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*The role and importance of self-control in intertemporal consumer decisions*

Statements of the PhD thesis

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## ***1.1 INTRODUCTION***

In this PhD. thesis the phenomenon and importance of *consumer self-control* are studied from economic and psychological aspects. This research topic covers a huge and varied spectrum of human decisions, since self-control may play an important role in consumers' intertemporal decisions.

In everyday life a lot of situations can be considered as intertemporal decisions. A good example is when a housewife considers whether to spend her saved household expenses immediately at the end of the month or save it for worse time. Another good example is when a consumer considers whether it is worth buying a product if a credit is needed for it. It is also an intertemporal decision when a student calculates the "opportunity cost" of a party before an important exam. Other examples when intertemporal decisions are needed are smoking cessation or slimming diet.

In economic and psychological studies these intertemporal situations are often described as a choice between a "short-term beneficial/ long-term disadvantageous" alternative and a "short-term disadvantageous/long-term beneficial" alternative. Is it worth buying a PDP TV for a consumer who buys this on commercial credit and will be hard to pay it back? Is it worth resisting the temptation of smoking? Is it worth starting a slimming diet for a healthier body? There are questions the multidisciplinary analysis of which meets serious theoretical and methodological problems.

The above phenomenon has called the attention of economists and psychologists as well. In this PhD. thesis, beyond the presentation and study of self-control processes, we also analyse the chance to develop cooperation between these two disciplines having different theoretical backgrounds and methodologies.

In neoclassical economics, the consumer is knowledgeable, independent, and makes all decisions in a frame where there's no importance of time (Rabin, 2002). According to Herbert Simon "The rational man of economics is a maximizer, who will settle for nothing less than the best" (cite McFadden 1999).

In neoclassical economics the basic idea assumes an economic actor who behaves rationally. This makes the prediction of economic interactions (to some extent) possible, considering market circumstances alone.

Individual and personal differences are not important in microeconomic analysis because of many reasons. First of all, these differences are not important, because an economist thinks an economic actor behaves in a unique way only if his behaviour is opposed to the rational economic decision deducible from the actual economic circumstances. So the

irrational response, according to the values of economics, is harmful or at least carries costs which would be avoidable. However, economists are interested in making a profit.

On the other hand, individual differences are not important also because microeconomics presumes that the occurrence of consequent irrational economic interactions are sporadic. That's why if you analyse a great number of economic interactions on an aggregate level, then models built on economic rationality could provide relatively good estimations, even if individual actions are not rational at all (Friedman 1986).

This approach, though it is successful beyond doubt, is criticised in many ways. The most important lesson of this debate to be presented later in more details, is that economists are more and more confused by irrational economic interactions.

'Economic decisions in the most strict sense are influenced not only by rationality as many economic analysis have proven it. In the last few years many experiments and field studies proved that under given conditions persons depart systematically from rationality in the economic sense' (Hámori 1998. p. 17).

The above citation indicates that the reason behind the puzzlement is quite simple: it is more and more evident, that the irrationality of economic actors from an economic aspect can have a considerable puzzling effect. Though:

'If you know only the fact that someone's behaviour is not rational, then we can not tell anything about his/her actions under certain circumstances. Namely, we can not tell to what extent he/she will divert from rational behaviour. There are many ways of behaving irrationally' (Kertesi, 2004. p. 4).

This standpoint is more and more hard to keep to. There is an increasing need<sup>1</sup> that economy should overcome these frames and handle the phenomenon of irrational economic interactions in a new way.

'Instead of Robinson who is cool headed, always makes evident decisions, does not consider others when enforcing his interests and maximises his benefit, in economic theory there appears the 'Homo Politicus' or the 'Homo sociologicus' who lives in the society and influenced by traditions, restrictions, regulations and feelings' (Hámori, 1998. p. 15).

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<sup>1</sup> Furthermore, there is a pressure from the society and other disciplines. C.f. Hunyady and Székely (2003)

The citation also indicates that the pure commitment of economy to the explaining force of market (and social) circumstances changes the most hard. For a long time economists found it difficult to consider the inner, psychological processes of actors as causing factors (Friedman, 1986).

In this thesis we introduce and analyse a research topic which is connected expressly or implicitly to the above questions. The neoclassical model of *Homo sapiens*, which is often called as 'Homo economicus', uses the simplification that consumers have unbounded will-power so they are able to realize their economic transactions using strict rational preferences without any hesitation (Jolls, 1998).

In our point of view, studying self-control means not only that we analyse dynamic (or 'intertemporal') decisions instead of static decisions in time. This research topic is also useful to study what happens when a consumer, using *strict rational preferences (!)*, is not consequent in realising his or her economic transactions. Modification of the axiom of unbounded will-power, in our point of view, might be useful to alter microeconomic models to a more sophisticated and more psychologically realistic direction.

The hypothesis of 'bounded willpower' is able to involve lots of new phenomena into the field of economic analysis. This assumption could also be justified by the fact that most of the consumers spend a significant part of their income to consume such products which are harmful to their well-being in the long-run. This consumption is also significant on national level. The magnitude of the turnover in the case of unhealthy foods and drinks, tobacco and other psychoactive drugs shows the economic importance of this topic<sup>2</sup>. The consumption of such products couldn't be influenced just by the lack of information. Most smokers fully realise that their passion is harmful to their health. Most of the obese people also know that they should avoid the excessive intake of certain kinds of foods or the lack of physical activity is harmful. But somehow, they are unable to behave according to their personal preferences which are expressed clearly.

Although this research field is changing nowadays: representatives of many contradictory models are debating continuously with one another. According to the mainstream, neoclassical economics, for example, it is unnecessary to use bounded willpower to explain the above phenomena. Becker and Murphy's model of rational addiction is an

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<sup>2</sup> According to data by the Central Statistical office (2008) Hungarian households have spent 3,2% of their income on alcohol and tobacco in 2006 (compare: clothes, shoes: 4,8%; health care: 3,9%; education: 0,9%; leisure time and culture: 8,3%) (Statisztikai Tükör 2008).

excellent example of what extent could be possible to explain this phenomenon by the creative use of neoclassical methodology. From our point of view which will be detailed later, this approach is logical and coherent, there is some empirical evidence that underline it, but this model could explain only a narrow range of the phenomenon.

More problems arise from the fact that there isn't a coherent model of the mechanisms which are involved in consumer self-control itself in economics yet. There are scientists who explain this phenomenon by interactions between sets of preferences which have different time perspectives (e. g. Thaler and Shefrin, 1981). Others think that this phenomenon could be depicted by a temptation function which is influenced by situative variables (e. g. Gul and Pesendorfer, 2004). And there is an other model which handles consumer self-control as a consequence of hyperbolic intertemporal discounting, but this topic is also controversial in economics (e. g. Monterosso and Ainslie, 2006).

Finally, an important discussion point could be the extent these models are suitable for analysing the influence of bounded willpower on everyday consumer decisions. In these cases, the rational 'abstinence' has an advantage which is based on deep philosophical and religious roots. But, in spite of these, in our point of view, the preference of the "short-term disadvantageous/long-term beneficial" alternative is not fully evident.

First of all, we are socialized to the joy and pleasure of consumption by a strong social pressure, which weakens the effect of the 'abstinence' principle (Hankiss, 2005). But it could also happen, that we rationalise the joyful activity – that is, we try to find some meaning in / use of the loved activity, reframing it somehow (Garai, 1998). It is also not surprising if we try to make a "useful" or "meaningful" activity pleasurable for ourselves (Garai, 1998). Entertainment is considered to be an activity with easily evaporable results that are joyful in the short-run, but useless in the long run. Work, though, is considered to be an activity that needs efforts – self-control – but at the same time meaningful. This makes things more difficult if you try to catch the mechanism of consumer self-control. That's why it is not an easy task to identify such activities that are evident to require considerable amount of self control from everyone.

We think, when discussing the above problems it could be very useful to analyse the psychological concept of self-control and try to integrate it into the economic models. One of

the significant psychological models of self-control (Baumeister, 2002)<sup>3</sup> considers the process of self-control a skill to stop 'automatic' activities, so practically it could disregard its problematical value content. The economic importance of this model has already been supported by some neuroeconomic research also (e. g. Benhabib and Bisin. 2005).

One of the aims of our thesis is to summarize the theoretical and empirical results in the above topic, also from the field of economics and psychology, with no strive at completeness<sup>4</sup>. The other aim of this thesis is to outline the results of our own surveys which integrated the theoretical and methodological advantages of both disciplines. The outlines of these surveys are presented in the next sub-chapter.

## ***1.2 STRUCTURE OF THE THESIS***

In this thesis the discussion of the above questions is divided into two bigger logical parts. The first big logical part contains the analysis of economic and psychological literature of self-control. While the second big logical part contains the methodological background of our own surveys, including the detailed documentation of their aims and hypotheses and their results.

### *1.2.1 Structure of the logical part dealing with the economic and psychological literature of self-control*

We begin the presentation of theoretical background of our topic with analysing the shortcomings of the rationality concept in neoclassical economics. In this theory, the description of economic actor's behaviour is built on a schematic model of Homo sapiens according to the assumption of unbounded rationality. This assumption is essential for describing the consistency of the set of preferences and the profit-maximizing behaviour. Although this assumption is not useful for every kinds of economic questions, it raises a lot of problems. That's why in chapter 2.1, we try to define the rationality concept of neoclassical economics and analyse its shortcomings. We will focus essentially on that case when the neoclassical analysis of the relationship between rationality and consumer behaviour is not adequate.

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<sup>3</sup> This means, that from our point of view, similar to economics, there isn't a uniform model of self-control in psychology also.

<sup>4</sup> But we'll emphasize the economic aspects of this topic, as you could see from the structure of this thesis.

Before the economic analysis of the phenomenon of consumer self-control it is also necessary to discuss the neoclassical fundamentals of intertemporal consumer decisions. As we mentioned it earlier, you could speak about an intertemporal consumer decision when its outputs are different not only in their utilities but in the moment of their realization also. This special decisional situation is analysed in chapter 2.2. In economic models consumers use discounting rates for 'equalizing' the output utilities related to different realization time. So, according to the neoclassical point of view, consumers' intertemporal decisions could be perfectly solved by using exponential discount functions.

There are however lot of problems with this above model, for example during the analysis of consumers short-sightedness and procrastination. That's why, in this chapter we'll show the phenomenon of consumer discounting on the one hand and we'll analyse the advantages and disadvantages of using the exponential model for the explanation of these phenomena.

We consider discounting an important part of the mechanism of consumer self-control, but these two processes are not the same. That's why we continue this thesis with concepts explaining intertemporal consumer decisions beyond the discounting models.

There is an explicit intertemporal relevance of addictive consumption, however, according to some scientists; it is worth separating this question. Becker and Murphy (1988) have brought the neoclassical economists' mind to bear on a special consumer behaviour, namely on smoking, which wasn't studied earlier. They kept the concept of 'Homo economicus', and their principal aim was to 'save' the rational choice theory and enlarge its strength. In chapter 2.3 we present the essence of their theory and summarize the pros and cons of the validity related to their model. From the aspect of our thesis the theory of rational addiction is very important, because its aim is to explain the phenomena of addictive consumption only with the neoclassical premises, without using the variable of self-control, but beyond the discounting models.

Later, in chapter 2.4, will we turn to the presentation of the economic models of self-control. The important theories of intertemporal consumer decisions which are based on self-control use two mechanisms basically: the short-sightedness and the procrastination. We have to anticipate that we can't talk about a uniform wing. The theory of rational addiction and the theory of self-control are often handled as two rivals, and this situation makes comparison difficult also.



The starting-point is the concept of Thaler and Shefrin (1981) which is a very significant theory because it contains the first description of economic importance of self-control phenomenon and gives an authentic overview of the potential applications. We'll present the kinds of models based on self-control to explain the phenomenon of consumer short-sightedness, as we mentioned in case of chapter 2.2.

Study of the procrastination phenomenon is hallmarked by Akerlof (1991) in economics. According to Akerlof, you delay the accomplishment of your task forward because you don't anticipate that you'll do the same next time also. There is more chance to this when present costs are more outstanding compared to future costs. At the end of the chapter, we summarize the causes and consequences of some salient differences between the economic models of self-control and the concept of Homo economicus.

Beside economic aspects, the introduction of the psychological aspects of consumer self-control is also important in a scientific work related to economical psychology<sup>5</sup>. The questions of self-regulation, self-control and will preoccupy people since the beginning of time. Philosophers and theologians have often analysed topics related to short-sighted decisions and the control of wishes. These antecedents have willy-nilly built in *scientific psychology*. In Chapter 3.1 we will introduce psychological models dealing with self-control, self-regulation and will that could have an importance in terms of developing economic theories. We pay a special attention to the fact, that there are logical relations to certain economic conceptions; so far it might have exercised only a little effect on behavioural sciences. That is why we strive at including this trend also to the empirical part of our study.

### *1.2.2 Empirical study of consumer self-control*

The study of literature dealing with the economic importance of self-control has revealed the importance of taking a look at the wider representations of self-regulation and self-control in economic transactions.

*To study this question we have created a study design in which consumer self-control is a research construct that created the resultant of intrapsychic and situative factors influencing the strength necessary for the rational implementation of consumer intertemporal decisions.*

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<sup>5</sup> This is reasonable with the author's 'psychologist' identity as well.

Do these comprehensive self-control indices have a prognosticative strength, importance during consuming and saving decisions.

This question is addressed by the study presented in chapter 4.2. The aim of this study was to characterise the everyday consuming and financial control of consumers and compare them to the general level of self-control.

To operationalize the above research question, we aimed at:

- characterising the studied population along the consuming and financial control-indicator adopted from the work of Wahlund and Gunnarson (1996)
- comparing results to psychological self-control scales (Tangney, Baumeister and Boone – scale, BIS/BAS scale by Carver and White)

We put forward the following research hypothesis:

- Hypothesis 4.2.1: in case of consuming control even this relatively homogeneous sample will be considerably segmented; high consumer control will characterise only a smaller part of the sample
- Hypothesis 4.2.2: those questioned will show considerable deviations along the financial control as well; only a smaller part of the sample will be characterised by high financial control
- Hypothesis 4.2.3: consuming control and financial control will correlate
- Hypothesis 4.2.4: consuming control and financial control will be in a demonstrable relation to self-control scales (in case of Tagney, Baumeister and Boone (2004), and Carver and White (1994) as well).

Economic theories dealing with consumer decisions – either acknowledge or deny the existence of consumer self-control – build the phenomenon of consumer discount into their approaches somehow.

As this phenomenon is important in terms of self-control also, we considered it important to carry out a research concerning the above phenomenon, the result of which is presented in chapter 4.3.

On the basis of literature presented in chapter 2.2 in detail we assume, that the essence of consumer discounting is: the consumer calculates on the present value of the expedience of goods/services to be consumed in the future.

The present sensed expedience of future consumption is less this way, according to the extent of the delaying period.

In this study our aim was to compare the prognosticative strength of four big models<sup>6</sup>: the exponential discounting approach and three kinds of hyperbolic discounting formula<sup>7</sup>.

As we have explained it in chapter 2.2, the exponential approach is suitable to prepare several microeconomical tasks (e.g. investor decisions), but several economists think it is not suitable for modelling the particular discounting decisions of particular consumers.

For this task the above mentioned psychological models, due to their greater psychological realism, seem to be more suitable, but there are only a relatively few empirical proofs (see chapters 2.2 and 2.4). We intended to analyse this question more thoroughly, with the help of empirical means.

To study the above research question (according to Wahlund and Gunnarson, 1996; Bretteville- Jensen, 1999) we have worked out a hypothetical situation, and made the following hypothesis accordingly:

- Hypothesis 4.3.1: the mean of discount rates obtained from the answers will have a function-like relationship with waiting time;
- Hypothesis 4.3.2: this function-like relationship will be more of a hyperbolic than an exponential kind;
- Hypothesis 4.3.3: from among the discounting models the models of Loewenstein and Prelec will show the best fit to the obtained data.

During intertemporal decisions the consumers are often confronted with the problem of **trade-off between money and time**.

As self-control, from psychological and economic aspects as well, manifests itself mostly in delaying consumption, the study of this phenomenon might be of huge importance. In our next research we asked answerers to create an ordinal preference progression through thinking their everyday activities through.

Afterwards the questioned had to allocate their money and time along a preference progression “filled with” personal content.

In this situation they had to decide on the amount they would allocate from their reduced financial resources on being freed from fulfilling certain activities.

The rational decision would be if the questioned would allocate their money and time according to their preference order.

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<sup>6</sup> A fogyasztók leszámítolásának modellezésére számos koncepció létezik, ezeket részletesen majd a 2.2 fejezetben mutatjuk be.

<sup>7</sup> Loewenstein és Prelec, Rachlin, és Mazur modellje, lásd. 2.2 fejezet

In the typical intertemporal decision situation, from the economic aspect, self-control is important if the consumer is confronted with an immediate *tempting* reward, but no matter of the attraction of the immediate reward he chooses the later reward, that is, his decision is not pro the most tempting alternative. In this case, the most tempting alternative for the consumer is to allocate all his possible recourses to the elimination of his least favoured activity. We suppose (cf. chapter 2.4.), that in each case when this did not happen, there was a need for some control mechanism.

In chapter 4.4 we analyse if this phenomenon could be depicted in the above situations in consumer decisions. The aim was to demonstrate that there are several kinds of rationalities for consumers that need more or less self-control from their part.

Our hypothesis accordingly:

- Hypothesis 4.4.1: the order of activities given by those questioned reflect a preference order, this is underlined by the monotone increasing type judgement of the pleasure and usefulness of activities
- Hypothesis 4.4.2.: a considerable proportion of those questioned will spend their financial resources NOT to the elimination of their least preferred activity.

In the next research we have studied the decisions of those questions in situations carrying more or less financial aspects as well: in the context of health, consumption and economic policy.

In chapter 2.2. we will introduce Chapman's (2003) researches that pointed at considerable differences between the intertemporal discounting of health and money.

By refining this hypothesis further we wanted to study **from the aspect of self-control the decisions of consumers** concerning their health, consumption delay and giving opinions on certain political alternatives.

Furthermore, with the help of collecting qualitative information we strived at identifying the motives behind consumers' preference system. These data are introduced in Chapter 4.5. We aimed at comparing decisions under different decision situations *along time preferences*. Our further aim was to identify those independent variables during the study of groups preferring short-term and long-term outcomes that would be suitable for discriminating the two groups. (This might help later during the refining of self-control scales.)

Our hypothesis was that:

- Hypothesis 4.5.1.: in case of decisions under different contexts people will show identical time-preferences (as we suppose, self-control depends on a certain inner personality trait).
- Hypothesis 4.5.2.: the “play on” inclination (“s”) will positively correlate with decisions arrived at under the consumption context.

**In summary**, we have the following research objectives.

- We have studied the control *perceived* in consuming and financial behaviour and compared it to the self-control of those questioned. We tried to demonstrate through this, that it is worth using psychological variables as well during the analysis of economic problems (consumption and saving) (c.f. Chapter 4.2.).
- We have analysed the empirical prognosticative power of current intertemporal discounting models. We considered it important, as intertemporal discounting mechanisms play an important part in the phenomenon of consumer self-control. (c.f. Chapter 4.3.).
- WE would have liked to demonstrate the existence of consumer self-control (Chapter 4.4.).
- We have collected data referring to those economic decisions of consumers that require self-control. The economic decisions related to health, consumption and saving and the evaluation of economic policy.
- We have also analysed the extent these decisions can be related to certain personality traits or other measured variables (c.f. Chapter 4.5.).

Interdisciplinary works always carry certain risks. In case of economic psychology work there is a real threat that the economist reader will find it too psychology-oriented, the psychologist reader will find it too economy-oriented. The psychologist author though aims definitely at revealing a phenomenon in economy, through starting from an economic problem and applying the methods of behavioural economics and psychology. We are well aware of the fact that this is not yet a real interdisciplinarity, though we strive at one. We ask for the patience and professional attention of the reader for this.

## **2. SUMMARY OF RESEARCH RESULTS**

We arrived at the following results during our research.

## *2.1 Consumption and financial control*

With the help of the “consumption control” background variable developed from the research tool of Wahlund and Gunnarson (1996) we wanted to indicate the *general* extent of control during shopping. In the other background variable called “financial control” we collected the indicator statements referring to the control consumers feel over their saving decisions.

We considered it important to distinguish between the two kinds of consumer decisions as we think these mobilize different information, information processing mechanisms and preference systems.

We set up four hypotheses during the study of consumption and financial control. Our data have proven Hypothesis 4.2.1, that is, our sample could be divided into sharp groups in case of consumption control. Strong consumption control, that is, consumer behaviour with the best fit to neoclassical axioms was shown by a smaller, but still considerable proportion (39,6%) of the sample.

Hypothesis 4.2.2. referred to financial control. Here we have found a more sharp division and we can highlight at the fact, that only 33% of the sample could have been characterised by strong financial control. Though even they can hardly reach the extent expected on the basis of neoclassic axioms.

Hypothesis 4.2.3. was also proven, that is, consumption control and financial control are in significant, moderately negative correlation with each other: so we can state, that for example weak consumption control is likely to go with weak financial control (and vice versa).

In case of Hypothesis 4.2.4. we wanted to know whether consumption control and financial control are in traceable relationship with the self-control scales. Here we have used the scale of Tagney, Baumeister and Boone (2004) on the one hand, that considers self-control as a personality trait. On the other hand we have used the BIS/BAS scale of Carver and White (1994), which, indirectly though, might be suitable for depicting self-control as well, through characterising the approximating and obstructive processes of human behaviour.

We have demonstrated that results obtained on the TBB self-control scale were significantly higher among the groups with higher consumption and financial control. This is an important result as the sample was a highly qualified one. The TBB self-control scale can be divided into five factors (self-discipline, lack of impulsivity, healthy habits, work-ethics and reliability). In the case of group members with higher consumption control we have demonstrated that they have reached significantly higher score on each factor of the TBB scale compared to the other groups. Similar significant differences were obtained in terms of financial control as well, apart from the case of lack of impulsivity factor.

Looking at the relationship between the BIS/BAS scale and consumption control, only the pleasure seeking has shown significant differences.

According to our data, those with a weak consumption control has shown the greatest inclination for pleasure seeking, while those with a strong consumption control have shown the smallest pleasure seeking score. This result corresponds to the expectations of economic models designed to model consumer short-sightedness.

On the basis of financial control significant differences among groups with strong, average and weak self-control could be depicted along sensitivity to punishment, the results are controversial though. Namely we have observed that the group with average control was the least sensitive to punishment, while the ones with low and high control were the most sensitive. We understood this phenomenon as follows: those with weak financial control were sensitive to the lack of short-term reward, while those with strong financial control were sensitive to the lack of long-term reward. However we could not demonstrate a significant correlation between the TBB and the BIS/BAS scale.

This result we find important as they refer to the fact that the personality trait of self-control can not be reduced to the extent of balance between the nervous approximating and obstructive processes.

## *2.2 Intertemporal discounting*

The hyperbolic or exponential nature of intertemporal discounting is of key importance in the behavioural economy models. We test the prognosticative power of the exponential discounting model unique in economy and of three hyperbolic models. On the basis of the discounting rate of the first month, and with the help of the hyperbolic models we gave intertemporal estimating functions, then the so estimated amounts discounted for 3, 6, 9, and 12 months were compared to those amounts provided by the participants during the questionnaire survey.

We have worked with three hypotheses here as well.

Corresponding to Hypothesis 4.3.1. we have found that the mean of discounting rates obtained from the answers showed a function-like relationship with waiting time, basically a monotonous decreasing one.

Hypothesis 4.3.2. was proven too, as according to our data, the discounting model of Loewenstein and Prelec was the most precise in predicting population level means, while the exponential model was the weakest. It might be enough for economists working with aggregate values, though the analysis of predictions referring to individual discounting reveal,

that there were no considerable differences between the correlation values of estimated and obtained amounts counted according to the exponential and the hyperbolic models. The model of Mazur was better in predicting individual answers.

Finally, in terms of discounting rates, not so convincingly though, but we can prove Hypothesis 4.3.3. From among the hyperbolic discounting models the model of Loewenstein and Prelec showed the best fit to the mean of experienced rates. The exponential model however, though it was less suitable for population-level prognosis, showed a surprisingly high correlation during the estimation of individual answers.

### *2.3 Stability of preferences*

Self-control can be important in a typical intertemporal decision situation when the consumer faces an immediate reward meaning a *temptation* for him/her, but no matter of the immediate reward he/she chooses the later reward. This temptation is very often reflected in the instability of consumer preferences. In the present research first we have asked participants for the creation of a hypothetical preference-order. Their task was to name activities they hate, do not like, like and love. We have checked the validity of the obtained preference order with the help of several scales making subjective evaluation possible.

According to Hypothesis 4.4.1. the order of activities given by those questioned reflected a preference order, that is, the judgement of the pleasantness and usefulness of the activities was of monotonous increasing nature.

Furthermore, according to Hypothesis 4.4.2., a considerable proportion of those questioned spent their financial resources *not* to the elimination of their least preferred activities. On the hypothetical day we considered, 31,6% of participants chose the option of spending all their available money on buying off their hated activities. 43,6% of the answerers showed a bigger or smaller self-control through a partial submission to temptation and allocated the amount released so to other activities. 24,8% did not spend money on this activity and did not use the remaining amount to paying off other activities either.

### *2.4 Decisions requiring self-control*

We have studied consumer decisions requiring self-control in three situations.

In the first situation where a decision concerning the consumer's health was required, approximately 80% of answerers were sure or almost sure in choosing the outcome requiring higher self-control.



Without considering the uncertain answerers, approximately 90% felt inclined to make sacrifices for their health that will bring profit on the long run. Answerers preferring the short-term outcome (medication) are older, their BMI is relatively higher and they find their preferred activities relatively pleasant. Indecisives (could not choose between medication and remedial physical education) were characterised by responsiveness to high reward and they found their preferred activities relatively useful. We could grasp differences between indecisives and those preferring the long-term outcome (remedial physical education) in an other way.

Discriminance analysis indicated that indecisives marked a relatively high amount after the 24 months waiting time and in the activity management task they rather optimised their time (that is they were willing to spend more money for the sake of obtaining more free-time). Those preferring remedial physical education were characterised (compared to the indecisives) by higher self-control and self-control score, and a relatively higher age and greater impulsivity. Qualitative analysis has shown that in case of the group (group 3) preferring long-term aspects the “seek for permanent improvement” and “avoidance of medication” as justifications were dominant.

The main reason of indecisives (group 2) was measuring the possibility of lack of time. The reason given for preferring the short-term outcome was the pain threshold.

We presupposed during studying the choice between consumption and saving – similar to most of the behavioural economy researches – that immediate consumption results at smaller self-control, hence the consumer yields to the temptation of immediate consumption while in case of saving the individual gives up the profit of immediate consumption in hope of a greater consumption in the future.

Results show that one third of answers was more or less sure in spending the amount immediately, 14,5% would strive at some optimizing solution between saving and consuming, that is, he/she would spend one part of the amount and save the other part. More than half of the answerers (55,9%) were thinking in terms of saving the whole amount.

According to the qualitative analysis, the main reason of those preferring immediate consumption was a life-situation where they would immediately need that amount (11,6%), on the other hand, the second most frequent motive was, that these did not consider the 500.000 forint given in the task such a considerable amount that is worth investing for the long run.

The indecisives refer to a kind of optimizing strategy in their reasoning; their most frequent reason is to spend one part of the money and save the other (5%). The choice requiring long-term self-control had two main motives: first of all it was reserving (11,3%),

on the other hand they would take it as a financial resource that brings profit when invested (11,3%). Discriminance analysis shows that indecisives find their preferred activities largely useful and pleasant, though sometimes they tend to lose control (excessive medication and alcohol consumption). Those preferring short-term, immediate consumption are relatively older, save money more hard, and live under worse financial circumstances.

Compared to those preferring long-term outcomes hesitants differed in finding their less preferred activities as pleasant as well, and they considered their preferred activities more useful and their loved activities more pleasant and they are relatively older. That is they could have sensed a bigger temptation for consumption. Those preferring long-term outcome though showed more positive attitudes in terms of financial matters, were more sensitive to punishment and marked a higher amount in the intertemporal game in return to their waiting. They obtained a relatively higher score on the TBB scale as well.

Finally, consumer decisions related to self-control were observed in a situation where they had to process an economic policy decision situation and take sides in a question that has considerable consequences for them. 15,2% of answerers preferred the strategy that does not require short-term sacrifices, but is not fruitful on the long run. 66,6% supported the outcome with initial sacrifices but long-term profit, 18,1% were hesitant between the two outputs. The choice of short-term outcome was motivated mostly by the difficulties of everyday life- and work circumstances (“lives now” – 5,3%), and by losing trust in politicians (3,9%).

Indecisives are also highly mistrustful towards politics (4,2%), the most frequent reason however is that they do not find any of the solutions satisfying, so they are looking for some compromise (6,7%). They justify the choice of long-term outcome with strategic thinking, supporting future plans (25,4%), but reference to some values is also frequent (future of their children, meaningfulness and reality of change, etc.). We can observe however that the proportion of giving a qualitative answer was the highest among all three answers (27 answerers). This, we think, is the result of the political overtone of the question and could indicate that people are reserved in revealing their political stand. The Friedman-probe indicates significant differences between the extent of self-control showed in consumption and economic policy decisions.

Our results oppose Hypothesis 4.5.1, as people, depending on the context of their decision, show considerable differences in case of preferring long-term outcomes that are considered rational.

Surprisingly, self-control is the most characteristic in case of health that is preferring the initially more expensive but later more useful alternative. In case of microeconomic level

– consumption and saving decisions – this is also considerable but less steady. This tendency is even more expressed in case of macroeconomic level decisions.

We had to reject Hypothesis 4.4.2. though, as the research tool we have used to study financial risk taking had no explaining power in the studied decision situations.

### **3. CONCLUSION AND STATEMENTS**

The importance of self-control pervades our everyday life. We often come across with situations where we have to go up the stream of “instinctive” or automatic ideas, desires, temptations and the usual outcomes of earlier choices. This phenomenon is so general that the economic modelling of consumers/economic actors can not get around the study of this question.

According to the stout-hearted protectors of neoclassic economy, e.g. Gary Becker, there is no need to change neoclassic axioms, it is enough to widen the time-horizon of consumer decision towards the past and the future to be able to analyse the *suspension* of addictive consumption.

Other authors, e.g. Richard Thaler think, that the solution is not this. The phenomenon of consumer short-sightedness or delay can not completely explained by widening the consumer time horizon, and there is a need for an (at least) two-dimension consumer preference system instead.

The main difference however is in the implied axioms. Becker (in a paradox way, we think) overcomes the neoclassic hypothesis by working with the dynamically changing perception when modelling the addictive consumption of the homo economicus instead of focusing only on its market circumstances.

The standpoint of Thaler is different, he wishes to increase the psychological realism of the consumer treated as a “black box”, with the help of his double preference system model. The present research proved that this topic exceeds the study of addictive consumption. Our aim was to demonstrate: the other economic decisions of consumers are not by all means built on the unrestricted willpower axiom.

The consumer struggles with the shortages of his/her willpower more often than it is presupposed by the neoclassic economy. And uses self-control processes more often for the sake of somehow balancing the disadvantageous consequences resulting from the weakness of his/her willpower. Becker’s model did not include it at all, while Thaler did relatively few (but important) empirical researches on the field.

We did not aim at deciding about the validity of these two competing models. Our comparison is just partly right: they deal with the same research topic but on a different field and with different tools. Keeping the above restrictions in mind, we could summarise our research results in the following statements.

**Statement 1:** The biggest lesson of research into consumption and financial control was the finding, that there are problems with the model of rational choice.

Approximately 60% of answerers characterised their consuming and financial behaviour in a way that could be brought into less concordance with the neoclassic idea of consumer rationality.

The problem here was not with the often studies information processing distortions, but with the smaller or bigger loss of control experienced during consumption and with the low motivation of managing savings.

This refers to the fact, that *according to their self-evaluation*, consumers might have problems in implementing their decisions.

**Statement 2.** In studying intertemporal discounting the most surprising result is the one that no significant differences were found in the prediction precision of exponential and hyperbolic models.

This does not question the higher explaining power of hyperbolic models in theories explaining self-control processes and the empirical importance of their use, but they might need further refining.

**Statement 3:** During studying the stability of preferences we have demonstrated that there is no need for creating two preference lines for modelling the self-control decisions.

Our standpoint is that there is a need for self-control during economic decisions in cases when the consumer has to allocate his/her resources according to the existing preference order. If this realisation does not happen, we talk about a consumer short-sightedness. Difficulties resulting from the inertia of the preference line define the energy-need of self-control processes required for correction.

However rational a decision is from an economic point of view, if there is a need for the *inhibition* of inclinations opposing the actual/useful/trying behaviour, it needs self-control.

**Statement 4:** Our most important consequence we arrived at when studying economic decisions is that self-control does not appear simply in the preference of a timeframe.

Someone with weak self-control might as well prefer long-term alternatives and even strong self-control can not guarantee that the consumer will choose outputs useful on the short run. This consumer behaviour proved to be more complicated. Self-control though plays part in the indecisiveness of the consumer. That is, the consumer with weak self-control might become uncertain more times during acting according to his/her decision.

So, a consumer with weak self-control can also quit smoking (can prefer the long-term alternative), but there is a greater chance, compared to those with strong self-control, that he/she will start smoking again. This is the inner uncertainty of the consumer that is coming from his /her personality and is not the result of uncertain circumstances, e.g. uncertain changes in the price of tobacco.

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