Household Green Finances: Demand in Focus

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Summary

Based on a retail questionnaire survey conducted in the framework of the BME-MNB cooperation we aimed to answer to the following main research questions: 1) how the households' environmental and financial knowledge and attitudes are related to the demand for green financial products, 2) how significant (price) support shall be used to channel Hungarian consumers towards more sustainable financial products. In addition, we aimed to explore the households' green and financial knowledge and attitudes. During the study, aggregate indices and indicators were created to study the main issues, which formed the basis of the analysis. The Hungarian population generally has a positive attitude towards environmental protection. Respondents tend to underestimate their green knowledge and their financial knowledge prudence. Education and financial literacy are also the most important in terms of financial and green knowledge and attitudes. Concerning personal green attitude, it can be said that the pragmatism provided by the financial possibilities is decisive in everyday life. Demand for financial products is most affected by pricing, green and financial knowledge indices, and age (demography). Based on the results, only a significant price subsidy could steer domestic consumers towards more sustainable financial products.

Keywords: retail finance, green finance, financial literacy, financial attitude, self-image

JEL codes: A13, D14, G5, J11, G53, Q56

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As far as green financial products are concerned, regulators and central banks usually focus on institutional players (banks, fund managers, pension funds etc.). They basically expect institutional players to strengthen the market (demand and supply side), and wish to achieve that by influencing the behaviour of these players. The (ultimate) retail demand receives less attention. This research wishes to fill this gap. The research is based on a national representative survey that carried out a complex assessment of the financial and environmental knowledge and attitude of Hungarian population, as well as their demand for green products. This way it was possible to examine the relations among these factors. Such a comprehensive survey is hard to find internationally, too.

At present, the market of green financial products is marginal (MNB, 2021). From the aspect of market building for green financial products, we are looking for answers to the following question: how are households' environmental and financial knowledge and attitude related to the demand for green financial products? Is it possible to strengthen households' demand for green financial products by extending their financial and green knowledge and by influencing their attitude?

Our further research questions also focus on households' demand for green financial products. In the respect of demand for green financial products, we cannot rely purely on consumer preferences. Without a proper subsidy policy (pricing), consumers will be less motivated to play active roles in environment protection (Cui et al., 2020). This is independent of the fact that the majority of consumers agree with environment protection objectives in general. Our hypothesis is that it requires relatively higher (price) subsidies to steer domestic consumers towards more sustainable financial products. We would like to point out that allowances are able to strengthen the demand side, however according to the survey of the MNB, the biggest obstacle on the supply side of green loans is that the interest rate allowance to be provided to customers presents a threat to the profitability of the given product from the perspective of the banks (MNB, 2021).

Considering the fact that the domestic financial intermediary system is basically bank-based – similarly to other CEE countries – (Bethlendi, Mérő, 2020), in the respect of demand, our examination will focus on bank loans and savings products.

In the second chapter of the study, we will review the relevant literature. Following that, we will present the empirical basis of the study and the methodology of its processing. It was a methodological challenge to properly aggregate the large number of variables received, so that the analysis could be carried out. Chapter four includes the results of the statistical analysis of the questionnaire. The study is closed with the conclusions drawn.

REVIEW OF LITERATURE

Institutions responsible for the stability of the financial system recognised the fact that the financial sector could play an important role in mobilising funds for more sustainable and low-carbon investments in order to promote environmental sustainability. In order to strengthen and harmonise that at international level, central banks and supervisory authorities set up the Network of Greening the Financial System (NGFS)[1] initiative in 2017, in which the Magyar Nemzeti Bank (MNB) is also a member. These kinds of activities by central banks are new phenomena, and this also stems from the fact that during the management of the crisis of 2008, the social responsibilities of central banks became more pronounced (Lentner et al., 2015).

Green finance is an approach that wishes to combine the financial and the business world with environmental protection objectives. It wishes to establish a financing system that finances investments with environmental benefits (IFC, 2017). Green financial services affect a number of players: household and business consumers, producers, investors and banks.

Our literature review basically focuses on the questionnaire surveys. In the relevant literature, we were not able to find another comprehensive and questionnaire-based survey that would cover the population's environmental knowledge and attitude, as well its financial knowledge and attitude, and using all these would be able to measure the demand for green finance (loan and savings products). Domestic and international surveys about households' environmental attitude and financial culture have been produced for a long time, and in relatively large numbers. From these, we will highlight the key surveys (e.g. OECD surveys on financial culture), as well as the ones that cover financial products, too, in some way. Questionnaire surveys specifically about green finance were found at OECD only.

Before presenting the questionnaire surveys, we have to mention the related methodological problems, which cause strong distortions in several cases in the interpretation of the surveys (Breitenfellner et al., 2020).

❶ The choices in the questionnaire favour certain answers and present socially accepted statements.

❷ The distortion of the cohort effect: it is impossible to grasp the differences between individual generations without long-term, regular and longitudinal examinations, as that would only generate so-called 'generation myths'. One of the clichés is that the Millenial Generation (people born between 1981 and 1996) are more committed to environmental/social sustainability in the field of finances, too, than older generations. Results may be distorted by the fact that the members of the Millenial Generation presently have relatively small financial assets, which may easily increase the differences between declared preferences and actual conduct.

Since the middle of the 2000's, the OECD has been regularly measuring financial culture in its member states, along the dimensions of knowledge, attitude and conduct. According to its surveys, in the field of knowledge and attitude – measured by us, too – Hungary is around the average. At the same time, in the field of conduct (e.g. insufficient control of everyday finances or neglecting long-term financial savings, no prudence in selecting services etc.) Hungary is one of the lowest performing countries (see the results of the latest survey as an example: OECD, 2020). One of the key experiences obtained from domestic financial culture surveys is that there is a significant difference between real and perceived financial knowledge. *Huzdik et al.* (2014) found about students in higher education that they usually overrated their financial knowledge compared to the actual. The study of *Horváthné Kökény and Széles* (2014) pointed out that households are aware that they have poor financial knowledge, and feel the need to develop their financial literacy. The financial literacy development programmes related to the central bank and market players (e.g. the Money Compass Foundation) already have a history of almost one and a half decades. In addition, the Government has also been involved in this issue since 2017. As a result, increasing attention has been paid to the development of financial literacy (Németh, Varga, Domokos, 2020).

Households usually have a positive attitude to environment protection, the vast majority of them find it important personally, too.

According to the study of the European Commission on environment protection covering all Member States (European Commission (2020), on average more than 90% of the European population finds this topic important (the lowest value is that of Austria, with 86%). In the survey of the Commission, the Hungarian ratio is 95%. The questionnaire behind our study also included a question about it, and based on that 93% of respondents found it important to live in an environmentally conscious way. This ratio of answers is fully in line with the results of the Commission's survey. The Commission's questionnaire covers policy issues, too. Among other things, it inquires about the three most important tools of the management of environment protection problems. A very low percentage of respondents selected the answer that an environment-friendly financial sector might be an efficient tool in managing these kinds of problems. The average of the EU-28 was 5% in this issue (the Hungarian ratio is 6%). European respondents (European Commission, 2020) find the changes in consumption habits (33%), the changes in production and commercial procedures (31%), and the role of education and the provision of information (24%) more efficient tools.

The knowledge of Hungarian society about environment protection and sustainable development is rather poor, based on empirical researches carried out in this respect in Hungary (Gáthy, 2004; Kollarics et al., 2021). Literature says we should not expect a strong relation between environmental attitude and environmental knowledge. It is not enough to inform society about environmental problems to make them environmentally more conscious (Havas, Varga, 2009).

As to the surveys containing questions about the demand for green products, too, an Austrian survey showed that 8% of respondents found it very important, 32 found it rather important, and 55% (mainly elderly people) did not find it important at all to consider green aspects in financial savings products (Breitenfellner et al., 2020). The questionnaire processed by us contains a very similar question: when choosing from savings products, how important is environmental/social utility? Two-thirds of Hungarian respondents find these considerations absolutely important. This is similar to the results of a German survey, which showed that German respondents had higher interest (65%) in savings products that take environmental/social utility in consideration, too. On the other hand, of course, economic objectives (low risk, liquidity, higher yields), are more important than ecological objectives in making investment decisions (Röstel, 2019).

A survey about the demand for green loan products and the related attitude was found at the OECD only. An OECD survey conducted in Kyrgyzstan in 2019 examined the use of loan and other financial products, including the meeting of green loan objectives. Based on the questionnaire, the main obstacles to the spread of green loans are as follows: terms and conditions specified by banks (e.g. high interest rates, coverage requirements), the weakness of green consciousness, as well as the lack of knowledge on green investments. (OECD, 2021).

However, we did not find any survey in literature about consumers' willingness to pay for financial green products. In relation to normal consumption goods, we can find such international[2] and domestic surveys. For instance, about the question whether the population – depending on their income position – are able and willing, and if yes, to what extent, to pay the higher prices of environment-friendly products. According to the survey by *Valkó* (2003), 41% of the

domestic adult population has such intentions. The majority of these respondents think that a price difference of maximum 5-10% would be acceptable in this respect. Based on that, consumers are willing to pay only a small surcharge for environment-friendly products. In the case of green mortgage loans, this may have exactly the opposite effect: in order to encourage consumers to choose environment-friendly (significantly more expensive) housing investments, it is necessary to provide them with very favourable instalments. This, however, as we already mentioned in the introduction, is against the interests of the supply side. The solution may be some kind of state aid. In order to promote housing energy investments, cheaper mortgage loans have been available in Germany since 2010, which are provided by a state development bank (Kreditanstallt für Wiederaufbau, KfW) to the population (Novikova et al., 2013).

THE METHODOLOGY OF THE SURVEY AND ITS PROCESSING

The BME-MNB household green finance survey (hereinafter it will be referred to as such) was recorded in the summer of 2020[3], with the involvement of 2500 people and the telephone surveying (CATI-) method, based on the demographic data of the Hungarian Central Statistical Office (KSH) (sex, age, education, territorial distribution et.) in a way that is nationally representative. The full description of the survey (including the exact questions) and the primary results are available in *Vértesy's* study (2021), therefore we refrain from their detailed presentation here. The objective of the survey was to estimate household demand for financial products, and to explore individual drivers. The questionnaire reviewed five main subjects, these are the population's

- green knowledge,
- environment consciousness, green attitude,
- financial knowledge,
- financial attitude,
- demand for green financial products and price sensitivity.

The questionnaire contained thirty-three thematic and fifteen demography questions. They generated eighty-five qualitative and quantitative variables and groups/categories, and their number had to be significantly reduced for the analysis. In the first phase, the variables (including both qualitative and quantitative) were normalized to values between 0 and 1, this way the qualitative part became more suitable for analysis, and the quantitative elements were much easier to manage. Following that (from the variables whose piece number did not decrease) eight aggregate indices were created, which cover individual aspects of the thematic questions.

Then, by combining these indexes, so-called 'self-images' were created (Huzdik, Béres, Németh, 2014). Their values may be between -1 and +1, based on which we created three groups from each of them.

❶ Group 1 – underrates himself/herself (between -1 and -0.251),

❷ Group 2 – fairly realistic self-evaluation (between -0.25 and +0.25),

❸ Group 3 – overrates himself/herself (between +0.251 and +1).

Table 1 shows the indices and indicators created by us, but we used the variables not included in the table, too, as explanatory and other variables.

In the next step, we are going to explore the relations among aggregate indices, indicators and other demographic etc. variables. We used linear regression to measure relations among various variables. Considering the large number of variables, this methodology included a lot of runs, and this paper presents the relations among the key variables. We are

Table 1

DESCRIPTION OF INDICES AND INDICATORS

Topic	Index, indicator	Description
Green knowledge	Green knowledge	Based on answers given to green knowledge questions (K2, K3) (more correct answers, higher value)
	Green knowledge self-image	Difference between the variable created from the green knowledge based on self-assessment (K1) and the value of the green knowledge indicator
Green attitude	Personal green attitude	Based on answers given to questions about personal green preferences (K4, K7, K9) (higher value, stronger positive attitude)
	Global green attitude	Based on answers given to questions about global sustainability (K5, K8) (higher value, stronger positive attitude)
Financial knowledge	Financial knowledge	Based on answers given to financial knowledge questions (K10, K11, K12, K13) (more correct answers, higher value)
Financial attitude	Financial interest	Based on answers given to questions about financial interest (K14, K15) (higher value, stronger positive attitude)
	Financial knowledge self-image	Difference between the values of financial interest and financial knowledge indicators (the bigger it is, the more overestimated the knowledge is)
	Financial prudence	Based on answers given to questions about financial risk assumption (K16) (higher value, more prudent attitude)
	Financial prudence self-image	Difference between the indicator created from the financial risk assumption according to self¬-assessment (K17) and the value of the financial prudence indicator (the higher it is, the more overestimated the prudence is)
	Financial sophistication	Based on answers given to questions about financial conduct and savings (K19, K20) (higher value, higher sophistication level)
Green demand	Green demand	Based on answers given to questions about the demand for green products (K21, K22, K25, K26, K30, K31) higher value, bigger demand

Source: Own editing

planning to perform an analysis with multiple variables, in a separate study. We considered a link strong when the value of R^2 was over 0.66, between 0.33 and 0.66 it was rated as below medium, while below 0.33 the relation was ignored. In the linear regression, the *x*-axis holds the discreet values of individual variables, and the *y*-axis holds – for more clarity – the mean of all elements belonging to the given value. This, of course, means that the analysis loses some information. On the other hand, categories with very low numbers of elements were omitted (thus reducing distortion).

RESULTS

Green knowledge and self-image

Based on descriptive statistical characteristics, the factors that influence households' green knowledge most (the median of the indicator

between 0 and 1 is 0.5) are the following: sex (men's knowledge is significantly better), education (the more qualified, the better, *see Figure 1*), place of living (the larger the settlement, the better), and financial literacy (whether they studied finance). There is a strong relation between green and financial knowledge. The relation to living conditions and age is only weak or medium, while other demographic factors (region, size of family, labour market status etc.) do not have a significant influence on the basis of the answers given in the questionnaire.

We can say that the population rather overestimate their knowledge in this issue (*Figure 2)*, especially people who belong to the more confident category, based on their own assessment. This is fully in line with relevant domestic empiric researches (Gáthy, 2004; Kollarics et al., 2021), based on which the domestic population's environmental and sustainability knowledge is poor.

The green knowledge self-image is influenced mainly by sex (women usually overestimated themselves), education (the better, the less overrated), place of living (decreasing size of settlement, increasing overrating), living conditions (the better, the less), and financial literacy (if they studied finance, they overrate themselves less). There is a weak – medium relation to age. The labour market situation is an interesting aspect, as pensioners significantly overrated themselves, but there seems to be no other relation. Other factors (region etc.) did not have a significant impact, based on the answers given in the questionnaire.

Green attitude

Two indices were mapped (Table 1), population's global green attitude, which covers their attitude to the big global issues of sustainability, and personal green attitude, which refers to their conduct in everyday life. Based on the answers, the global green attitude is much stronger than the personal: people in their personal lives do not follow the global attitude. The relation between the two indicators is weak, which in itself reflects the above point.

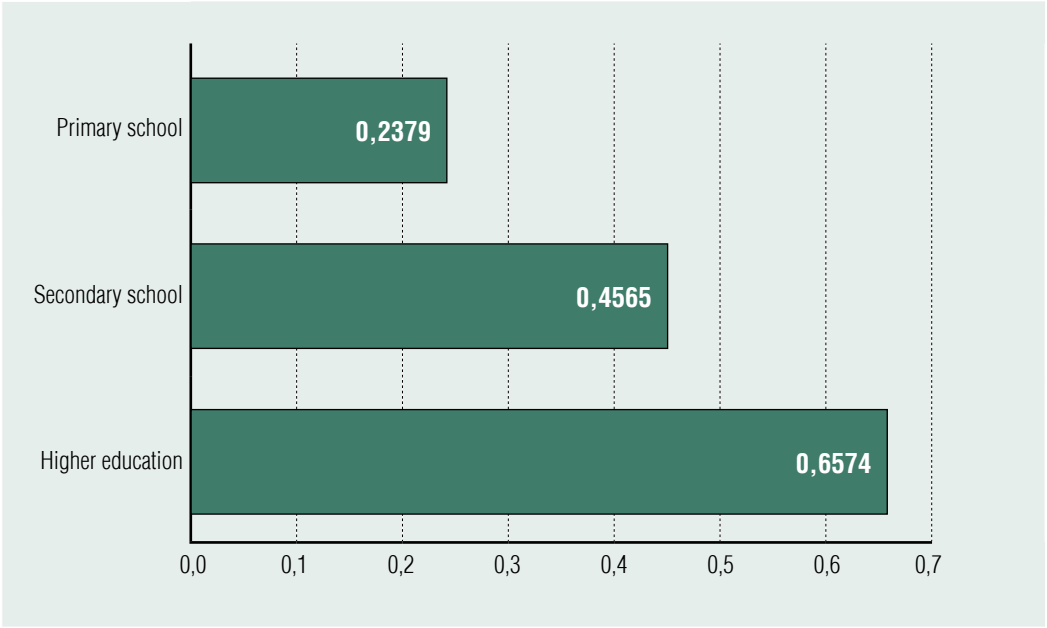
Personal green attitude is mainly influenced by sex (for women it is much better, as opposed to knowledge) and living conditions (better, stronger), while the global attitude is influenced by education, financial literacy, place of living and living conditions. It should be noted that none of them have any significant relation with age. The relation between personal green attitude and green knowledge is very weak, while the global index has a medium relation with green knowledge. (*Figure 3)*. The latter are in line with the results of other surveys in literature (Havas, Varga, 2009). Other factors (region, size of family, labour market status etc.) did not influence the indicators.

Based on their self-assessment, most of the respondents explained their weak personal green attitude with financial limitations (*Figure 4*, they were able to mark multiple reasons, this is why the amount is above 100%). The financial motive is basically present in the whole questionnaire, and it can be detected later in a lot of other questions, too, so it seems to be the most important factor motivating the population.

We compared the green attitude indicators with the financial attitude indices, too. There is a strong relation between financial knowledge and global green attitude, but the link with personal green attitude is medium. There is a strong relation between financial prudence and global green attitude, too *(Figure 5*), but the link with personal green attitude is weak. There is a very weak relation between financial knowledge and prudence, so they are relevant

Figure 1

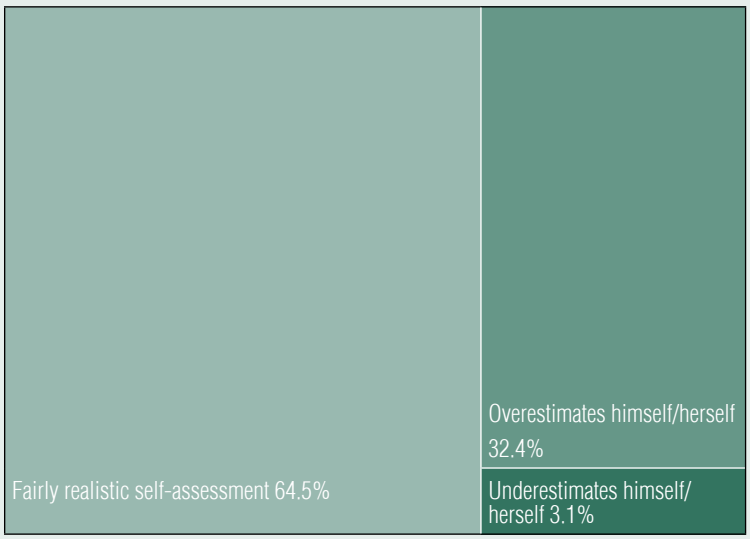
GREEN KNOWLEDGE IN RELATION TO EDUCATION



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 2

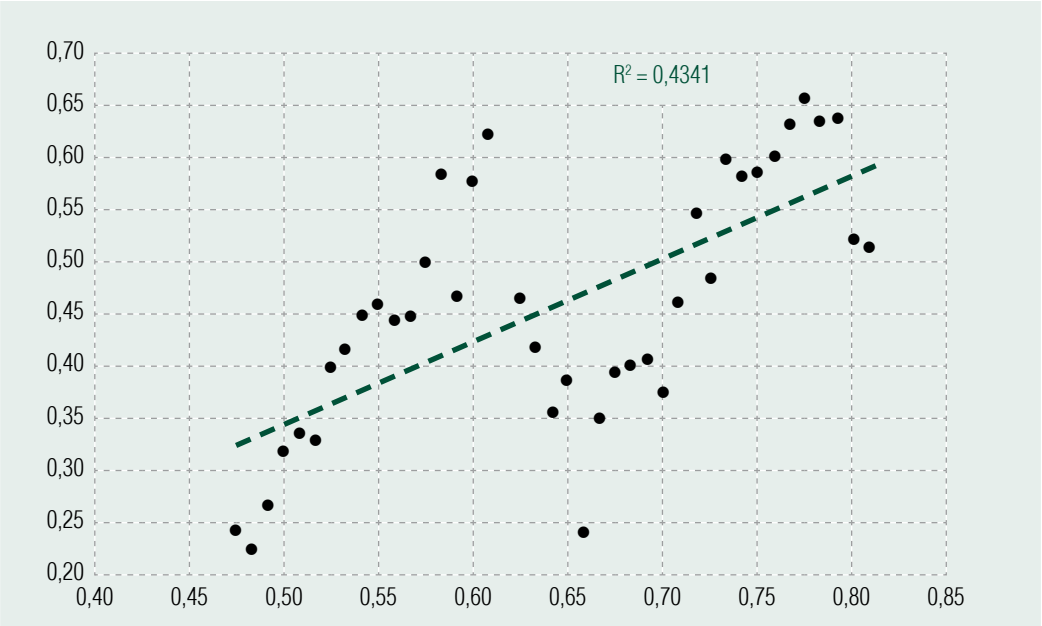
GREEN KNOWLEDGE SELF-IMAGE



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 3

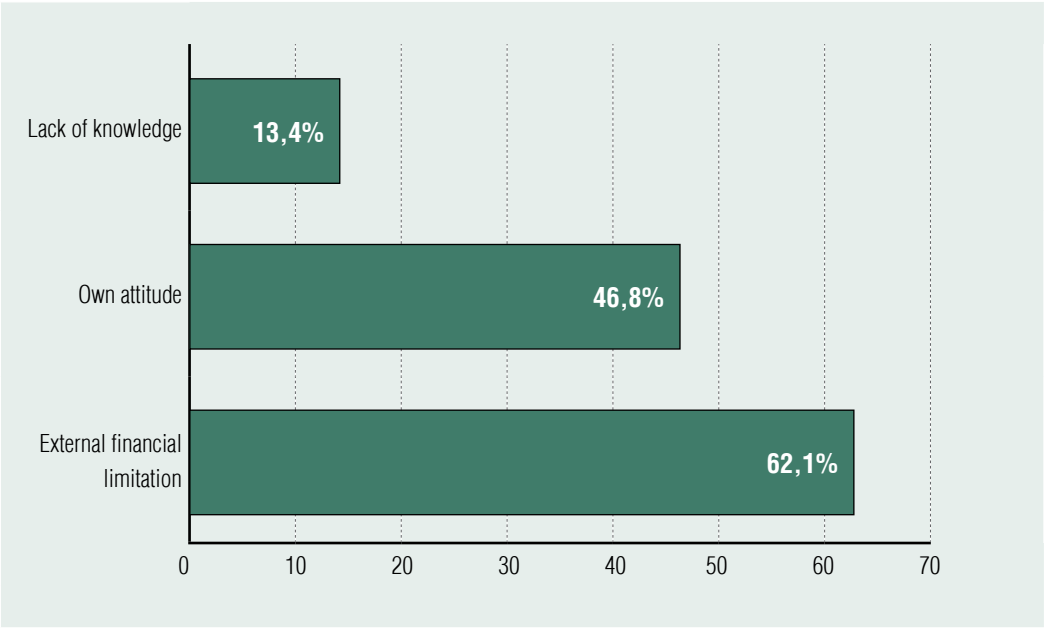
GREEN KNOWLEDGE IN RELATION TO GLOBAL GREEN ATTITUDE



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 4

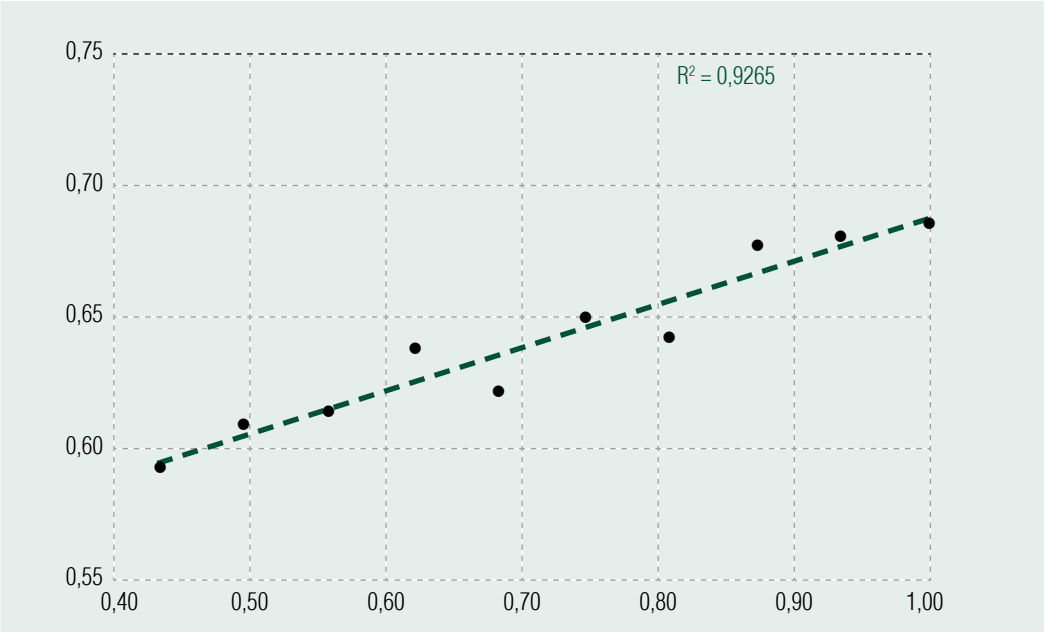
WHY DON'T YOU LIVE AN ENVIRONMENTALLY MORE CONSCIOUS LIFE?



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 5

GLOBAL GREEN ATTITUDE IN RELATION TO FINANCIAL PRUDENCE



Source: Own editing based on BME-MNB household green finance survey (2020)

explanatory factors on their own, too. There seems to be no relevant relation between financial sophistication and green attitudes.

All in all, financial knowledge and prudence offer a relatively good explanation for the global green attitude, but the answers given here are not necessarily sincere in each case, if we compare them with the personal attitude.

Financial knowledge and self-image

The financial knowledge index is primarily influenced by age (weaker for elderly people, see *Figure 6*), sex (significantly better for men), education, place of living and financial literacy. There is a weak-medium relation with living conditions. Other factors (region, size of family, labour market status etc.) do not have a significant impact, based on the answers given in the questionnaire.

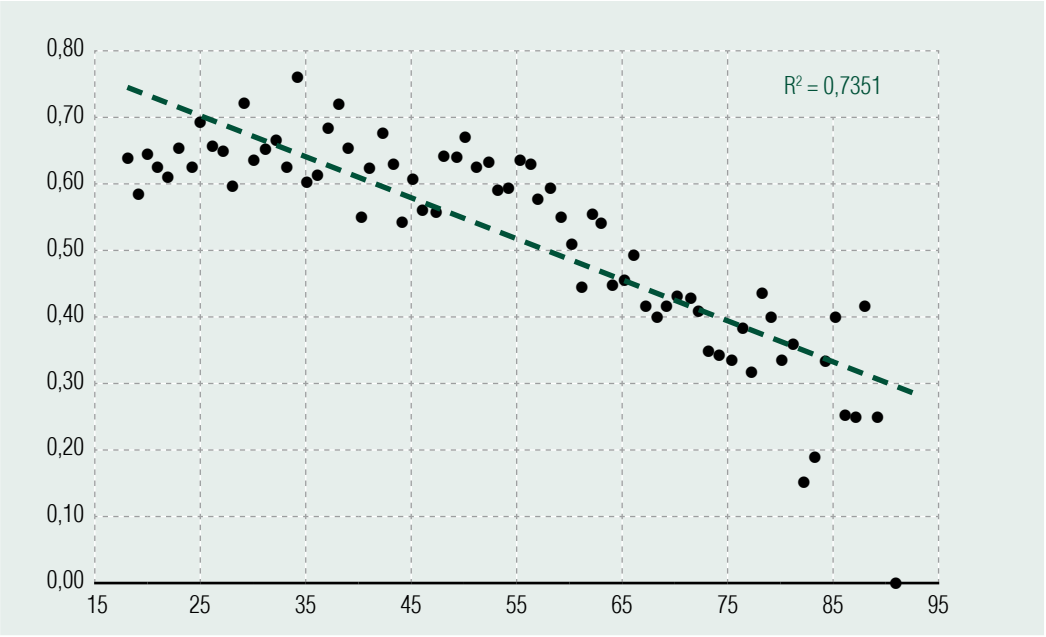
It is fair to say that younger male respondents living in larger towns, with more education, who studied finance, too, have more significant financial knowledge.

On average, the population rather underestimate their knowledge in this issue (*Figure 7),* but there seems to be a break: the age group below 60 usually underestimate their knowledge, while people over 60 overestimate it. This is partly in contradiction to what Huzdik et al. (2014) found regarding students in higher education. Please note that the survey processed by us was representative according to age group considerations, too, so in younger age groups it contained not only people currently in higher education.

The major influencing factors are age (people over 60 significantly overestimated themselves), education (the better, the less), and living conditions (the better, the less), as well as financial literacy. There is a

Figure 6

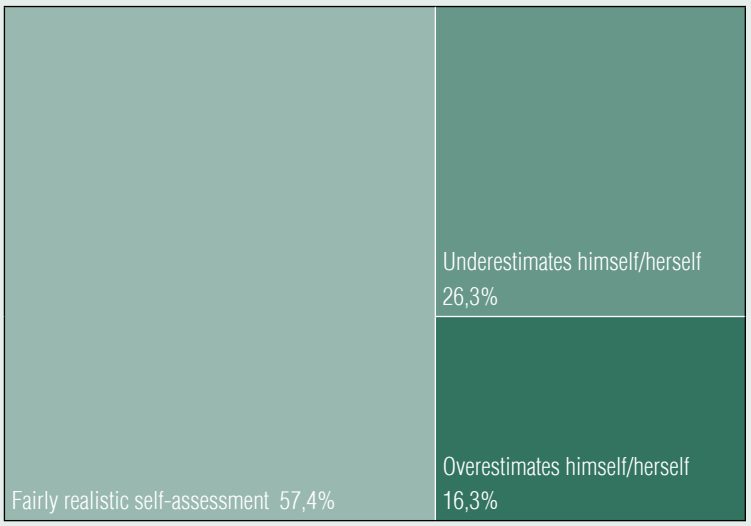
FINANCIAL KNOWLEDGE IN RELATION TO AGE



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 7

FINANCIAL KNOWLEDGE SELF-IMAGE



Source: Own editing based on BME-MNB household green finance survey (2020)

strong relation between green knowledge and financial knowledge self-images: people who over- or underestimated themselves in one of these, did the same in the other. *(See Figure 8)*

The impact of other demographic factors (sex, place of living, region) is not significant, based on the answers given in the questionnaire.

Financial prudence and self-image

Based on the values measured, the population can be considered fairly prudent in general, perhaps due to their past experiences with foreign currency loans. Signs referring to it were detected in the examination of individual products. Financial prudence is primarily influenced by place of living (larger town, more prudence), education (*Figure 9*), living conditions (better living conditions, more prudence) and financial literacy.

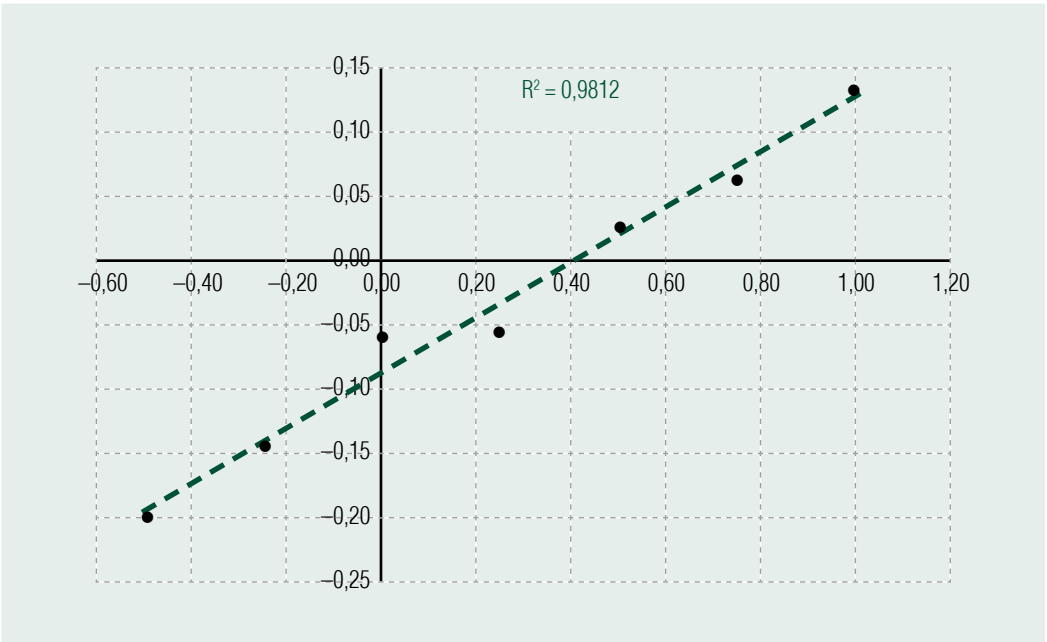
Other factors (sex, age, region, size of family, labour market status etc.) do not have a significant impact, based on the answers given in the questionnaire.

The population slightly underrate their prudence (they are more prudent than they think, *Figure 10*). Influencing factors: place of living (larger settlement, underestimation), education (the better, the more underestimated), living conditions (the better, the more underestimated, *Figure 11)*, and financial literacy (if they studied finance, they are more prudent than they think). There is a weak-medium positive relation with age.

Other demographic factors (sex, region etc.) do not have a significant impact, based on the answers given in the questionnaire.

Figure 8

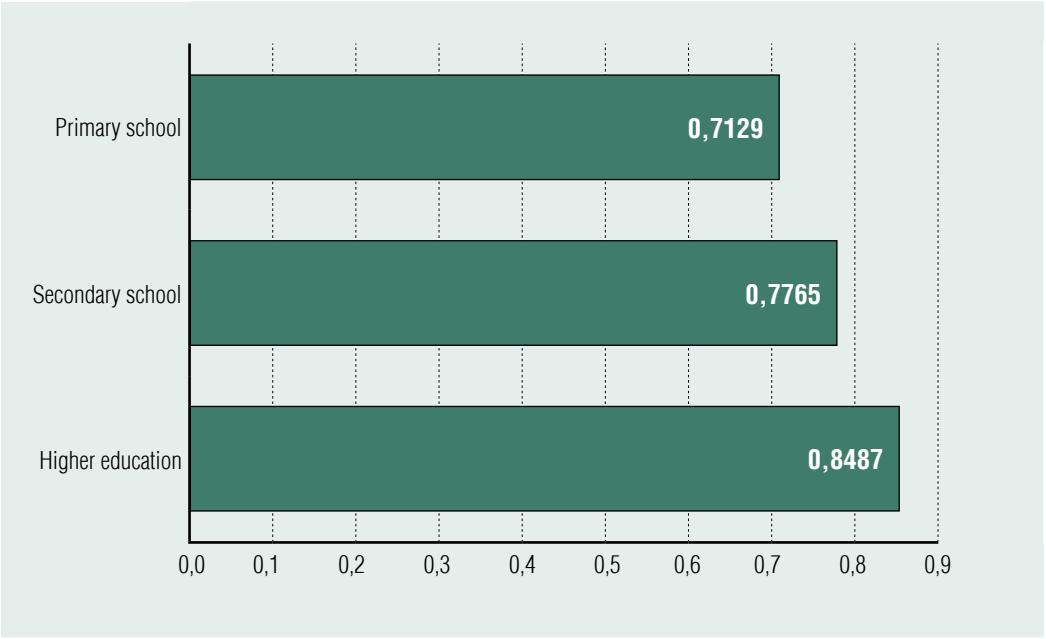
FINANCIAL KNOWLEDGE SELF-IMAGE IN RELATION TO GREEN KNOWLEDGE SELF-IMAGE



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 9

FINANCIAL PRUDENCE IN RELATION TO EDUCATION



Source: Own editing based on BME-MNB household green finance survey (2020)

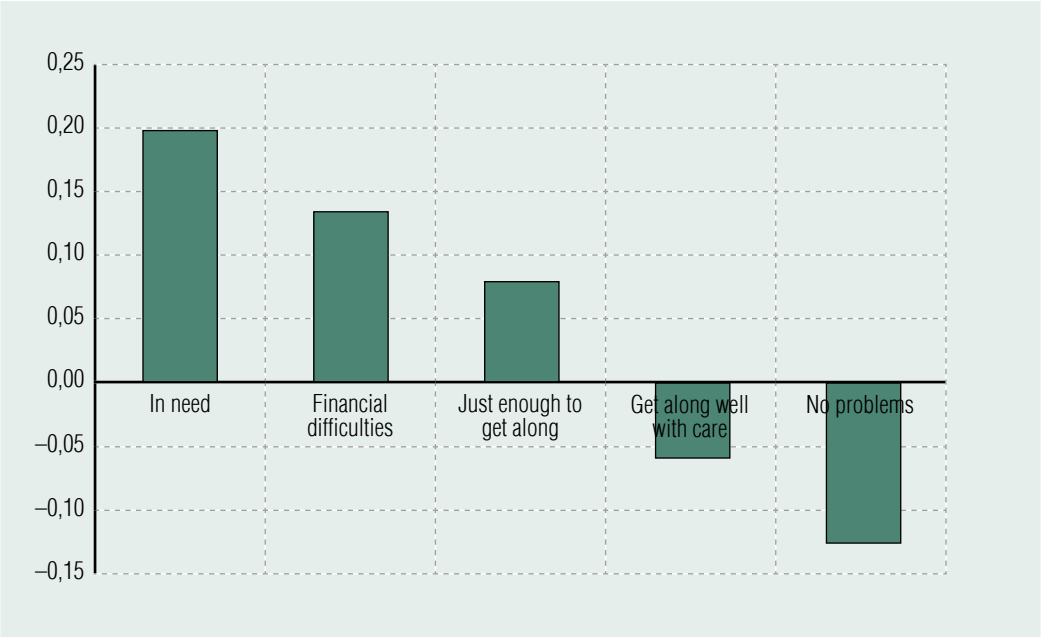
Figure 10

FINANCIAL PRUDENCE SELF-IMAGE

Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 11

FINANCIAL PRUDENCE SELF-IMAGE IN RELATION TO LIVING CONDITIONS



Source: Own editing based on BME-MNB household green finance survey (2020)

Impacts of financial education and knowledge

The impact of financial education (if they studied finance) is very strong on all other financial indices (*Figure 12*), but this can be considered as one of the strongest influencing factors almost in any other questions examined, too. We tested the differences with two-sample t-tests, which – with a p=0.01 significance level – showed for each index that the difference between people who studied finance and those who did not is significant.

This has high significance, and not only from green aspect, but for the financial culture, too: one of the lessons learned from the research is that financial education is very important in the issue of green demand, too.

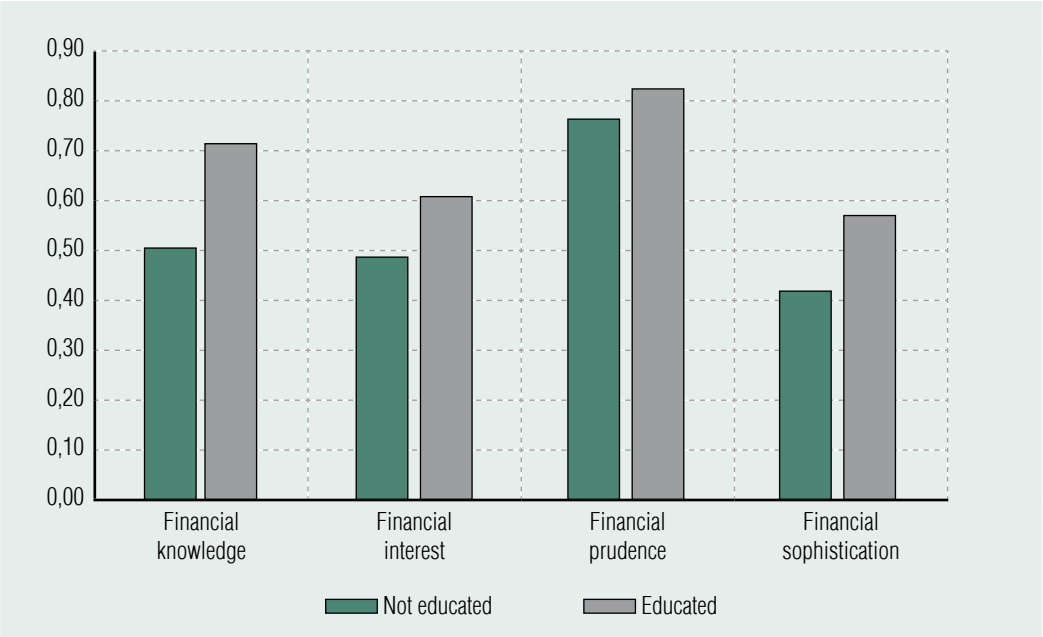
People who studied finance take more risks according to their self-assessment, but the data entered describe them as fairly prudent. It is not really surprising, but there is a strong positive relation between the measured financial knowledge indicator and the financial sophistication index (which measured the diversity of financial transactions and assets). The strong relation between the measured financial and green knowledge also leads us to believe that education is important, and, of course, that these are partly questions of erudition.

Green finance demand

One of the key objectives of the survey was to assess the population's demand for green financial products and price sensitivity. This is why the green demand aggregate indicator (Table 1) was created, and we compared it with all of the demographic variables and other indices and indicators.

Figure 12

IMPACT OF FINANCIAL EDUCATION ON INDIVIDUAL INDICES



Source: Own editing based on BME-MNB household green finance survey (2020)

All in all, the green demand index of respondents cannot be considered high, the median value was 0.375 (all the values are between 0 and 1). The strongest influencing factor is age (*Figure 13*).

Other influencing factors are sex (higher for men), place of living (higher at larger towns), education (the better, the higher), living conditions (the better, the higher), and financial literacy.

Other factors (region, size of family, labour market status etc.) have a marginal impact, based on the answers given to the questionnaire.

The green knowledge and the financial knowledge indices have significant positive impacts on green demand. Global green attitude (who has it stronger, has it higher, *Figure 14*), financial prudence (the more prudent, the higher), and financial sophistication (the more sophisticated, the higher) have a weak-medium impact.

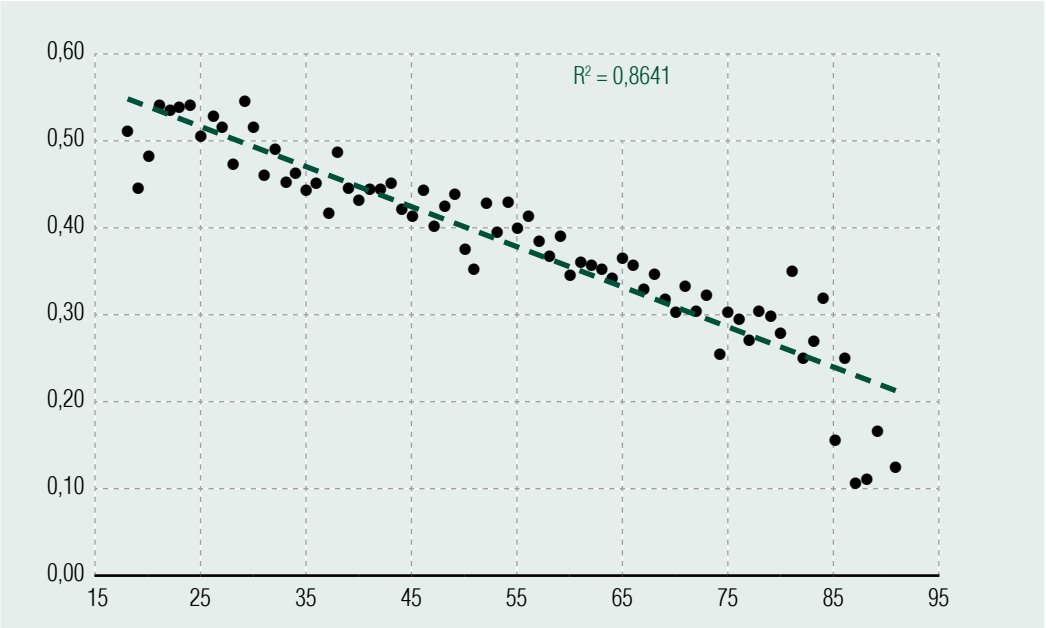
There is no actual link with the personal green attitude, which is another feedback indicating that in everyday practical activities the population is not as environmentally conscious as we could think on the basis of their self-assessment or global green attitude. Financial interest has no effective influence.

A definitely strong relation between green demand and self-images can be observed in one single case: in the green knowledge self-image (the less overestimated, the higher the demand, *Figure 15*). There is a medium relation with the financial prudence self-image (the less overestimated, the higher the demand). There is only a weak relation with the financial knowledge self-image (the less overestimated, the higher the demand).

It is an interesting point under the financial prudence index that according to the self-assessment, risk-takers have a higher demand, but the measured data indicate that demand

Figure 13

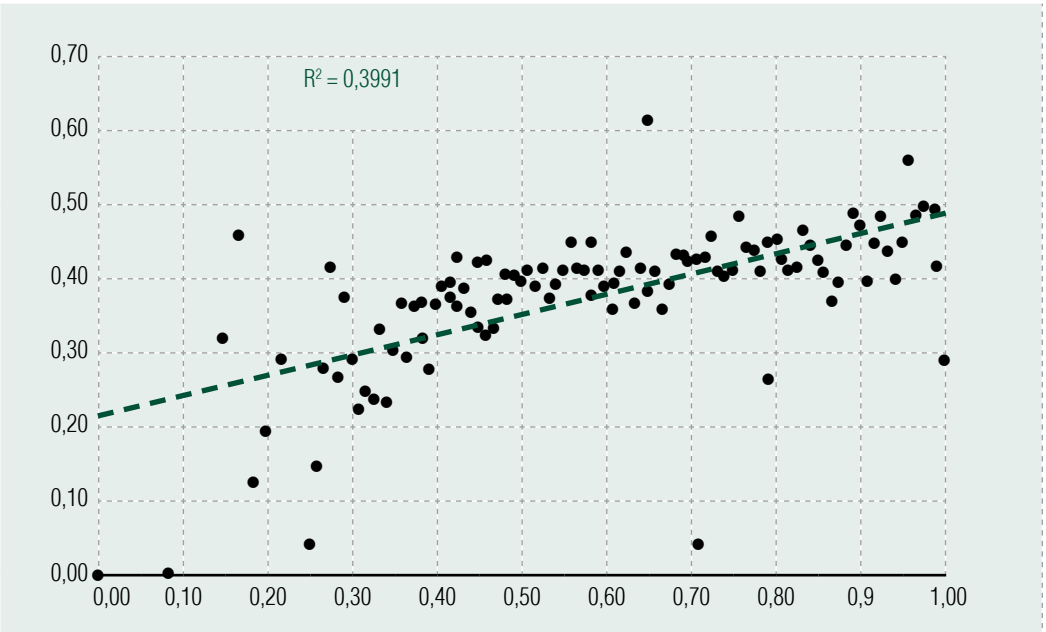
GREEN DEMAND IN RELATION TO AGE



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 14

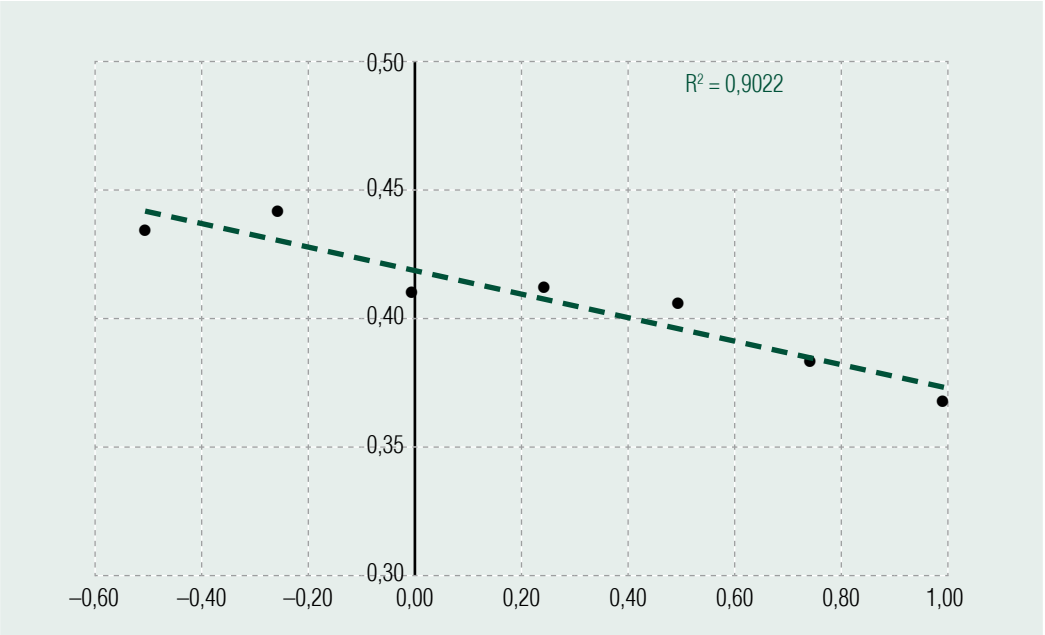
GREEN DEMAND IN RELATION TO GLOBAL GREEN ATTITUDE



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 15

GREEN DEMAND IN RELATION TO GREEN KNOWLEDGE SELF-IMAGE



Source: Own editing based on BME-MNB household green finance survey (2020)

is higher among prudent people. This is supported by the related self-image indicator, so there is a discrepancy between self-assessment and actual willingness to take risks (people are more prudent than they think).

Demand for certain product groups and price sensitivity

In this part of the survey, we assessed the demand for individual specific green products, they are in sequence:

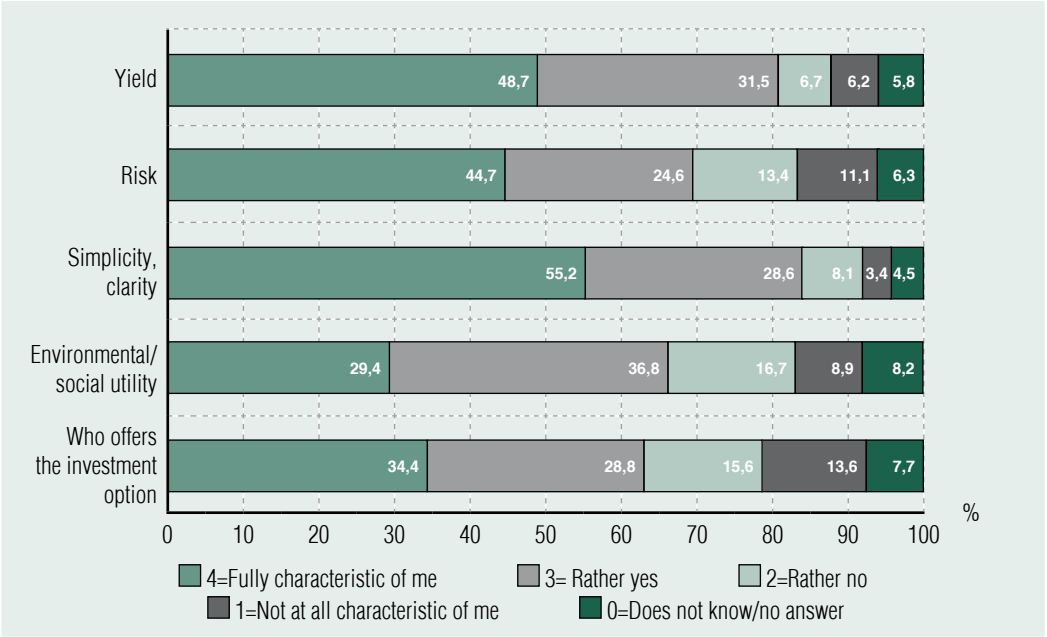
- green savings possibilities,
- green housing loan, and
- green renovation or modernisation loan.

The survey first inquired about the priority order of the individual parameters of these products (risk, yield, green considerations etc.). Then the questions inquired whether people were planning any purchases or renovations, would they take green loans, if they were cheaper, and in this respect (among people who intended to take loans), there was a question about the extent of the specific allowance, too, so that price sensitivity could be estimated. People who would not take any loan were requested to answer the question about the exact reasons for that.

In the decisions about savings options, although environmental and social utility is also a consideration, economic objectives are much more dominant (clarity, yield and risks). For more than two-thirds of respondents, even the waiving of the account management fee of investment services would not be enough motivation to select a more sustainable investment asset *(Figure 16)*. This supports our hypothesis that minor price discounts are not enough, it requires relatively higher (price) subsidises to steer domestic consumers towards more sustainable financial products.

Figure 16

KEY CONSIDERATIONS IN SAVINGS



Source: Own editing based on BME-MNB household green finance survey (2020)

Green considerations are not among the most important features of green housing loans, either: the purchase price is the key factor *(Figure 17).* From those who are planning a purchase or a construction project, 56 per cent would take subsidised loans, while 44 per cent would not. Those who would not, explain this with the risks: the impact of negative experiences with foreign currency loans is probably still strong. It is worth noting that the 'there are no good products' concept is not dominant, so in respondents' perception, the key point is not the lack of suitable products, but clearly the material aspects.

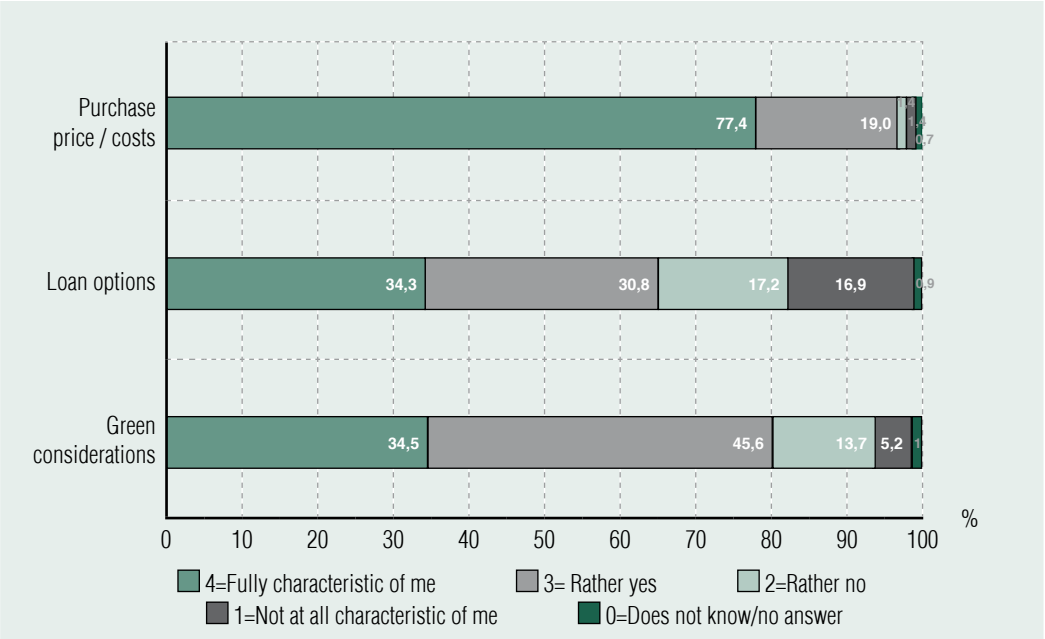
84% of all respondents would not take loans, as they are not planning to buy or build homes, or simply do not want to for some reason (see above point), but the ratio of potential loan-takers within the sample is not too large: it represents one sixth of respondents. With a 15% drop in instalments, the majority of these people would take green loans (*Figure 18)*, but this is still only 9% of the whole sample.

Factors influencing price sensitivity: sex (men would take the loan with less discounts than women), education (the better, the less discounts are enough), and financial literacy (if they studied finance, less discounts are enough). Financial prudence has a weak-medium impact on price sensitivity (*Figure 19)*: the more prudent somebody is, the higher allowance is necessary. No relation with any other variable, index or indicator can be observed.

We carried out simple price flexibility calculations (average of price flexibility of given points) and cross price flexibility calculations (normal loan versus green loan) on the data series, with relatively strong assumptions (the loan volume is not known, only the piece number, from the respondents,

Figure 17

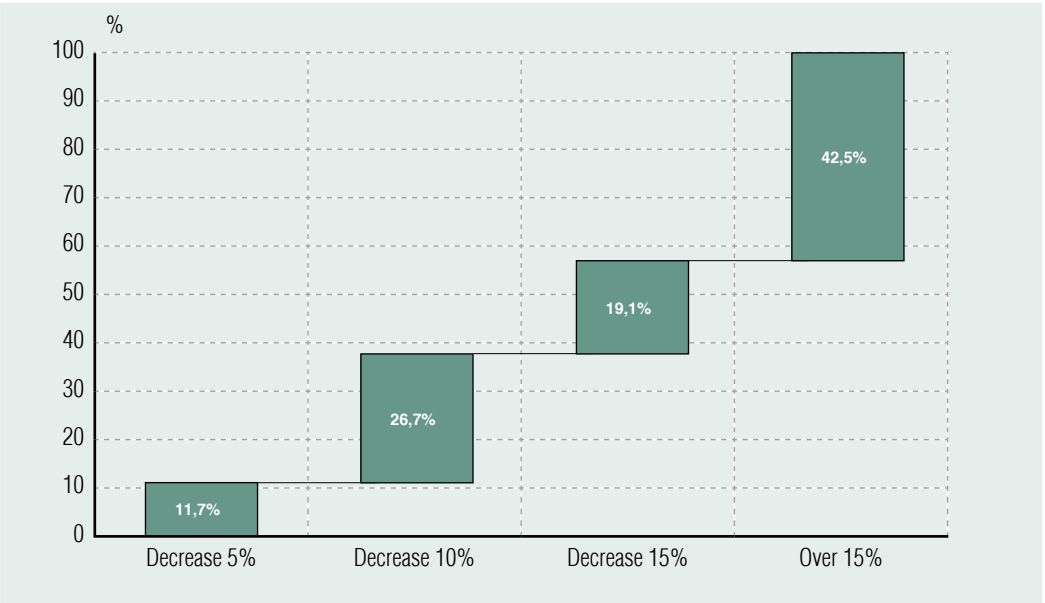
MOST IMPORTANT CONSIDERATIONS IN BUYING/BUILDING HOMES



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 18

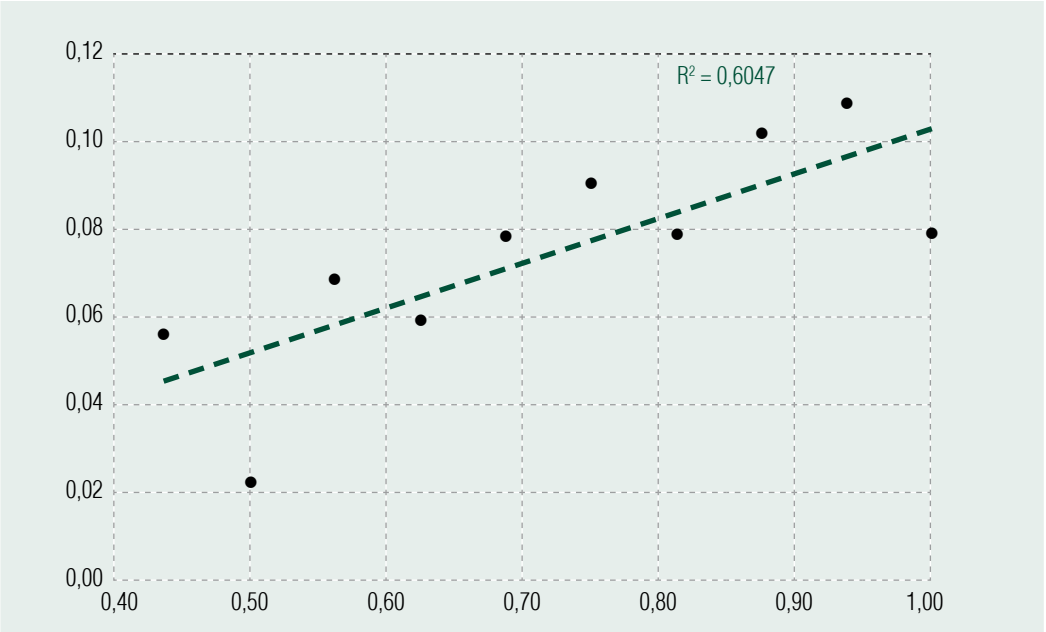
18 WHAT INSTALMENT ALLOWANCE WOULD MAKE YOU LOOK FOR ENERGY-EFFICIENT HOMES?



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 19

PRICE SENSITIVITY OF GREEN HOUSING LOAN IN RELATION TO FINANCIAL PRUDENCE



Source: Own editing based on BME-MNB household green finance survey (2020)

and we can calculate it only for those who said they would take the green loan). Based on that we can say that people who would take loans (based on their self-assessment) showed a very strong price flexibility, over 11% (and cross flexibility), so a discount instalment could probably steer them toward 'more environment-friendly' properties.

As a matter of fact, instalments that are 15% less can be achieved with significant interest allowance only,[4] which would greatly deteriorate service providers' profitability. In the lack of state subsidies, service provides will not establish such discounts. With moderate price discounts (maximum 5% cut in instalments), the potential demand is not too high.

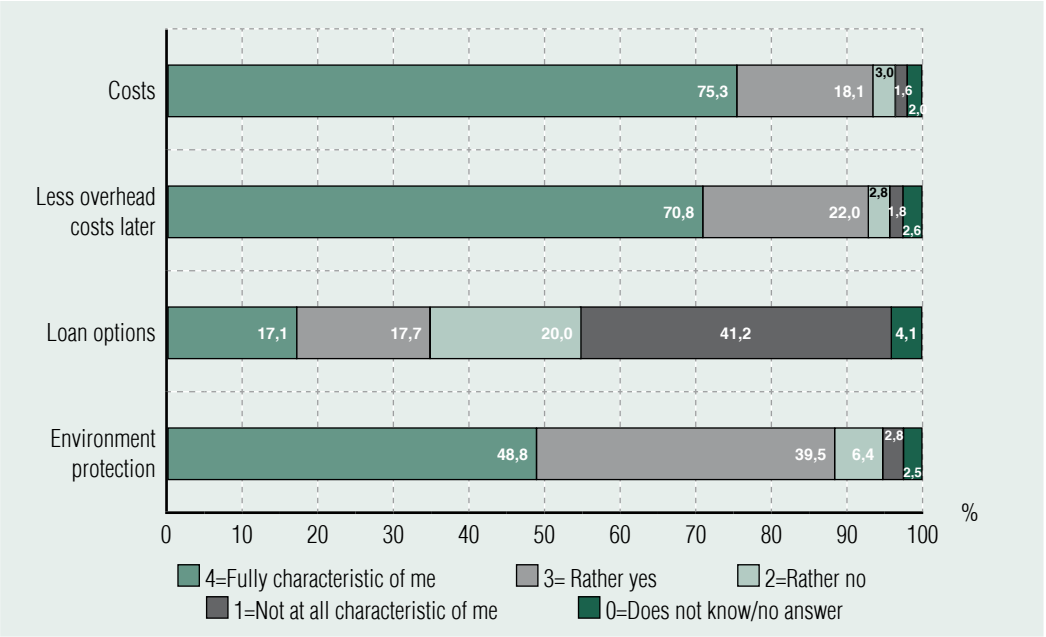
Green considerations cannot be considered as points of high importance in the case of loans for renovation or modernisation, either: renovation considerations are dominated by renovation costs and potential savings in overhead costs *(Figure 20)*. From those planning renovations, 48% would take a discount loan, so that their property could be more energy-efficient, 52% would not take any loan, as they are not planning any renovation, or they simply do not want to, for some reason *(Figure 21)*.

The main argument against loans is risk (*Figure 21*, it was possible to mark multiple points, therefore the amount is over 100%), experiences with foreign currency loans probably still have an impact. The 'there are no good products' concept is not strong, although stronger than in the case of purchases or construction.

The partial sample of loan-takers is much bigger than in the case of purchase/construction, so the demand is stronger all in all. Price sensitivity is very similar to purchase/construction loans. The key threshold is the

Figure 20

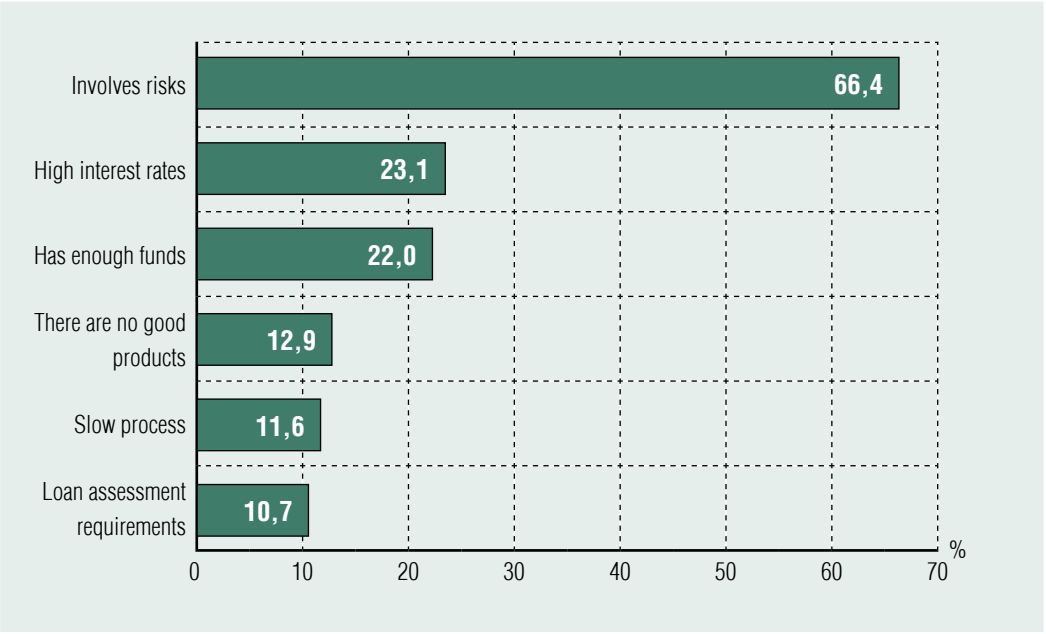
KEY CONSIDERATIONS FOR RENOVATION



Source: Own editing based on BME-MNB household green finance survey (2020)

Figure 21

WHY WOULD YOU NOT TAKE A LOAN FOR RENOVATION?



Source: Own editing based on BME-MNB household green finance survey (2020)

15% reduction in instalments, the majority of the partial sample would take a loan with that figure, this means 26.7% of the whole sample. We carried out a simple price flexibility (mean of the price flexibility of given points) and cross price flexibility (normal loan versus green loan) calculation on the data series, with the same relatively strong assumptions (loan volume is not known, only the piece number, based on the respondents, and we can count only those who would take the loan, according to their self-assessment). Based on that we can say that price flexibility (and cross price flexibility) is rather strong, over 10% among people who would take loans according to their self-assessment, so they could probably be convinced to do a green renovation with the instalment allowance.

No relation with any other variable, index or indicator can be observed. It should be pointed out – and it is surprising (as it may be counter-intuitive) – that the green attitude (neither at personal, nor at global level) has no relevant impact on price sensitivity.

CONCLUSIONS

The basis of our study was provided by a questionnaire that intended to identify the domestic nationwide financial and environment protection attitude and the demand for green products. Based on that, we examined the (potential) demand side of the market of green financial products that is still in its early stages. Apart from the fact that we received proper answers to the formulated research questions, we drew important conclusions about other important relations between financial and green knowledge and attitude, too.

In line with international surveys (European Commission, 2020), the majority of the Hungarian population has a positive attitude to environment protection in general, and their vast majority find it important at personal level, too.

It is fair to say that Hungarian population rather overestimates their own green knowledge, while their knowledge on sustainability is poor. This is fully in line with related earlier domestic empirical studies (Géthy, 2004, Kollarics et al., 2021).

The most interesting relations among indicators and demographic explanatory variables are summarised by *Table 2*.

Green knowledge is influenced by several factors, but age and living conditions have only weak-medium impacts. The population overestimate their green knowledge (self-image), especially the pensioner labour market category (this is practically the only impact that could be clearly shown from the labour market status).

From the aspect of established indicators, education and financial literacy (whether they studied finance) are the most important indicators from both financial and green aspects. One of the key lessons learnt from the survey is that financial literacy has to be developed, too, and not only environmental knowledge, if regulators wish to encourage green demand. This also confirms that the efforts that have been increasingly focusing on the development of financial culture since 2010 were correct.

The only exception from the above points is personal green attitude, which is significantly different and weaker than the global, and neither education, nor financial literacy can influence it. This is in line with the results of *Havas and Varga* (2009), which say that we should not expect a strong relation between environmental attitude and environmental knowledge. Global green attitude does have a strong relation with financial knowledge and prudence. In most cases, the different personal attitude was explained by respondents with external financial limitations (living conditions). This

Table 2

IMPACT OF DEMOGRAPHIC VARIABLES ON INDICATORS

Demography	Sex (1/2)*	Age	Place of living***	Education	Living conditions	Financial literacy	Other
Green knowledge	1	–	+	+	+	+	
Green knowledge self-image	2	+	–	–	–	–	
Personal green attitude	2				+		
Global green attitude			+	+	+	+	
Financial knowledge	1	–	+	+	+	+	
Financial knowledge self-image		+**		–	–	–	
Financial prudence			+	+	+	+	
Financial prudence self-image		+**	–	–	–	–	
Green demand	1	–	+	+	+	+	

Strong Weak-medium None

Note: * 1=male, 2=female ;** much stronger impact among people over 60; *** +=larger size of settlement

Source: Own editing based on BME-MNB household green finance survey (2020)

difference leads us to believe that in everyday life, instead of idealistic principles, environment consciousness is primarily determined by a pragmatism triggered by living conditions and financial possibilities (mainly for men). In their personal lifestyle, the population do no follow their global attitude, this was quite obvious in the assessment of the demand for individual green products. Based on the above points, one of the biggest obstacles to green actions in Hungary today is the financial position of the population, even if they find environment protection objectives important in general. This statement is confirmed by the detected price sensitivity, too.

Financial knowledge is primarily determined by sex, age, place of living and education. People rather underestimate their financial knowledge – as opposed to green knowledge (self-image). This is in contradiction to what Huzdik et al. (2014) found regarding students in higher education. Please note that the survey processed by us was representative according to age group considerations, too, so in younger age groups it contained not only people currently in higher education. It is interesting that the financial knowledge self-image indicator is not influenced by the place of living. From financial point of view, the population can be considered prudent, based on the questionnaire. The financial prudence index is not influenced by sex and age to a significant extent. Respondents usually underestimated their own financial prudence (similarly to their financial knowledge), so the measured values are more prudent than the values based on self-assessment.

In green issues, the population overestimate themselves, but in financial issues, they underestimate themselves and are more prudent, which may be a permanent effect of the experiences with foreign currency loans, or simply the higher personal stake and the more extensive experiences. It is interesting that the

relation between green knowledge self-image and financial knowledge self-image is strong, so if you overestimate yourself in one of them, you tend to do so in the other as well, so the values can probably be explained with psychological factors, too, to some extent.

In the demand for financial products, people find green considerations important, but these are not the most important considerations for them. This is in line with the results of foreign surveys, too. In the population's financial decisions, economic aspects (risk, yield, transparency of the product) are much more important than ecological aspects (Röstel, 2019). Green considerations are strongest among younger, well-to-do, educated and financially more literate people in the capital (and mainly among women, within that). The relation of green demand with global green attitude, financial prudence and financial sophistication is weak-medium, but stronger with green and financial knowledge. This will actually answer one of our research questions: the role of education and cultural factors, education have to be emphasized in connection with green products, too. It should be pointed out that there is no relation with personal green attitude at all.

As to the examination of the demand for individual product types, we found our hypothesis supported, as domestic consumers could be steered towards more sustainable financial products with a relatively significant (price) subsidy only.

Under the green savings possibilities, the waiving of the account management fee is not significant enough to be relevant in boosting demand.

In the case of buying / building a home, the purchase price is by far the most important issue, green considerations are not so important. A lot of people would not even take a loan, mainly because of the risks (this might be a kind of post-trauma of foreign currency loans). The majority of people willing to take loans would be satisfied with a higher, 15% instalment allowance, and would select the green loan. Please note that a 15% less instalment can be achieved with more interest allowance only, and that would significantly deteriorate the profitability of the service provider. In the lack of state subsidies, service providers will not establish such discounts. However, in the case of moderate price discounts (maximum 5% decrease in instalments) the potential demand is not too high for these products, considering the fact that the majority of respondents would not take the loan. Financially more educated and better qualified people (mainly men) would be satisfied with less discounts, too. Financial prudence has weak-medium impact on price sensitivity: the more cautious you are, the bigger allowance you want (not surprisingly). Price sensitivity has no relation with any other index (e.g. personal or global attitude).

In the case of modernising homes, the roles of renovation costs and potential savings in overhead costs are important, the green factor is not strong here. The majority would not take any loan, mainly because of the risks (again, the foreign currency loan impact may play a role). In the case of loans of this type, also the 15-% instalment discount is the key threshold, most of the people willing to take loans would be happy with that. Financially more educated and better qualified people (mainly men) would be satisfied with less discounts, too. However, in a slightly counter-intuitive way, there is no relation with any other index (for instance personal or global attitude).

The information contents of the questionnaire offer further research possibilities. With a multi-variable methodology and cluster analysis, it is possible to determine consumer groups, too. This approach is able to eliminate the limitations of our methodology used in the study: the loss of information because of calculating the averages and the lack of managing non-linear relations. ■

Notes

[1] https://www.ngfs.net/en

[2] There are a lot of international surveys about the demand for various environment-friendly products (paper, fish, cosmetics etc.). We will not describe them, as they have low relevance to our study.

[3] In the summer of 2020 the pandemic situation improved a lot, therefore we think that the pandemic did not cause a significant distortion in the survey.

[4] The rate of the necessary interest allowance depends on the term of the loan, its original APR and the interest method. As an example, in the case of an 18-year annuity mortgage loan with 4.8 per cent APR and fixed interest rate, the APR should be reduced by 2 percentage points to reach a 15 per cent reduction in instalments.

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