



Would you Make the Right Decision? – Decision Making Biases in Economy - Related Dilemmas

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Abstract

As they say, money can't buy happiness. However, the lack of it can make people's lives much harder. From the moment we open our first bank account, we have to make lots of financial decisions in our life. Should I save some money or should I spend it? Is it a good idea to ask for a loan? How to invest my money? When we make such decisions, unfortunately we sometimes make mistakes, too. In this study, we selected seven common decision making biases - anchoring and adjustment, overconfidence, high optimism, the law of small numbers, framing effect, disposition effect and gambler's fallacy – and tested them on the Hungarian population via an online survey. In the focus of our study was the question whether the presence of economic knowledge helps people make better decisions? The decision making biases found in literature mostly appeared in the sample as well. It proves that people do apply them when making decisions and in certain cases this could result in serious and costly errors. That's why it would be absolutely important for people to learn about them, thus increasing their awareness and attention when making decisions. Furthermore, in our research we did find some connection between decisions and the knowledge of economics, people with some knowledge of economics opted for the better solution in bigger proportion

Keywords: *decision making, bias, knowledge of economics, heuristics, finance*

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Introduction

The economic crisis of 2008 had a serious impact on the economic and financial sector on a global scale, and also indirectly on the whole society. According to the survey conducted by the World Bank the cause of this worldwide recession lay in the unbelievably accelerated innovation of products available in the financial sector. The number and complexity of products in the market have become so overwhelming that even

professionals who deal with finances on a daily basis are unable to estimate and manage the risks hidden in them. (IRBD, OECD, CGAP, 2009). Hung et al. claim that without having proper knowledge of economy it is impossible to make the right decision in financial matters (Hung, 2009). That's why developing financial knowledge and culture is essential if we are to avoid facing another crisis.

1. Decision making models

1.1. How it should be - the normative models

In literature there are two directions of decision making. The normative models focus on how perfectly rational agents should make decisions while descriptive models focus on how people make their decisions in their everyday lives. The basic normative model is about decisions that can be expressed in financial value and have a predictable outcome, their axioms are in accordance with the central paradigms of classic economics. At the same time it is built on a world concept that lacks uncertainty and also explains human decisions such as the choice of partner or profession by market mechanisms. So this model was soon replaced by the classical utility approach, which considers individual usefulness to be the main criterion in rational decision making (Móra, 2003). Based on the above, the axioms are as follows:

- when choosing any option in decision making, the probability of outcome is one
- information on variations and outcomes is complete and available
- outcomes can be positioned on a utility scale, this scale is continuous
- the decision maker will choose the option with the highest utility

All options have their consequences. According to the theory of expected utility, when making a decision we estimate the value and probability of the possible consequences. The expected value of a decision is calculated by multiplying these two, and then adding up the products of different consequences. (Krajcsi, 2008). As a maths formula:

$$VÉ = v_1 \times \acute{e}_1 + v_2 \times \acute{e}_2 + \dots + v_n \times \acute{e}_n$$

VÉ stands for the expected value of a decision, v_1 is for the probability of consequence and \acute{e}_1 is the value of the consequence. So the rational decision maker has to determine the expected utility of each alternative, and has to choose the one with the highest expected utility.

1.2. How it is - the descriptive models

Most of the time, rationality and real life practice are not in harmony: mathematicians and economists make their calculations and models based on optimal decision making process, but people typically do not follow these rules.

According to the normative models the right estimation of probabilities is the key to make good decisions. But how successfully can we do that? How often do we make mistakes? Are there typical tendencies that we follow during our decision making process?

The pioneers of this area, Daniel Kahneman and Amos Tversky discovered several biases and heuristics (Kahneman & Tversky, 1974). A heuristic is a method of learning or solving problems that allows people to discover things themselves and learn from their own experiences, it employs a practical method not guaranteed to be optimal or perfect, but sufficient for the immediate goals. As an alternative for the expected utility approach there is Kahneman és Tversky's model known as the prospect theory (Kahneman, Tversky, 1979). The model builds on the expected utility approach, clarifying the description of the real world by some modifications. This theory divides the decision making process into two stages: a multi-step editing phase and an evaluation phase. In the first phase the individual tries to narrow down the complex decision making process to a simple yes or no question. In the second phase he allocates his individual subjective accents to the already analysed outcomes.

1.3. When we are wrong – decision making bias

According to Kahneman's and Tversky's study, when we estimate the probability of a certain event, we usually rely on our former experiences and knowledge and accept the first idea that comes up in our mind – that is called the availability heuristic. For example, if we would like to guess the number of Metallica fans who own a cat we start searching in our memory for the members of this particular group. If it goes fast and easily, we will consider this category big and tend to overestimate its probability. But just because we remember something easily, it doesn't mean it occurs more frequently. Another popular decision making bias is **anchoring and adjustment**. It depends on the moderating effect of the first information we receive – that's called anchoring – after that we adjust every further piece of information to this reference point, even if there is no logical connection between them. For example, if we see the ads of two totally identical houses, we think the more expensive one is more valuable. When we have to make a decision under uncertain conditions, we tend to overestimate our decision making ability and the accuracy of our choice. That effect is called **overconfidence** and usually occurs among experts, especially in finance. A very similar bias is **high optimism**, when people think their future will be bright and good things will happen to them. Svenson's famous experiment showed this effect very spectacularly: 82% of the university students in the study said their driving skill is in the top 30% (Svenson, 1981). That obviously can't be possible. But not only university students' fall into this trap, for example had had a study revealed that investors and brokers tend to overestimate their knowledge and the accuracy of their decisions (Odean, 1998). **The law of small numbers** shows that even trained mathematicians are not sensitive enough to the volume of a certain sample, people tend to draw conclusions meaning the whole population, but only based on a small sample and few observations. One of the most well-known biases is the **framing effect** by Kahneman and Tversky. It enlightens that the same problem with a different focus can lead to a totally different result. Researches in finance have documented a massive preference among investors for selling winner stocks rather than losers—a bias that has been labelled as the **disposition effect** (Shapira-Venezia, 2001). After observing a long run of red on the roulette wheel, people erroneously believe that black is now due, presumably because the occurrence of black will result in a more representative sequence than the occurrence of an additional red. That bias is called **the gambler's fallacy**.

2. Research

2.1. Method, sample and research questions

In our study we examined these decision making biases among the Hungarian population. The participants had to fill in an online survey, where they had to face 15 decision making dilemmas. These dilemmas reflected to the real life events when people have to make financial decision. Our main questions were the following:

- Which bias can we detect in our sample?
- Does the presence of economic knowledge help make better decisions?

We suggested that the overconfidence and high optimism bias will appear more dominantly among those who have some knowledge of economics, but the other bias will be stronger among those who haven't got any knowledge of economics. 477 people filled in the survey, 149 men and 329 women. The male population were underrepresented in the sample, but according to previous studies there is no gender relevance in decision making bias, so we can assume it doesn't affect our results. The participants' age varied between 18 and 74 years, but 70% of the sample were formed by the 18-25 year group (average=27,8 year). 35% of the participants had some knowledge of economics (they are called, experts" in the followings), that was the grouping variable during the analysing process. In the sample the number of college or university graduates account for 43,5%.

2.2. Results

As suggested before the research, overconfidence and high optimism were more dominant among experts, there is a weak connection between the biases and knowledge of Economics.

Table1.

Results of overconfidence and high optimism questions

Question	Average of experts	Average of non-experts	Average of sample
1. Financial awareness	4,6	3,5	3,9
2. Accuracy of decision	5	4,6	4,76
3. Accuracy of others' decision	3,2	3,4	3,4

(Source: Own editing)

In case of the first two questions that point at the respondents' own abilities the average in both groups is higher than in case of the third question, asking about others' abilities. Respondents with a degree in economics valued their own awareness 1.1 higher than that of the non-expert group, which is logically understandable. Both groups trust more the correctness of their own decisions. What makes one think is that while the scores of experts increased by 0.4 in case of the second question, the same score rose by a much bigger extent, namely 1.1. So it seems that non experts think that they are able to make the right decisions intuitively in spite of their lack of economic knowledge.

If we compare the third question asking about the accuracy of others' decisions with the second question about the accuracy of own decisions we can spot a significant difference between the averages. Experts' average of the accuracy of own decisions

exceeds the average of others' accuracy of decisions by 1.8 while in the non-expert group we can see the same tendency, this time the increase is 1.2. As for the third question, the average is under 3.5 in both groups, a bit lower in the non-expert group whose average for the accuracy of others' decisions is 3.2. The massive difference between the accuracy of others' decisions compared to their own signals an illusion of superiority which is more dominant in the expert group. Respondents had to give a *yes* or *no* answer to question nr. 4 referring to whether they assess their own decision making skills at a higher level than the average. 65% of respondents thought that they were able to provide better than average decisions, which meant 72.65 % of business graduate respondents, whereas this was only 60.8% of those who did not have a business degree. The Pearson khi square equation proved to be right: $\chi^2(1)=6,635$, $p<0,05$, Cramer V= 0,118.

Question no. 5 assessed excessive self-confidence. Respondents had to make a guess whether after five years of operation their own, currently successfully operating company will have the same chances to go on at the same profitable level. An average of 63.9% of respondents see chances in their company's successful operation, and this rate is 67% in case of business graduates, whereas it is 59.7 in case of non-business graduates. Data received prove this excessive self-confidence and those with business degrees are 8% more self-confident than the average in the sample.

The law of small numbers isn't shown dominantly in the sample and also doesn't have any connection with the knowledge of economics ($\chi^2(1) = 0,816$, $p>0,05$). The framing effect worked, when the focus was on the potential profit, non-experts were significantly less risk takers ($\chi^2(1)=7,207$, $p<0,005$, Cramer V=0,123).

Table 2.

Results of the framing effect bias

		Have you studied or currently studying economics?		Total
		yes	no	
Risk taking answer	Quantity	30	29	59
	% of economic knowledge	17,9%	9,4%	12,4%
Risk-averse answer	Quantity	138	280	418
	% of economic knowledge	82,1%	90,6%	87,6%
Total	Quantity	168	309	477
	% of economic knowledge	100,0%	100,0%	100,0%

(Source: Own editing)

The gambler's fallacy also appeared, but there is no connection with the knowledge of economics ($\chi^2(3) = 1,325$, $p > 0, 05$). We got the same result for the disposition effect. ($\chi^2(1)=0,733$, $p>0,05$; $\chi^2(1)=0,877$, $p>0,05$)

Table 3.

Results of the gambler's fallacy bias

		Have you studied or currently studying economics?		Total
		yes	no	
Exchange rate decline	Quantity	40	73	113
	% of economic knowledge	23,8%	23,6%	23,7%
Exchange rate rise	Quantity	24	35	59
	% of economic knowledge	14,3%	11,3%	12,4%
Stays at this rate	Quantity	51	91	142
	% of economic knowledge	30,4%	29,4%	29,8%
Cannot say	Quantity	53	110	163
	% of economic knowledge	31,5%	35,6%	34,2%
Total	Quantity	168	309	477
	% of economic knowledge	100,0%	100,0%	100,0%

(Source: Own editing)

We got the same result for the disposition effect. ($\chi^2(1)=0,733$, $p>0,05$; $\chi^2(1)=0,877$, $p>0,05$).

1. Conclusion

In our study most questions focussed on the biases of excessive confidence and the illusion of superiority, which turned out to be inevitable in the sample. The findings definitely reveal that people consider the accuracy of their own decisions higher than others'. It seems logical to think that if someone has some routine in a specific field, he becomes more confident in thinking that he has a better than average knowledge of that particular area, in this case he can make better decisions. But it does not answer the question whether or not this is true in everyday life. It is interesting to consider the phenomenon revealed in the sample that there is a considerable difference between the financial awareness and the meant accuracy of decisions in the non expert group.

As for Hung, the essential criterion of accurate decision making is to have some knowledge of economy. However, respondents think otherwise – as the sample shows. One could think that maybe the respondents have acquired some intuitive, experience-based knowledge over the years that helps them make good decisions. The two biases mentioned above are responsible for how much confidence people have when viewing their own competencies and the future.

Excessive confidence projects an optimistic future and this can be motivating and stimulates action. At the same time it has the implicit risk that acting on excessive confidence may lead to unreal expectations and then failure is unavoidable. The illusion of

superiority works in the same way, its motivating impact could be quite useful, but when it is overrepresented, it might have a negative impact.

The gambler's fallacy bias and the disposition effect were also revealed in the responses. Respondents had to make stock-related decisions in both cases. However, it is important to mention that in case of the gambler's fallacy bias the majority of respondents opted for the "cannot say" answer. It is the deficiency of the questionnaire that it is impossible to find out from the responses whether the respondent is actually aware of the detachment of currencies or simply cannot form an opinion in the topic. When focusing on disposition impact, more respondents are ready to sell a profitable share than a loss, as described by the bias.

The insensitivity to the sample size bias was not dominantly traceable in the sample. Decision making based on the law of small numbers was not realized. The reason for this lies in the phrasing of the example. When selecting a bank people most probably consider a number of factors and do not rely only on the results of one survey. Although it makes you wonder, and we also find it problematic that for 40% of the sample – including mostly non experts – this amount of information turned out to be satisfactory to be able to choose a bank.

The framing effect certainly worked for respondents. When emphasizing some possible profit, there was only a slight demonstrable connection between having some knowledge of economics and the decision. Sure profit was selected by non experts in a bigger proportion. From this we can draw the conclusion that experts are more risk takers. This result might have a connection with the overconfidence and the feeling of superiority of experts. Supposedly if they believe in the superiority of their abilities, they use it to compensate the uncertainty of decision making. However, when focusing on a possible loss this effect cannot be demonstrated, the two groups chose the risk taking option in closely identical proportions.

As a closing remark of this study we would like to point out two important findings. The decision making biases found in literature could well be traced in this sample. Their presence in the decision making process is proven, and in certain cases it could lead to serious and costly problems. That's why it would be important to extensively introduce them to people, thus increasing their awareness and attention when making decisions.

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