Cognitive and emotional factors affecting currency perception

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Abstract: It is commonly known that both cognitive and emotional factors co-determine perception of stimuli. In case of money perception, Shafir, Diamond & Tversky (1997) described a phenomenon called money illusion. It consists in that that people have the tendency to use the nominal value as an anchor when they evaluate the value of goods, and they neglect the real value of money. This tendency may lead to different perception of the same price, depending on the currency it is expressed in. The higher is the value of a currency unit the lower are the prices in people’s perception. This prediction was supported in several experiments – among others by Gamble, Gaerling, Charlton & Ranyard (2001). Our first hypothesis concerned the same phenomenon. We hypothesized that the same real prices will be perceived differently depending on the currency they are expressed in. The higher the value of monetary unit used for expressing prices the lower will be the perceived prices of goods.

The second purpose of our study was to inquire how the cognitive bias of money illusion can be modified by the emotional attachment to particular currency. When the object has an emotional meaning for a person making judgment about this object, his/her evaluation will be influenced by this emotional attachment. According to Tajfel’s accentuation theory this overestimation results from the unconscious influence of affective dimension on descriptive dimension. Correspondingly, we formulated hypothesis 2 that gains and losses expressed in a currency having greater emotional attachment will be perceived as higher than gains and losses expressed in a currency having lesser emotional attachment. Both these hypotheses were supported to some extent.

Keywords: Euro, accentuation, money illusion,

Introduction

It is commonly known that cognitive and emotional factors co-determine perception of stimuli.

In the case of money perception, Shafir, Diamond & Tversky (1997) described a phenomenon called money illusion. It consists in the fact that people tend to use the nominal value as an anchor when they evaluate the value of goods, and they disregard the real value of money. This tendency may lead to different perception of the same price, depending on the currency it is expressed in. The higher is the value of a currency unit, the lower are the prices in people’s perception.

Shafir et. al. (1997) showed manifestations of money illusion in many different contexts. One of them was the evaluation of earnings in inflation periods. In this case, the Authors noted that in inflationary conditions people were satisfied with obtaining higher nominal amount, despite the fact that their real income not only had not increased but even had decreased due to inflation (the majority of participants stated that a person who obtained a higher raise in nominal terms was more satisfied than a person who obtained a raise lower in nominal terms but higher in real terms). This means that their income satisfaction was not based upon their purchasing power but rather on the number of monetary units they obtained. The researchers found, however, that when the participants were asked to evaluate the described situation in economic terms, they did it correctly, i.e. they were able to calculate the real value of the raise, and to distinguish the nominal representation of the raise from the real one.

Gamble, Gaerling, Charlton & Ranyard (2001) conducted an experiment on money illusion in the context of Euro conversion. In one of their studies they interviewed Swedish consumers on the phone. The participants were asked to express their opinions on the prices of different goods and services. One group of participants evaluated the prices in Swedish Crowns, ant the second group – in Euro. Naturally, the real prices were identical, however, they differed in terms of nominal value. As expected, the participants considered the prices of products and services expressed in Euro as lower than those of the same products and services expressed in Swedish Crowns. In this particular situation, the nominal value of prices in the national currency (SEK) was higher than that expressed in the common European currency (1 EUR = 8,33 SEK). Thus, we may argue that the money illusion effect was observed.
The authors also conducted a parallel study in the UK, where the nominal value of products expressed in the national currency (British Pounds) was lower than that expressed in Euro. In this case, according to the money illusion hypothesis, an opposite effect was expected, i.e. participants should evaluate the prices of products and services in Euro as higher than the prices of the same products and services in Pounds. However, the findings of the study revealed no money illusion effects. The authors suggest that this resulted from the fact that the currency exchange rate (1 GBP = 1.5 EUR) was much closer to one, than was the case with the Swedish Crown.

Factors which modify the intensity of money illusion have also been studied. Raghubir and Srivastava (2002) demonstrated that money illusion is stronger when the foreign currency unit represents a fraction of the national currency unit than in cases where it represents multiples of the national currency unit. Another factor which modifies the intensity of the money illusion effect is the real value of a product. The studies by Raghubir and Srivastava (2002) and Shafir et. al. (1997) show that money illusion is stronger when the product belongs to the luxury segment or is simply more expensive. The illusion is much weaker for products belonging to daily necessities, low-priced and more frequently bought.

It is commonly known that apart from cognitive factors also emotional processes co-determine perception of stimuli. When an object has an emotional meaning for a person making judgment about such object, his/her evaluation will be influenced by this emotional attachment. This idea has been developed by Tajfel and his collaborators.

In their well-known research, Tajfel and Wilkes (1963) asked the participants to estimate the length of lines. In experimental conditions, four shorter lines were labelled A and four longer lines – B. In the control group labels were assigned at random. As a result, when estimating the length of the same lines labelled with the letters A and B, the experimental group revealed larger differences between categories than the control group. This means that the participants used the label information to form perceptual judgment of the line length.

This phenomenon guided Tajfel to develop the accentuation theory. According to this theory, when objects are presented under the same label, the processes of making judgments of stimuli is based not only on the incoming data about the objects but also on the information contained in the category label. This may lead to an increase in perceived differences between objects belonging to different categories and a decrease in perceived differences between objects belonging to the same category. These two processes subsequently make the evaluations of the objects accentuated in such a way that objects in the category are seen as homogenous and the differences across the categories are much bigger than in reality.

In the above experiment the accentuation occurred in a situation where the labels were meaningless letters and the judgments made by the subjects pertained to simple physical features. However, the same process may be active in a situation when the label carries some affective information. For example, in social psychology studies such processes were proved to lead to stereotyping of social groups. Simple psycho-physiological dimensions have no emotional meaning, but more complex dimensions may be rooted in emotionally meaningful values. Indeed, in the classical study by Bruner & Goodman, children assessed the size of coins and cardboard disks of matching magnitude. It was found that the children overestimated the size of coins compared to the size of cardboard disks. In a similar study by Dukes and Bevan (1952), children were asked to estimate the weight of jars filled either with a variety of coloured candies or sand and saw-dust. As in the classical Bruner’s and Goodman’s study, jars of candies were perceived as heavier. Thus, the more positively the object had been evaluated on the scale of attractiveness, the higher it was placed on a descriptive dimension of size or heaviness.

Money is certainly something more than an objective number of units. As Bourgoyne, Routh and Ellis (1999) put it, money has symbolic meanings different from its purchasing value. This is an emotion-based value which may add to or subtract from the purchasing value. It is also conceivable that some currencies may be considered better than others. Most people are attached to their national currencies, which forms part of their patriotic feelings. However, in certain circumstances, a currency other than the national one may gain a high emotional value.

It may be argued that the stronger is an individual’s emotional attachment to a currency, the more accentuated the evaluation of the currency will be. While evaluating gains or losses expressed in a given currency, an individual’s judgment is based not only its nominal value but also on its category label that carries some additional affective valence.

The main purpose of the present research was to examine how the cognitive bias of money illusion can be modified by the emotional attachment to a particular currency. We hypothesized that gains and losses expressed in a currency displaying greater emotional attachment would be perceived as higher than gains and losses expressed in a currency displaying lesser emotional attachment.
Preliminary study: Pole’s emotional attachment to US dollar

Purpose

In Poland, where the national currency used to be inconvertible for a long time, the US dollar came to be regarded as a “better currency”. It became a universal currency used for denoting contracts and prices of real property, etc. As in the 1980s the country’s average salary was about 20 dollars, this particular currency was commonly desired and treated as something precious. Somewhat surprisingly, many Polish citizens still prefer to use the dollar as parallel currency. This shows that despite the fact that the Polish national currency is now convertible and quite strong, US dollars continue to be used for expressing prices. We argue that the sustained determination to use the dollar as a universal currency is based upon a very strong emotional attachment to it which has been developed over the last 50 years.

In the discussed research we tested a hypothesis that in Poland the US dollar has a greater emotional attachment (value) than other currencies.

Method

A 23-item semantic differential with a five-point scale was used to collect participants’ opinions about four currencies: Polish Zloty (PLN), US Dollar, Euro and Italian Lira. The questionnaire was administered to 60 participants of the age of 35+. Each participant evaluated all four currencies.

Results

First, we wanted to discover the structure of perception of different currencies. For this purpose, data from the semantic differential were subjected to factor analyses, separately for each currency. It turned out that factorial structures for different currencies have a different level of complexity. As shown in Figure 1, the percent of variance explained by the three-factor solution is different for each of the four currencies. The three factors explain the highest percent of variance for USD and the lowest for PLN. This means that the structure of perception of the national currency is more complex than the one for other currencies, whereas the least complex perceptual structure is that of the US dollar.

![Figure 1: Variance for four currencies explained by three factors](image)

Then, we found that for the two-factor solution different currencies displayed similar compositions of items within each factor. As shown in Table 1, the first factor consists of scales related to “good money”. The second factor consists of scales related more to physical characteristics of money; we interpreted it as “nice money”.


Table 1. Factorial structure of semantic differential common to all currencies

<table>
<thead>
<tr>
<th>Factor 1 'good money'</th>
<th>Factor 2 'nice money'</th>
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</thead>
<tbody>
<tr>
<td>certain</td>
<td>cheerful/funny</td>
</tr>
<tr>
<td>strong</td>
<td>nice</td>
</tr>
<tr>
<td>safe</td>
<td>pleasant in touch</td>
</tr>
<tr>
<td>serious</td>
<td>interesting</td>
</tr>
<tr>
<td>valuable</td>
<td></td>
</tr>
<tr>
<td>reliable</td>
<td></td>
</tr>
<tr>
<td>difficult to forge</td>
<td></td>
</tr>
<tr>
<td>conducive to saving</td>
<td></td>
</tr>
<tr>
<td>profitable</td>
<td></td>
</tr>
<tr>
<td>known</td>
<td></td>
</tr>
<tr>
<td>popular</td>
<td></td>
</tr>
<tr>
<td>accessible</td>
<td></td>
</tr>
<tr>
<td>easy to use</td>
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</table>

Figures 2 and 3 show the average evaluations of the four currencies on the two factors. As can be seen from Figure 2, the US dollar has been evaluated as the best money. One-way ANOVA revealed the main effect of currency (F(3,141)=57.24; p<.000).

![Figure 2. Evaluation of the four currencies on the “good money” scale](image)

A similar analysis for the “nice money” factor was performed. As can be seen from Figure 3, in this case, the differences between currencies are not so big, although still significant (one-way ANOVA, F(3,159)=7.56; p<.000). Again, the US dollar and Euro are the “nicest money”.

![Figure 3. Evaluation of the four currencies on the “nice money” scale](image)
Thus, our hypothesis that in Poland the US dollar has a greater emotional attachment (value) than other currencies was supported.

**Study 2: Evaluation of price expressed in different monetary units**

**Purpose**

The purpose of this study was to test the following two hypotheses:

- General money illusion hypothesis: prices expressed in greater nominal values will be perceived as higher.
- Hypothesis of dollar attachment: money illusion effect will be modified by the emotional attachment of Poles to the US dollar, i.e. the prices expressed in US dollars will be perceived as disproportionately high.

**Method**

We used a set of consumer goods (consumer basket) and ask four independent samples of participants (102 women of the age of 35+ who declared to be the person most frequently doing shopping in their households) to evaluate the prices expressed in different currencies. The study was conducted in a supermarket in Warsaw. In all four versions of the questionnaire, the products and services had the same real value, but expressed in four currencies: Polish Zloty (PLN), US Dollar, EUR, and Italian Lira. The currency exchange rates used in the study are presented in Table 2.

<table>
<thead>
<tr>
<th>Currency Exchange Rates Used in the Study (April, 2002)</th>
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<tbody>
<tr>
<td>1 EUR = 3.62 PLN</td>
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<tr>
<td>1 000 ITL = 1.87 PLN</td>
</tr>
<tr>
<td>1 USD = 4.15 PLN</td>
</tr>
</tbody>
</table>

Participants were asked to assess how expensive different products are and mark their opinion on a bipolar scale, ranging from 1 (“very cheap”) to 9 (“very expensive”). The ‘shopping basket’ included the prices of basic goods such as food and clothing, as well as durables. The currency exchange rates were also presented as part of an introduction to the questionnaire. Prices ranged from USD 0.08 (egg) to USD 5,421.00 (Fiat Seicento).

**Results**

In line with the money illusion hypothesis, the prices expressed in ITL are perceived as the highest, next the prices expressed in PLN, then in EUR. However, while the USD was the strongest currency unit at the time of the research, the ratings of prices in dollars were higher than the ratings of prices in EUR. One-way ANOVA revealed a significant main effect of currency in which the prices were expressed (F(3,98)=2.79; p<.04). The contrasts EUR vs. PLN (p<.05) and EUR vs. ITL (p<.01) in LSD-test proved to be significant, while the difference between the USD and PLN was insignificant. Thus, the money illusion effect which occurred for three currencies (EUR, PLN, and ITL), failed to appear in the case of US dollars.
Study 3. Evaluation of gains and losses expressed in different monetary units

Purpose

The purpose of this study was to test if the dollar attachment effect found in the previous study for the price evaluation may be of more general nature, i.e. if it is present in the evaluation of gains and losses expressed in different monetary units.

Method

A questionnaire composed of seven different gains and seven losses was prepared. Forty-nine respondents of the age 30+ were asked to imagine that they gain or lose a certain amount of money or an object of a specified financial value. Respondents were randomly assigned to three groups where the values of gains and losses were expressed in the Polish Zloty (PLN), USD and EUR. The amounts to be gained/lost were ranging from PLN 2.1 (USD 0.53; EUR 0.49) to PLN 576 (USD 145.94; EUR 135.68). Participants were asked to express their feelings about the gains or losses, and mark them on a continuous scale ranging from “insignificant gain/loss” to “significant gain/loss”. The currency exchange rates used in the study are presented in Table 3. The order of gains and losses was randomised for participants.

Table 3. Currency exchange rates used in the study (April/May, 2003)

<table>
<thead>
<tr>
<th>Currency</th>
<th>Conversion Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 EUR</td>
<td>4.24 PLN</td>
</tr>
<tr>
<td>1 USD</td>
<td>3.94 PLN</td>
</tr>
</tbody>
</table>

Results

Figures 5 and 6 show mean assessments of importance of gains or losses. As can be seen, assessments of gains in PLN are always higher than assessments of gains in either USD or EUR. One-way repeated-measures analyses of variance, with the factors of currency treated as between-subjects variables and the domain gains vs. losses as within-subject variable, yielded the effect of currency ($F(2,46)=3.23; p<.05$). However, one-way ANOVA performed on averaged gains revealed no significant effects of currency. Figure 6 shows a distinctive money illusion effect: losses in PLN were the most severe, next losses in EUR, and finally, losses in USD. One-way ANOVA performed on averaged losses revealed significant effects of currency ($F=4.79; p<.01$).

Finally, we also found a significant effect of the domain gains vs. losses ($F(1,46)=4.38; p<.04$). In line with the prospect theory, the losses were perceived as more important than gains.
Our results definitely support the money illusion effect. Both prices and losses expressed in greater nominal values were perceived by the subjects as higher. However, in Study 3, the money illusion effect in the domain of gains was not supported. This can be accounted for in accordance with the assumption of the prospect theory which says that losses are felt more strongly than gains. Actually, this claim was supported in our experiment. The evaluations of various amounts of losses were higher than the evaluations of corresponding gains. Presumably, due to this concern about losses, the money illusion effect is more prominent in the domain of losses than in the domain of gains.

Our Study 2 showed that the money illusion effect could be modified by the emotional attachment to currency. This emotional attachment can increase the price evaluation even in the case of low nominal value of a currency. However, comparing the results of Study 2 and Study 3, we found that while the emotional attachment appeared in the context of price assessments, it disappeared in context of pure losses. There are two possible explanations for this result. First, perhaps the emotional attachment is active in the context it was conditioned, i.e., in our
case, in the area of purchasing behaviour. Due to the fact that people tend to have little experience with finding and losing money, the emotional attachment has no effect in this context. The second reason for the disappearance of the emotional attachment effect might be the fact that US dollar has recently substantially dropped down as compared with the Euro and Polish Zloty. In the period between Study 2 and Study 3 the relation between Euro and dollar reversed. It is possible that such a change, widely commented upon in the media, weakened the emotional attachment to USD. Both possible causes suggest that the emotional attachment may be a very capricious and unstable phenomenon. In contrast, the money illusion effect is evidently not.

References