroeconomic implications see Davies, Otto, & Stott, planned [i.e. product papers on customer differences and innovation; process model specification with recommendations like Bernheim & Rangel or general policy effectiveness like Boskin?])

One distinction introduced here for the better understanding of saving behavior and its relation with SC, is the differentiation between types of 'Financial Personality'. The proposal

of individually different concepts for saving might help to understand the SC mechanism in place and could prove useful for saving increasing policies. People approach the task of saving differently, varying on important dimensions like willingness to relinquishing control, demand for involvement, and level of advice accepted. Only when understanding these individual differences we can fully embrace the concept of SC and its conditional importance. The assumption of a Financial Personality helps to systematically analyze attitudinal differences in relation to variations in saving behavior. Further proof is needed for establishing this claim and also areas like self-awareness (O'Donoghue & Rabin, 2003; xxx) or the propensity to plan (Ameriks, Caplin, & Leahy, 2003) have to be addressed. Also the relation to social theories (xxx: social learning, group formation) and personality research (i.e. xxx) could be important. Existing clinical measures of SC (xxx) and the connection to other behavioral constructs like sensation seeking (Zuckerman, xxx)[xxx: add risk taking (xxx), self-efficacy (Bandura, xxx), self-esteem (Rosenberg)] and locus of control (Rotter, 1966 [xxx: check]) have to be accounted for. But the construction of a general psychometric SC scale might be useful for various fields including personalized financial services. The survey only discovered first relations between individual SC, product characteristics, and saving behavior. A further specification of the SC construct in combination with the evaluation of direct behaviors and its changes over time according to lifecycle changes appears reasonably demandable.

### **3. General Discussion**

The strong intra- and inter-individual variability in saving behavior in relation to motives, strategies, and lifecycle issues has not been acknowledged accordingly. Multiple saving motives with changes over the lifespan, differences in goal orientation and capacities, individual foci and changing needs all demand for an individually centered and situation specific

expansion of the understanding of saving behavior. But also the universal and more stable patterns might be better explained evolutionary and by mental or social functioning.

### *Saving Psychology*

The common deficit orientation in saving behavior research is challenged by alternative explanations. Besides similarities with a strategy of conflict between multiple selves (i.e. Schelling, 1980), we provide a positive perspective on individual saving tools as means for SC. This assumption itself is grounded in the variations of the observed behaviors but also supported by cognitive models and neurological underpinnings.

Neural processing and the interaction of multiple cognitive systems represents an integration which can be seen as an internal communication and a problem solving process rather than a conflict. The different mental functions are complementary in intertemporal choice (i.e. Manuck, Flory, Muldoon, & Ferrell, 2003) which is in line with consistent plans over time (Becker & Murphy, 1988; Loewenstein & Prelec, 1993). For achieving commitment over time, the actual planning of future behavior is of importance. The influence of goal formation on behavior has been repeatedly documented (i.e. Bandura & Schunk, 1981; Gollwitzer, 1999). Also the rare reversions or redistribution in saving behavior (Skinner, 1992 [xxx: check literature]; Venti & Wise, 1987) support this claim. What part here cognitive strategies play and to what degree it is influenced by mental causation (i.e. habit, automation, sequential learning, chunking, self binding flows, feedback loops, instrumental learning) or social mechanisms (i.e. social control, social pressure, conformity, group commitment[xxx: shorten lists]) is open to future investigations.

### *Saving Policy*

Underlying cognitive mechanisms are mainly neglected in models of saving behavior. We argue that the different areas of SC have direct implications for public policy issues, with concrete recommendations besides changing contingencies. For the incentive structure David

I. Laibson (1996 working paper) and Richard H. Thaler (1994; Thaler & Bernartzi, 2004) demonstrate that variations in delay, penalties, and rewards guide the saving behavior in saving schemes. The flexibility in individual saving, depending on the perceived decision space, is generally stressed in regard to pension plans (Choi, Laibson, Madrian, Metrick, 2001; Madrian & Shea, 2001; Papke, 2003; Poterba, Venti, & Wise, 1996). Following that the total amount allocated to retirement savings can easily be manipulated by the introduced pension plans, then there might just not be the SC demand matching products available to secure saving levels. A common practice to directly restrict the decision space by using credit cards and credit limits to manipulate liquidity (Haliassos & Reiter, 2003; Soman & Cheema, 2002) illustrates that SC mechanisms are in place. Together with a supporting information structure and based on the persistence of decisions, we assume that the provision for retirement can be improved substantially and though the lack of individual consistency diminished. The current saving gap in the Anglo-Saxon regions might then only be a mismatch between available products and individual needs.

The individual differences in SC strongly demand tailored solutions and stress design components which support the understanding, the involvement, the evolution, and the flexibility of financial products. Naturally the individual commitment to save also depends on the inclination for buying and related avoidance strategies (i.e. Benhabib & Bisin, 2004; Bernheim & Rangel, 2004; Carrillo & Mariotti, 2000; Hoch & Loewenstein, 1991; Loewenstein, 1996; O'Guinn & Faber, 1989; Wertenbroch, 1998). We focused on the side of empowerment to increase choice. To enforce saving behaviors here tools for all three SC strategy areas have to be provided on an individual level: decision space restrictions, environmental cues, and contingency structures.

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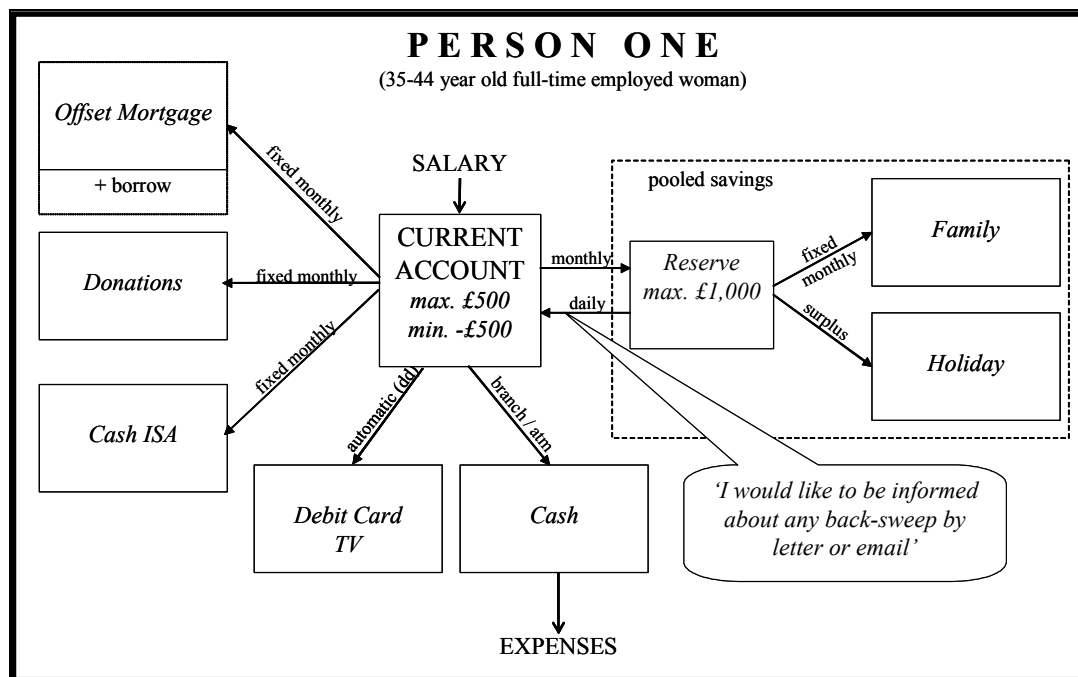
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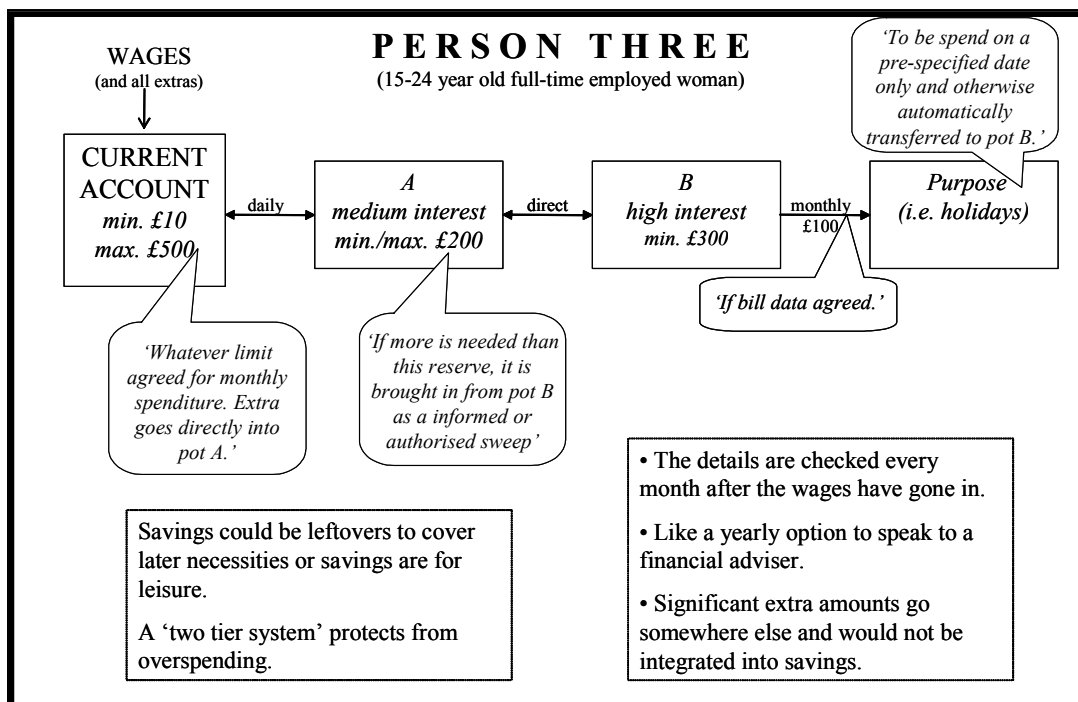
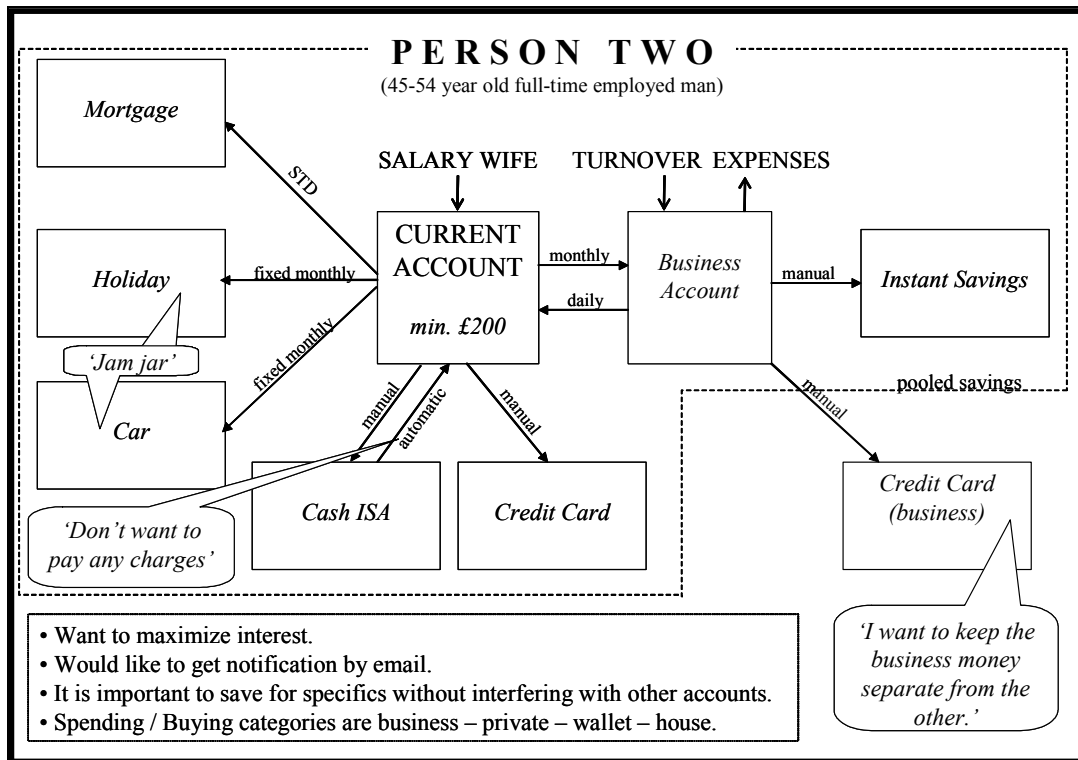
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## APPENDIX

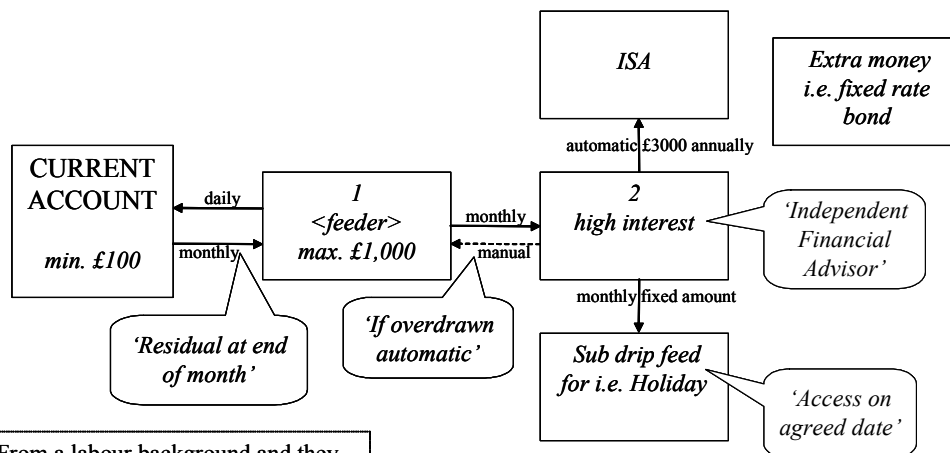
### A: Derived Saving Structures





## PERSON FOUR

(55-64 year old full-time employed woman)

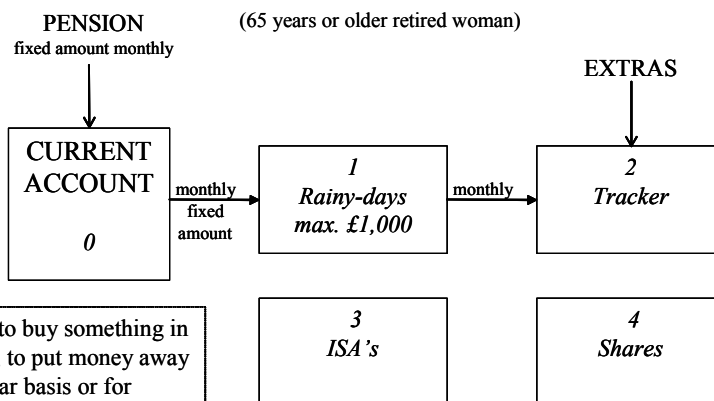


From a labour background and they tended to put money away on a regular basis into a building society: 'You did save!' or 'the rainy-day syndrome'. Besides this habit save for specific items.

- Like to fall directly on the money if needed.
- The system should be secured 'by the computer'. But you are still responsible for your money although you sometimes need penalties to get hold of it.

## PERSON FIVE

(65 years or older retired woman)

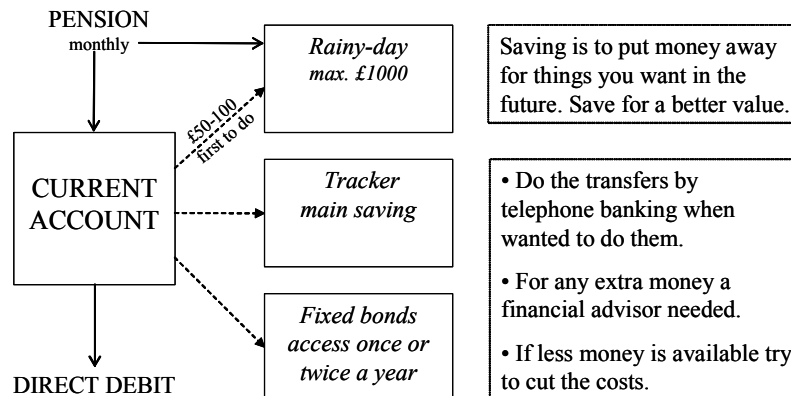


Saving is to buy something in particular, to put money away on a regular basis or for something unexpected.

- All other transfers are made manually. I.e. if I need money for the holidays I put that specific amount from the 'Tracker Pot' into the Current Account.
- If overdrawn then a little more careful the next months.
- Would like to have financial advise on income as a whole to move money accordingly. Don't want to loose money.
- Don't want too many accounts.

## PERSON SIX

(65 years or older retired man)



## PERSON SEVEN

(65 years or older retired woman)

