CONSUMER'S BEHAVIOUR IN EAST SLOVAKIA AFTER EURO INTRODUCTION DURING THE CRISIS

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Abstract:

The paper highlights the results of the survey of potential retail customers. The survey emphasizes the relationship between their responses to the chosen marketing pricing strategies and the perception of the introduction of the euro and the crisis. The multi-dimensional techniques were used to implement input data concerning perceptions of the euro introduction and the crisis in order to create a segmentation of respondents dividing them into: optimists, pessimists, crisis-pessimists, euro-pessimists, profiteers. It was subsequently proven that the responses of the members of these segments to the chosen pricing strategies EDLP (Every Day Low Pricing), Hi-Lo (High Low Pricing) and PMG (Price Matching Guarantees) differ significantly. Furthermore, the relation between the found segmentation and the subjective perception and assignment to the social group from the point of financial security is shown. Moreover, further segmentation of respondents according to their subjective anxiety about their future was carried out. Finally, the emphasis is put on the relation between the perception of the euro introduction in the country during the current influence of the world economic crisis on potential retail customers in the East Slovak Region and their subjective anxiety about their future.

Keywords: factor analysis, cluster analysis, two-step cluster, marketing pricing strategies, crisis, euro introduction, EDLP, Hi-Lo, PMG
JEL Classification: C12, C18, C40, G01, M21, M31

1. Introduction

Perceptions of the euro usefulness and desirability have changed dramatically over the last couple of years. Euro membership has been typically accompanied by either a reduction in inflation or no appreciable change. It has also been generally followed by an increase in business-cycle volatility (Karras, 2011). On the one hand, there are profits, however, on the other hand, there are costs. Experts' opinions on the euro adoption differ. The fulfil-ment of the Maastricht convergence criteria is the exhaustively defined condition for the

adoption of the euro (Dvoroková *et al.*, 2012). It is necessary to emphasize that Slovakia met the convergence criteria just before the crisis broke out. Dvoroková *et al.* (2012) is devoted to investigation of the impact of the crisis on the fulfilment of the convergence criteria in the Czech Republic. Spiesová (2010) concludes that the economic crisis has a very similar impact on both Slovak and Czech economies and that the euro adoption does not provide a specific advantage and protection against economic downturn.

The contemporary highly competitive world puts pressure on companies which are obliged to improve their performance continually (Bucki, 2010; Jurajda, Stančík, 2013). It is extremely important to evaluate their effectiveness from rapidly changing data not only for production companies (Jenčová, 2009) but also for entrepreneurs operating in the retail sector where the appropriate logistic approach ought to be implemented. Moreover, there is a need to acquire and evaluate information continually and react to changing conditions in a dynamic way. One of the biggest changes which affected the Slovak Republic in recent times happened after joining the Eurozone. Retailers in Slovakia noticed changes in customers` behaviour associated with the use of the new currency (Maťovčíková, 2010). Another major change was the ignition of the global financial crisis which turned into the big economic crisis. Even when the crisis seemed to be subsiding, it re-emerged with renewed force. The introduction of the euro in January 2009 and the crisis which broke out in the autumn of 2008 created a specific situation that needed to be addressed. Retailers could assume that the crisis would increase the anxiety of those customers who were able to buy and decrease their will to spend. One of the effective tools of retailers is advertising. As Slovakia has been known to attract its citizens by promotions and discounts, retailers can effectively motivate their potential customers to buy by implementing marketing pricing strategies, which are based on discounts. A potential customer's purchase capacity is an indispensable variable while implementing advertising. When a customer makes a purchase decision, it is implemented more as a subjective variable than an effective objective variable.

2.   The Aim of the Work, Conceptual Frame and Hypotheses

The interest focuses on potential retail clients. The aim of the work is to get the complex information about the relations between the three values by means of the multi-dimensional approach application:

1. *Perceiving the crisis and the country's joining the Eurozone*;
2. *Sensitivity to chosen marketing price strategies*;
3. *Subjective perceiving of one's own buying power*.

The results of this investigation can be useful while choosing and investing into the marketing pricing strategy taking into account target segments of potential clients, which are defined from the point of view of the crisis and euro perception. Discussed values are understood as variable environments, which are named easily but not exactly and which results in measurement difficulties. In such cases the question-based survey is often used where each examined value is connected with more items. This leads to creating the database consisting of a number of variables where getting the maximal information is possible by means of applying the multi-dimensional approach. The discussed database obtained in this way is not generally homogeneous. This is the reason why the next set of variables is considered in the form of demographic indicators which, when it is not

unavoidable, enter analyses in the role dividing the set into more homogeneous parts. From the bigger number of marketing price strategies which can be applied in the retail area there are four discounts to be implemented. The objects of further examination were the first three of them (Borges, 2009):

- **EDLP method** (Every Day Low Pricing). Retail salesmen EDLP explicitly emphasize that there is a low price in everyday offer which excludes the need to use advertising.

- **Hi-Lo method** (High Low Pricing). Retail salesmen Hi-Lo use strong advertising activity for a temporary price drop for certain products with higher common prices for products which are not the subject of advertising.

- **PMG method** (Price Matching Guarantees). Retail salesmen PMG guarantee that their shop offers the lowest price of either the chosen product or groups of products with the financial compensation as long as the customer proves that he has found a certain product at the lower price in another shop. Compensation can be low – payment of the price benefit or high – payment of ten times the price difference or other benefits (see Maťovčíková, 2010).

- **SDD method** (Steadily Decreasing Discounting). Retail salesmen use the SDD method instead of the Hi-Lo one and the difference consists in gradual adjustment of the reduced prices for chosen products to the original level instead of one time return to the Hi-Lo method. The goal is to maximise the price reduction effect (UMSBA, 2010).

We propose that potential retail customers characterized by a positive approach towards the euro and resisting the crisis actively will react to the chosen pricing strategy more positively than others. Hence,

Hypothesis 1: There exists a relation between the perception of the euro introduction in the country during the current influence of the economic crisis on potential retail customers in the East Slovak Region and their reaction on three observed marketing price strategies ELP, Hi-Lo and PMG.

We propose that positive subjective perception of potential retail customers' own purchasing power will induce positive adoption of the euro and a proactive approach to the crisis. Hence,

Hypothesis 2: There exists a relation between the perception of the euro introduction in the country during the current influence of the economic crisis on potential retail customers in the East Slovak Region and their subjective perception of their own purchase power.

As the hypotheses prove, it is still possible to specify the existing relations even more precisely. We will investigate the issue of the "credibility reaction" as well as "make purchase decision in response to the selected pricing strategy". Marginally, the so-called "compulsive buying" is discussed as well.

We propose that potential retail customers who are confident and do not suffer from fear of their own failure will adopt the euro positively and have a proactive approach to the crisis. Hence,

Hypothesis 3: There exists a relation between the perception of the euro introduction in the country during the current influence of the world economic crisis on potential retail customers in the East Slovak Region and their subjective anxiety about their future.

3. Research

3.1 Sample data

Randomly chosen clients of common shops were approached in order to test the hypotheses. The respondents were addressed by either e-mail or by survey – the market researchers of the project VEGA 1/0876/10, namely "The Research of Marketing Pricing Strategies of Retailers in Slovak Republic and Perceiving the Value of the Euro and Inflation in Slovak Republic in the Times of the Global Financial Crisis in Different Social Classes". The intense collection of data took place in the East Slovak Region from April to June 2010 which was in the second year after joining the Eurozone and in the third year since the beginning of the global economic crisis. This time interval was chosen not to be too short because of the expected stabilization following joining of the Eurozone as well as the development of the crisis in the minds of the respondents and not too long to let them perceive the given situation as a new one. The narrow time interval was determined in order to keep the homogeneity of the environment in the rapidly changing conditions from the point of view of the determined factors. 497 respondents were surveyed in the closing phase to deliver data for the subsequent analysis. The sample consisted of 70.6% women, 32% respondents of the academic background and 56.7% married ones. Depending upon how satisfied the respondents felt about their financial security, they can be put in the following groups: most thought of themselves as middle class citizens, some of the respondents said they lacked finances and very few said they had a financial surplus. The sample was extensive enough to implement the multi-dimensional approach in order to obtain the biggest number of details from the research data.

3.2 Measurements

Apart from demographic characteristics the questionnaire consists of more thematic parts but for the purpose of this study only some of them were chosen. The aim of the nine binary items in the questionnaire that were introduced with: "*Please agree or disagree with the following statements*" was to examine the purchase behaviour in relation to some sensible marketing price strategies, specifically EDLP, PMG and Hi-Lo.

The last item is negatively formulated so that it differs from the previous ones and its purpose was to show disinterest in advertising in food categorically. The contents of the questionnaire and representation of the answers are shown in Table 1.

Table 1 | Customer Response Depending on their Opinion on the Chosen Marketing Pricing Strategy

Statement and response:	N 100%	statement	
		no%	yes%
I. EDLP presented:			
1. I am willing to trust this statement.	433	69.28	30.72
2. I am determined to shop there if there is the necessity to do so.	430	33.72	66.28
II. PMG presented:			
3. I am willing to trust this statement.	480	63.13	36.88
4. I am determined to buy this product there if there is the necessity to do so.	465	41.29	58.71
III. Hi-Lo presented for food:			
5. I will buy food products at a reduced price there even if I have not thought about it in advance but nothing else except for those items.	444	71.40	28.60
6. I will buy food products at a reduced price there even if I have not thought about it in advance and also quite a lot of other products in addition to them.	444	78.15	21.85
7. I will buy food products at a reduced price there only when I really need them and almost nothing else.	426	44.60	55.40
8. I will buy food products at a reduced price there only when I really need them and also quite a lot of other products, too.	431	67.98	32.02
IV. No response to the presented strategy:			
9. I do not react to food product leaflets by visiting the shop on purpose.	398	53.52	46.48

Source: own calculations in SPSS, specific statistical software

The next part of the questionnaire contains seven positively formulated items that are measured on the five grade ordinal Likert scale (from 1 for *strongly disagree* to 5 for *strongly agree*). These items are aimed at the perception of the crisis and at the introduction of the euro and are presented as "*Please express to what extend you agree with the following statements*".

Formulation of these seven items, their average values and standard deviations (this is not really correct for the ordinal scale but useful for quick reference) are shown in Table 2 and their relative frequencies in Table 3.

Table 2 | Descriptive Statistics

Statement	N	Mean	Std. Deviation
1. introducing the euro was an unavoidable step	492	3.27	1.306
2. I was happy with the introduction of the euro	496	3.02	1.256
3. a personal profit as a result of the crisis	492	1.65	0.872
4. expecting an early end of the crisis	492	3.13	1.214
5. the crisis is an opportunity for recovery	491	2.77	1.119
6. the overall situation after the crisis will improve	492	3.07	1.085
7. I will do better after the crisis	494	3.02	1.090

Source: own calculations

Table 3 | Relative Frequencies (Valid N = 487 for Intersection of 7 Items)

Statement	%					N
	1 - no	2	3	4	5 - yes	
1. introducing the euro was an unavoidable step	11.8	21.7	11.8	36.6	18.1	492
2. I was happy with the introduction of the euro	12.5	28.0	16.3	31.0	12.1	496
3. a personal profit as a result of the crisis	53.5	34.3	7.1	3.7	1.4	492
4. expecting an early end of the crisis	6.7	34.1	11.6	34.1	13.4	492
5. the crisis is an opportunity for recovery	14.3	27.7	31.8	19.8	6.5	491
6. the overall situation after the crisis will improve	5.3	32.3	20.5	34.3	7.5	492
7. I will do better after the crisis	5.5	33.8	22.1	30.6	8.1	494

Source: own calculations

Let us emphasize that items 5. and 6. in part III of Table 1 can be understood as the compulsive buying (Ridgway *et al.,* 2008) of food products in response to the Hi-Lo strategy. Integrating the respondents into social groups led to creating the variable termed *soc* and has subsequently divided respondents into three groups. From the group of 491 valid respondents, 22.2% said that they were in need or suffered from the lack of resources, 74.3% said that they were in possession of as many resources as they required and 3.5% said that they had a surplus. The subjectivity of this variable is obvious – it does not reflect the objective amount of resources which are at the respondents' disposal but the subjective feeling of satisfaction associated with possession can amount to diametrically

different levels of subjective satisfaction. However, it is expected that this subjectivity is reflected by the purchase behaviour.

The further part of the survey focuses on the anxiety measure of the future with the use of 18 variables measured on the five-degree Likert scale (where: 1 – *I am not afraid*, 5 – *I am afraid a lot*). A detailed description of these variables is given in the part 4.5 of the article.

4. Analysis and Results

4.1 Factor analysis of the euro and crisis perception

To obtain a more detailed insight into the results, we began to reduce the dimensionality of the original seven variables concerning the perception of the introduction of the euro and the global crisis in order to obtain a lower number of latent factors which were later used as the input data for further analysis. The factor analysis is a method that is often used in the research area of psychology (Lord, Novick, 2008), (Frankovský *et al.,* 2009) as well as sociology (Birknerová *et al.,* 2009) for example to reduce the dimensionality of manifest variables by means of obtaining a lower number of new latent variables, which are the linear combination of original variables and explain the satisfactory percentage of variability in the original data sample of the manifest variables. According to the SPSS knowledge base (2001) the factor analysis is determined primarily for interval variables and works also well with either ordinal or binary data. Ordinal variables from Table 2 were used as input variables for factor analysis, which was based on 487 items of valid data. The so-called Rule 10 is met as the ratio criterion of the number of subjects to the number of variables is greater than 10: There should be at least 10 cases for each item which is used (Everitt, 1975; Garson, 2008). The best extraction method chosen by comparing the amount of the variability of single manifest variables determined by the found latent factors was the method called Principal Component Analysis (PCA). The PCA method generates factors as uncorrelated linear combinations of manifest variables. During the choice of rotation and by comparing different rotated solutions it was confirmed that the most appropriate rotation, from the interpretation point of view was the orthogonal Varimax rotation minimizing the number of variables which have high factor loadings in more factors. The Keiser-Mayer-Olkin's adequacy test with the value of 0.662 proved the adequacy of the determined sets of variables. The Bartlett's sphericity test (chi^2=729,883; d.f.=21; sig=0.000) confirmed that the correlation matrix of the discussed variables is not an identity matrix. Three factors were determined because of the low communality value for the variable "*has the current crisis helped you – personal profit*" at the implicit double-factor solution where the interpretation aspect was not negligible. The reliability analysis (Řehák, 1998) of the final solution, relevant only for the first factor which as the only one saturated with more than two variables, led to the accepted Cronbach's alfa 0.691 value. The first factor explains 36.441% of the variability of the seven original manifest variables, the second factor explains 19.145% of the variability and the third one 13.451% of the variability. It is unusual to work with the factor which is saturated with a single variable but for the purpose of interpretation and input to the further analyses it is needed and accepted in terms of the explained variability. 70% of the variability in the sample data is explained by means of the chosen model. The factor loadings (the correlation coefficient between a factor and a variable) of the rotated solution are obtained

as a result and shown in Table 4. The rotated solution enables us to interpret extracted factors.

Table 4 | The Rotated Matrix of the Main Components

Statement:	Component		
	1	2	3
1. introducing the euro was an unavoidable step	0.128	**0.882**	-0.011
2. I was happy with the introduction of the euro	0.065	**0.884**	0.125
3. a personal profit as a result of the crisis	0.091	0.099	**0.946**
4. expecting an early end of the crisis	**0.693**	0.037	-0.179
5. the crisis is an opportunity for the market recovery	**0.574**	0.362	0.184
6. the overall situation after the crisis will improve	**0.838**	0.150	0.078
7. I will do better after the crisis than now	**0.707**	-0.026	0.289

Source: own calculations

- *Factor 1* is saturated with items *4–7* from Table 4 (*expecting an early end of the crisis, the crisis is an opportunity for the market recovery, the overall situation after the crisis will improve, I will do better after the crisis than now*). The appropriate term for the first factor is "*crisis perception*".

- *Factor 2* is saturated with items *1–2* (*introducing the euro was an unavoidable step, I was happy with the introduction of the euro)* and the adequate name for it is "*perception of the euro's introduction*".

- *Factor 3* is saturated with the only item *3* (*a personal profit as a result of the crisis*) which is expressed by "*the profit of the crisis*".

4.2 Cluster analysis on the basis of the crisis and euro perception

Cluster analysis was used to determine whether it is possible to identify the population segment with positive attitudes towards purchasing from the feedback to the EDLP, Hi-Lo or PMG strategy on the basis of the perception of crisis and euro introduction. The cluster analysis naturally reveals the most homogenous groups of respondents where single clusters differ considerably from one another. Clusters are generated by minimizing differences inside respondents and maximizing differences between clusters. The goal of this analysis was to reveal the existing segments of customers on the basis of the euro and crisis perception and examine whether any of these segments may develop an increased tendency to their purchase decision in response to the above mentioned strategies. With the use of the *k-means cluster* method we found two-, three-, four- and five-segment solutions and their mutual comparison. However, the five-segment solution proved to be the optimal one from the point of view of either its significance or interpretability. With the use of another method – *Two-step cluster* (Zhang *et al.*, 1996), (Chiu *et al.*, 2001)

with the implementation of the *log-likelihood* scale for measuring the distance between the points with the use of the BIC criterion it was possible to confirm the optimal five-segment model and to select respondents belonging to the separate segments. This method is able to determine automatically the optimal number of segments and adjust each respondent to one of the resulting segments.

Standardized variables are introduced into the *Two-step cluster* algorithm where distances are dealt with and they must be a single scale. The principle purpose of the analysis is to search for similarities in the sample data on the basis of the distances between single points in the multi-dimensional space. Close clusters of points are searched for on the basis of a chosen scale for measuring distances between the points and the properly chosen algorithm. The assumption of the independence of variables entering the cluster analysis was respected, which results from their nature since they are the product of the PCA algorithm of the previous analysis. The number of found clusters results from optimization of the used algorithm. The centroid is calculated in each found cluster, for each variable (factor) it is the average of the values of the respondents who belong to the cluster. A statistic test is evaluated for each average value which examines whether the average value is significantly higher or respectively lower than all the average of all respondents. The cluster is evaluated according to the direction in which certain variables differ from the total centroid (Aldenderfer, Blashfield, 1984). There are three reasons why it is good to use the two step clustering method:

1) It works with two connected and categorial data by enlarging the scale based on the model shown in (Banfield, Raftery, 1993).

2) It works with the two-step clustering approach similar to the BIRCH algorithm (Zhang *et al.*, 1996).

3) It gives the possibility to find the optimal number of clusters automatically" (SPSS, 2001).

The cluster analysis applied for three extracted latent factors generated a new variable *cluster* which divides the 487 valid respondents into five homogenous groups, from the perception point of view of introducing the euro during the crisis.

Table 5 shows the average values of each cluster in the three identified latent variables for perception (factors). The average values significantly differ from the total centroid and are shown in bold. Since the factors are standardized variables, the centroid equals 0 and the deviation rate of the average of single clusters for each factor from the centroid is easily interpreted and comparable.

**Table 5 | Cluster Analysis Based on Perception Variables of the Euro and Crisis**

| Cluster	F1 crisis	F2 Euro	F3 profit
1 crisis pessimists: crisis--, euro+, profit- (n = 80; 16.4%)	**-1.137**	**0.755**	**-0.401**
2 optimists: crisis+, euro+, profit- (n = 132; 27.1%)	**0.541**	**0.919**	**-0.316**
3 euro pessimists: crisis+, euro-, profit- (n = 113; 23.2%)	**0.886**	**-0.858**	**-0.271**
4 pessimists: crisis-, euro-, profit 0 (n=107; 22%)	**-0.867**	**-0.934**	-0.092
5 profiteers: crisis 0, euro+, profit++ (n=55; 11.3%)	0.223	**0.277**	**2.077**
Probability of type 1 error	**0.000**	**0.000**	**0.000**

Source: own calculations

It is possible to characterize clusters of respondents from Table 5 in terms of naming factors. Differences in contribution significance of single factors to the specified clusters of respondents are shown by means of the graphs (Figure 1), where the factors in the clusters are illustrated by their contribution to the significance, also concerning their size and direction.

The graphs clearly show which factor was dominant when specifying a cluster and to what extent it is more dominant than others.

Figure 1 | Significance of the Factor Contribution (namely F1-crisis, F2-euro, F3-profit) while Creating Clusters with an Insight into the Test Statistics Exceeding the Critical Value

EURO PESSIMISTS

PESSIMISTS

PROFITEERS
Cluster Numbers

Critical Value

Test Statistic
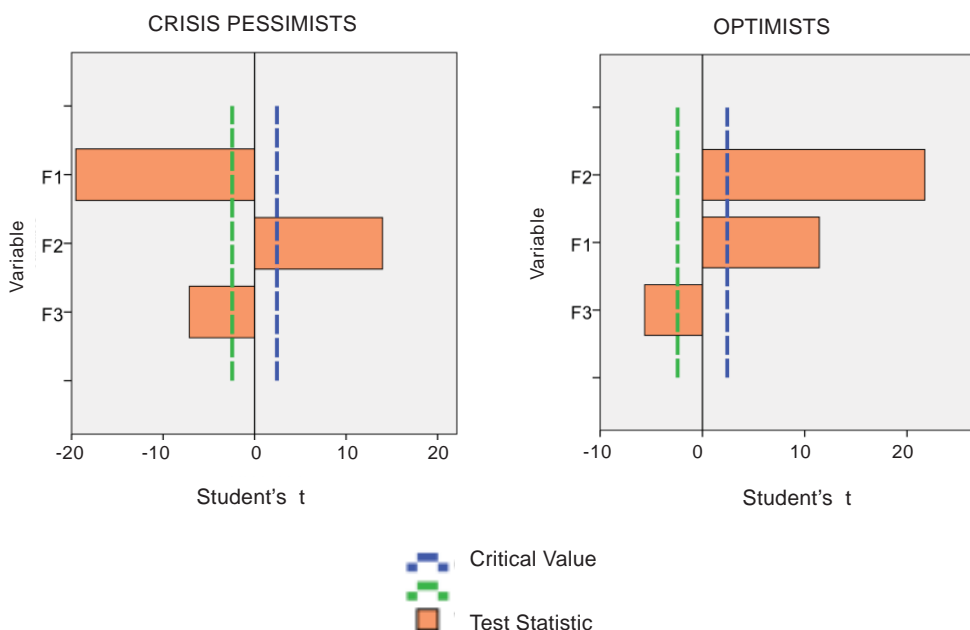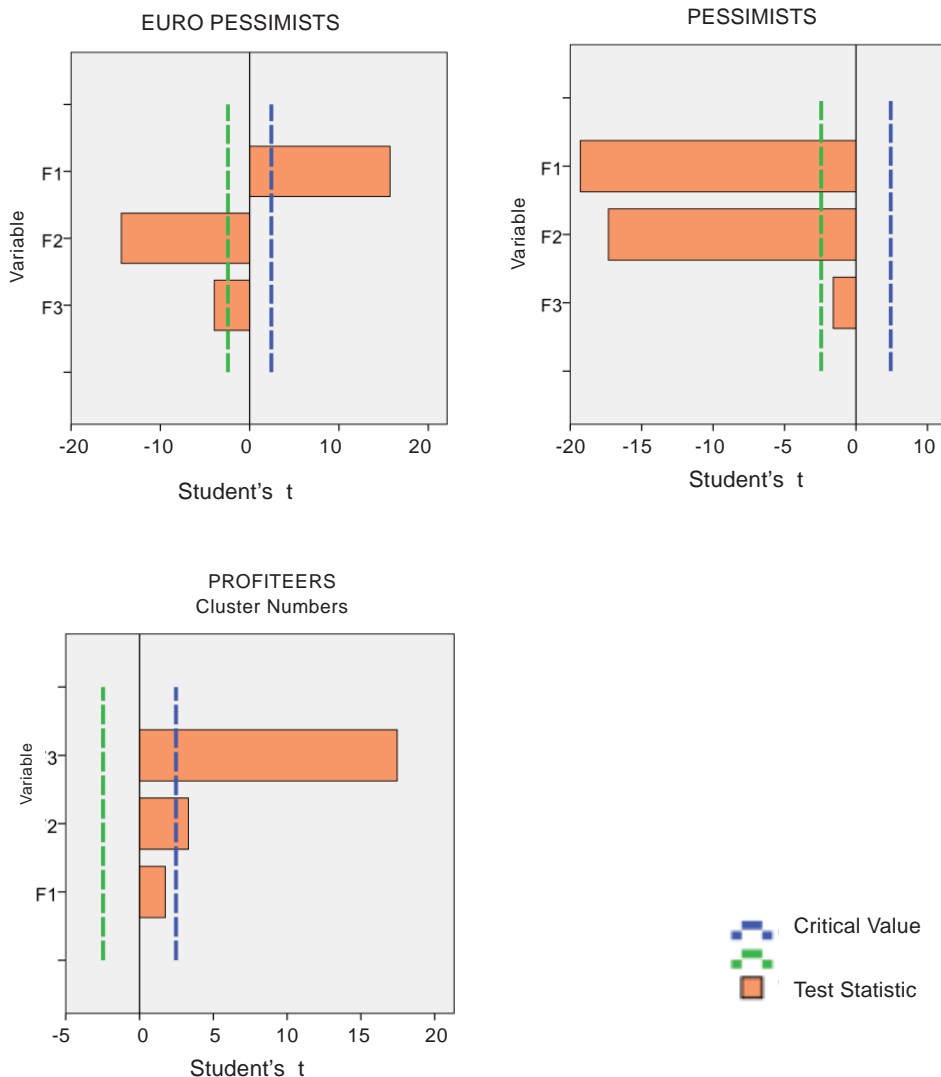
Source: own calculations

The variable *Cluster 1* means that the respondents have a significantly more negative approach towards the crisis (with the highest negativity in the crisis factor), positively accept the euro and who make no profits from the crisis, "*crisis pessimists*".

The *Cluster 2* mostly represents the respondents who are positively tuned towards the crisis, positively accepting the euro (the highest positivity) and who do not make a profit from the crisis but less than in *Cluster 1*, "*optimists*".

Cluster 3 represents the respondents who are mostly significantly positively tuned in terms of the crisis (the highest positivity), are negative about the euro and do not make any profit from the crisis but less than in *Cluster 2*, "*euro pessimists*".

Cluster 4 represents the respondents who are significantly negative about the crisis, negative about accepting the euro (the highest negativity), "*pessimists*". The profit from the crisis does not deviate significantly from the sample data.

Cluster 5 is the only cluster with a very significant positive profit from the crisis, "*profiteers*". An interesting side product of this finding is the fact that 11.3% of the respondents make a profit from the crisis. In the question of the crisis "profiteers" have an average insignificant approval, accept the euro significantly positively. It is a logical assumption that even if they did not make a profit from the crisis, their opinion on the crisis would also be positive. From the point of the positivity scale, it is possible to rank clusters beginning with the most positive one: "*optimists, profiteers, euro pessimists, crisis pessimists, pessimists*".

4.3 The relation of segmentation to the purchase behaviour

The aim of preparing of a new variable *cluster* from previously obtained latent variables concerning perception of the euro introduction in the prevailing crisis was to reveal the relationship between participation in the cluster and obtaining trust towards the retail tendency to making a purchase decision in response to the used strategy EDLP, PMG or Hi-Lo. Let us remember that there were 9 binary variables implemented to measure the previously mentioned customers' response listed in Table 1. The likelihood ratio test was used to reveal relations between each of these binary variables and the nominal variable *cluster* acquiring 5 possible values for 5 different segments respectively clusters or clusters of respondents (Agresti, 2002; Litavcová, Butoracová-Šindleryová, 2009). The results of the test are presented in Table 6. Hypothesis 2 is confirmed in Table 6 for 7 out of 9 statements.

Residual analysis (not submitted here in details) led to the next interpretation for each of significant relationships:

i. The response to the EDLP strategy is considered hereby. In the case of the first statement, concerning the credibility increase in customers, in response to the implemented pricing strategy EDLP the residual analysis revealed that the most significantly positive response is seen in "*optimists*" whereas the negative belongs to the "*crisis pessimists*". The second statement concerns the tendency to make a purchase decision in response to the EDLP strategy. Here, the segment "*optimists*" has the highest positive response and the segment "*euro pessimists*" has the most negative response. However, the value *p* slightly exceeds the conventionally accepted level of significance 0.05 (Table 6).

ii. In response to the PMG strategy, "*pessimists*" are significantly the least positive, more about credibility (statement 3 from Table 6) and less about the tendency to make a purchase decision (statement 4 from Table 6). Concerning credibility, the segment "*optimists*" presents a significant positive reaction in response to PMG. The significance of these two statements concerning the PMG strategy is shown at the level of significance 0.05 (Table 6).

iii. There was another approach concerning the Hi-Lo strategy than for the EDLP and PMG strategies because of irrelevancy in this case. We focused only on the response to the Hi-Lo strategy in the case of food products, where we analysed whether the respondent buys these products even if he does not need them and if

he reacts to this strategy, whether he buys other products not available at a reduced price. The credibility was not examined for the Hi-Lo strategy, only the tendency to make a purchase decision.

In the case of statement 5 concerning an unintended purchase of only discount food products, the response to the Hi-Lo strategy there is not significant relationship with the segmentation of the respondents.

Table 6 | The Relation between Affiliation to the Segment and the Pricing Strategy

| Statement and response:	Likelihood ratio	d.f.	P
I. EDLP presented:			
1. I am willing to trust this statement.	12.423*	4	0.014
2. I am willing to shop there if I need to.	8.380	4	0.079
II. PMG presented:			
3. I am willing to trust this statement.	12.121*	4	0.016
4. I am willing to buy this product if I need to.	11.487*	4	0.022
III. Hi-Lo presented for food:			
5. I will buy food products at a reduced price there even if I have not thought about it in advance but not much else.	5.438	4	0.245
6. I will buy food products at a reduced price there even if I have not thought about it in advance and also quite a lot of other products to.	17.012**	4	0.002
7. I will only buy food products at a reduced price there only when I really need them and almost nothing else.	10.053*	4	0.040
8. I will only buy food products at a reduced price there only when I really need them and quite a lot of other products.	9.831*	4	0.043
IV. No response to the presented strategy:			
9. I do not react to food product leaflets by visiting the shop on purpose.	17.315**	4	0.002

Source: own calculations

In the case of statement 6, in response to the Hi-Lo strategy the situation is opposite. It concerns the unintended compulsive purchase (Ridgway *et al.*, 2008) of other not discounted products. Here, the significant relationship is shown at the level of significance 0.01. The residual analysis revealed that in the case of the discussed purchase pattern "*optimists*" have a significantly positive attitude, "*profiteers*" and "*pessimists*" have an insignificant attitude but still positive and "*crisis pessimists*" have significantly a negative attitude and "*euro pessimists*", too.

As far as the purchase of food products is concerned in response to the Hi-Lo strategy, such ones as the respondents needed and thought about, there is a significant relationship confirmed at the significance level 0.05 for two discussed situations included in statement 7 and 8 in Table 6. In the case of purchasing only needed discounted food products in response to the Hi-Lo strategy (statement 7), "*crisis pessimists*" have the highest positive deviation against the independence assumption. Negative attitude of the answer to the seventh item belongs significantly to the "*profiteers*". While buying discounted food products also connected with compulsive buying other products in response to the Hi-Lo strategy (statement 8), "*euro pessimists*" show the significant positive reaction but "*crisis pessimists*" are characterized by the significant negative reaction. "*Profiteers*" are likely to respond the least to food product leaflets which is formulated negatively in Table 6, statement 9. "*euro pessimists*" show the highest response here. The significant relationship is confirmed at the significance level 0.01.

4.4 The relation of segmentation with the subjective evaluation of the purchasing force

The above presented variable *soc* offers 3 possible values. 22.2% of the respondents said that they suffered from a lack of resources or are in need, 74.3% of the respondents said that they had as many resources as they needed and 3.5% of the respondents answered that they had too many resources. The above created variable *cluster* offers 5 possible values – segments, according to how respondents perceive the introduction of the euro and crisis, its distribution is in Table 5. The verification of the Hypothesis 2 means searching for the relationship of these two variables. The Figure 2 presents the mutual distribution of the discussed variables. Their mutual relationship is obviously visible in the graph. The likelihood ratio test rejected the zero hypothesis about the independence of the discussed stochastic values (G^2=45.985; d.f.=8; sig=0.000). The hypothesis about mutually belonging to a social group and looking at the introduction of the euro and crisis was confirmed at the test level 0.01. This proves Hypothesis 2. The residual analysis leads to a detailed interpretation. The extremely high residual value appears in the case of the segment with a negative look at the crisis and the euro introduction. This concerns the group with lowest levels of security (std. res. 4.3). There are significantly more respondents here than expected in the case of independence. The opposite situation appears when the opinion about the euro and crisis is positive, in case of the group with lower security (std. res. -2.2). There are fewer respondents than expected in the case of independence here. The same is seen in the case of the segment profiting from the crisis (std. res. -2.0).

low   medium   high
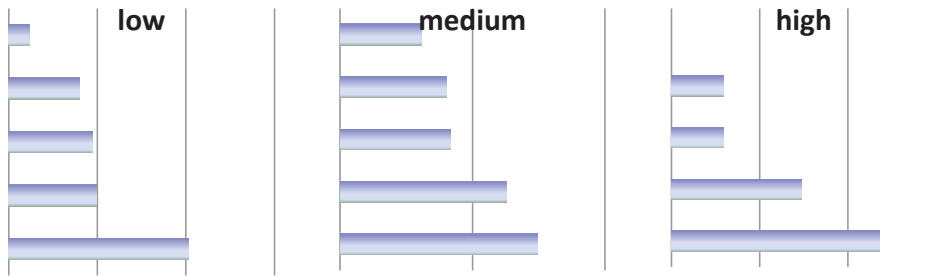
Source: own calculations

4.5 Factor analysis for feeling fear and uncertainty of future

The anxiety measure of the future is measured by means of 18 variables measured on the five-degree Likert scale (where: 1 - *I am not afraid*, 5 – *I am afraid a lot*). Means and standard deviations for these variables are presented in Table 7. All bivariate correlations between them are significant at the significance level of 0.01. As there is a big number of them fulfilling the assumptions, it was analysed with the use of the multi-dimensional approach. 451 out of 497 respondents answered all 18 questions concerning evaluating the measure of fear and here fulfilling the criterion of the number of subjects to the number of variables is higher than 10. The Principal Component Method (PCA) was the best extract method of choosing by comparing the amount of variability of separate manifest variables explained by found latent factors. While choosing the rotation and comparing different rotating solutions, it was proved again that the most convenient, from the point of interpretation view, is the Varimax rotation which minimises the number of variables with high factor loadings in more factors. The Keiser-Mayer-Olkinov test of adequacy confirmed, at the value of 0.934, the adequacy of the chosen set of variables. The Bartlett's Sphericity Test (chi^2=4114.853; d.f.=153; sig=0.000) confirmed the correlation matrix of discussed variables is not the one-unit identity matrix. After choosing the factor solution with satisfying communalities for all variables, 68.549% variability of original manifest variables was explained by means of the model way. Factor loadings of the rotated solution are shown as a result in Table 7. Before using the factor analysis, the analysis of reliability of manifest variables proved that all 18 variables measure the variable *fear* in the same direct way. This variable is difficult to measure and this is the reason why none of them should be excluded from the analysis. There exist more measurement methods to measure reliability (the Cronbach's alpha value equals 0.927). Reliability is defined as the determination coefficient of measurement of the variable *X* with implementing the real value *T* with the use of $X = T + E$, where *E* is an error caused by measuring *X* (Lord; Novick, 2008). The reliability coefficient is the determination $rel\ (X/T) = r^2(X,T) = varT/varX$, according to the variability *T* taking into account the variability *X* (Řehák, 1998).

Table 7 | The Rotated Matrix of the Main Components of Anxiety and Descriptive Statistics of Variables Concerning Fear

I am afraid	Component					Mean	Std. dev.
	1	**2**	**3**	**4**	**5**		
1. that I will be ill	0.198	0.012	0.295	0.488	**0.597**	3.22	1.117
2. that I will be made redundant	0.282	0.316	0.057	0.049	**0.815**	3.07	1.140
3. that I will stay alone	0.080	**0.652**	0.190	0.345	0.203	2.83	1.164
4. of being old	0.171	0.208	0.169	**0.833**	0.052	2.64	1.029
5. of debts	0.408	0.262	0.121	**0.457**	0.312	3.05	1.173
6. of my family	0.253	0.230	**0.623**	0.130	0.256	4.00	0.971
7. that prices will go up	**0.678**	0.264	0.145	0.241	0.114	3.09	1.026
8. of being poor	**0.579**	0.315	-0.005	0.495	0.143	2.94	1.010
9. of losing my friends	0.214	**0.796**	0.191	0.126	0.019	2.65	1.088
10. social disturbances	0.370	0.228	**0.665**	0.068	-0.016	3.08	1.070
11. of my future	**0.605**	0.410	0.017	0.272	0.295	3.11	1.073
12. that I will fail socially	0.231	**0.726**	0.112	0.000	0.198	2.56	0.974
13. of violence	0.216	0.185	**0.781**	0.141	0.059	3.46	1.035
14. that no one will help me	0.244	**0.698**	0.255	0.181	0.066	2.76	1.034
15. consequences of the crisis	**0.750**	0.185	0.246	0.192	0.154	3.10	0.950
16. that there will be big unemployment	**0.783**	0.172	0.257	0.055	0.157	3.28	0.985
17. that there will be high inflation	**0.762**	0.138	0.290	0.102	0.133	3.14	0.951
18. that there will be no resources for pensions	**0.735**	0.110	0.303	0.057	0.078	3.59	1.120

Source: own calculations

By analysing factor loadings included in Table 7 which are achieved by separate variables in the five-factor solution it is possible to name the result factors as follows:

The fear factor F1 is filled with the variables *7*, *8*, *11*, *15*, *16*, *17*, *18*. The adequate name for *F1* is "*the external financial causes for fear, economy*" is here fear about perceiving the state of economy. The first factor explains 45.3% variability in the set of data. The Cronbach's alfa of variables satisfying *F1* equals 0.902 .

The fear factor F2 is saturated with variables *3*, *9*, *12*, *14*. The adequate name is "*internal causes of personal distress*", these are concerns arising from the lack of self-confidence. The second factor explains up to 7.8% variability in the data sample. The Cronbach's alfa of variables satisfying *F2* equals 0.812.

The fear factor F3 is saturated with variables *6*, *10*, *13*. The adequate name is "*external violent causes of fear, violence*" since it is saturated with items related to

external violence. The third factor explains up to 6.2% variability in the data sample. The Cronbach's alfa of variables satisfying *F3* equals 0.726.

The fear factor *F4* is saturated with variables *4*, *5*. The adequate name is " *fear of the expected adverse situation*" since it is expected that everybody will be old as well as those who take credits expect they will be debtors. The fourth factor explains up to 5.2% variability in the data sample. The correlation coefficient between two variables which saturate *F4* equals 0.465 and sig.=0.000.

The fear factor *F5* is saturated with variables *1*, *2*. The adequate name is "*fear of an unexpected adverse situation*" because these are events which either can come into being or not. The fifth factor explains up to 4.0% variability in the data sample. The correlation coefficient between two variables which saturate *F5* equals 0.429 and sig.=0.000.

From the interpretation point of view it would possibly be the four-factor solution which connects the variables mentioned above to the fourth factor. The higher percentage of the variability explained in the model is a better choice for the subsequent analyses from the point of view of the use of factors.

4.6 Cluster analysis for feeling fear and uncertainty of the future

The goal was to learn how feeling fears about the future and perception of the euro introduction in the times of crisis influence each other (see Hypothesis 3). Subsequently, the fear factors *F1* and *F5*, the latent variables representing fear, used as input data for cluster analysis with the goal to divide the valid set of respondents into groups in accordance with the measure and the type of perceived fear. The application of the cluster analysis into five extracted factors divided 451 respondents into four relatively balanced clusters where for *Cluster 1*: n=126 (27.9%), *Cluster 2*: n=125 (27.7%), *Cluster 3*: n=102 (22.6%) and *Cluster 4*: n=98 (21.7%).

Table 8 presents average values for individual clusters for in the individual factors. The average values for which there is a significant difference from the centroid are formatted bold. As the input data for the analysis is standardized variables, the overall centroid has its mean 0 with the standard deviation 1. It is possible to characterise clusters of respondents in the sense of naming factors on the basis of Table 8. Having regard to the individual percentages of variability of the factor model which are explained by means of individual factors, the greatest weight should be given to the characteristics of clusters in terms of Factor 1 and, moreover, take into account Factors 2 and 3.

The fear *Cluster 1* includes respondents who are significantly less suffering from external causes of financial distress. They are also afraid that they can find themselves in an unexpected, unwanted situation. They suffer more from the external violent causes of fear as well as fear of an unexpected, unwanted situation. They are the people who are least afraid of societal economic circumstances and most afraid of the violence. However, they are considerably afraid of losing a job and an illness.

The fear *Cluster* 2 includes respondents who are significantly more suffering from external causes of financial distress and significantly less suffering from the fears of un-wanted situations. These people are most afraid of societal economic circumstances.

The fear *Cluster* 3 includes respondents who are significantly less suffering from external causes of financial distress as well as violent and internal personal causes of fear.

Their fear of losing a job or an illness is on the significance borderline. These people are confident and fearless in terms of targeting the first three factors.

The fear *Cluster* 4 includes respondents who are significantly more efface their internal personal causes of fear. They significantly suffer more from external causes of financial distress. They are high above the significance borderline in terms of being afraid of expected adverse situations. These people are not self-confident and frustrated.

To sum up, respondents discussed in the clusters are afraid of: 1 - violence, 2 - economy, 3 - are not afraid, 4 - themselves.

Table 8 | Cluster Analysis Results, Fear Variables Concern

Cluster, - note concern F1-F3.	F1 economy	F2 personal	F3 violence	F4 bad expected	F5 bad not expected
1 - big violence fear (n = 126)	**-.660**	-.090	**.806**	**-.385**	**.496**
2 - big economy fear (n = 125)	**.647**	.199	.043	**-.619**	**-.656**
3 - not big fear (n = 102)	**-.329**	**-.665**	**-1.149**	.037	**.282**
4 - big personal fear (n = 98)	**.365**	**.554**	.623	**1.247**	-.095
P	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

Source: own calculations

4.7 Finding relationship between two different segments of respondents

The multi-dimensionality of variables responsible for perception of the euro and crisis as well as variables evaluating the measurement of fear of the future was first reduced to eight factors and later to two dimensions. The goal remains to find relationship between the two dimensions - the variable *cluster* which divides respondents to five groups in accordance with perception of the euro and crisis and the variable *clusterS,* which divides respondents into four groups on the basis of the perceived fear.

The statistical significance of the relationship of variables *cluster* and *clusterS* was tested by the Chi-square test (chi2=31.612; d.f.=12; sig=0.002) and by the Likelihood ratio test (G²=33.226; d.f.=12; sig=0.001). The result of the test proved that the relationship between the perception of the euro's introduction and the current course of the crisis on the one side and the intensity of perceived fears of the future on the other is significant, p<0.01.

Further detailed interpretation of the results requires the table of the relative frequency distribution of variables *Cluster* and *ClusterS* (Table 9).

Table 9 | The Relative Frequency Distribution of the Fear Cluster vs. the Clusters of Views

The cluster of view factors - "cluster"		1 afraid of violence	2 afraid of economy	3 the fearless	4 afraid of themselves	Together
		The fear factor cluster - "clusterS"				Together
1 crisis --, euro +, profit -	Count	22	19	21	13	75
	Expected count	21.1	20.8	17.2	15.9	
	% row	29.3%	25.3%	28.0%	17.3%	100.00%
	% column	17.6%	15.4%	20.6%	13.8%	16.90%
2 crisis +, euro +, profit -	Count	46	34	26	16	122
	Expected count	34.3	33.8	28.0	25.8	
	% row	**37.7%**	27.9%	21.3%	**13.1%**	100.00%
	% column	**36.8%**	27.6%	25.5%	**17.0%**	27.50%
3 crisis +, euro -, profit -	Count	30	22	20	23	95
	Expected count	26.7	26.3	21.8	20.1	
	% row	31.6%	23.2%	21.1%	24.2%	100.00%
	% column	24.0%	17.9%	19.6%	24.5%	21.40%
4 crisis -, euro -, profit 0	Count	12	32	22	35	101
	Expected count	28.4	28.0	23.2	21.4	
	% row	**11.9%**	31.7%	21.8%	**34.7%**	100.00%
	% column	**9.6%**	26.0%	21.6%	**37.2%**	22.70%
5 crisis 0, euro +, profit ++	Count	15	16	13	7	51
	Expected count	14.4	14.1	11.7	10.8	
	% row	29.4%	31.4%	25.5%	13.7%	100.00%
	% column	12.0%	13.0%	12.7%	7.4%	11.50%
Together	Count	125	123	102	94	444
	% row	28.20%	27.7%	23.0%	21.2%	100.0%
	% column	100.00%	100.0%	100.0%	100.0%	100.0%

Source: own calculations

Expected frequencies in Table 9 satisfy the conditions of using the Chi-square test. The cells with the considerable deviation from the assumed independence are formatted bold. The following detailed residual analysis showed that the significant contribution to the significance of relationship between two different cluster distribution has a positive deviation, frequencies compared to the expected frequency for *Cluster* 2 (crisis+, euro+, profit 0) as well as for *clusterS* with the value 1 (big violence fear), std. res.=2.0. On the other hand, the negative standardized residue is calculated for *Cluster* 2 (crisis+, euro+, profit 0) as well as for the *clusterS* with the value 4 (big personal fear), std. res.=−1.9. Moreover, respondents with the negative perception of the crisis and euro, *Cluster* 2 (crisis-, euro-, profit 0) achieved the high negative std. res.=−3.1 in *ClusterS 1* (big

violence fear) and the high positive std. res. in C*lusterS 4* (big personal fear). Thus, the people who perceive the euro and the crisis positively are particularly prone to have a fear of external violence and not to have their own frustrations from which one can infer that these people are confident and successful. Conversely, the people who perceive the euro and the crisis in a negative way are prone to have concerns about their own failure and not to be afraid of external violence. These people are less confident. This proves Hypothesis 3 and, moreover, new variables, *ClusterS* and *Cluster*, generated by dividing respondents into groups according to the measure of fear and perception of the crisis and the euro have an interesting interpretation. If we recall that it is possible to order clusters according to the measure of positivity beginning with the most positive "*2-optimists, 5-profiters, 3-euro pessimists, 1-crisis pessimists, 4-pessimists*", then we can see that fear perception in neighbouring clusters 2 and 5 is very similar.

5. Conclusion

Reaction to the chosen marketing strategies EDLP, Hi-Lo and PMG has already been studied from many points of view. For example, Monica Kukar-Kiney (Kukar-Kinney *et al.*, 2007) demonstrates the relationship between pricing policy fairness and price fairness and their consequent effects on shopping intentions. Adilson Borges (Borges, 2009) demonstrates the influence of interaction EDLP and PMG to a different depth on credibility and buying intention. The goal of our work was to study the response to the chosen marketing prices from a new unique point of view. Slovakia's joining the Eurozone in January 2009 at the time of the global crisis created a very specific situation. We showed that perception of the interaction of these two new values is related to the examined reaction to EDLP, Hi-Lo and PMG. Our analysis divided the respondents into five segments different from the point of the euro and crisis perception. Moreover, it showed that the responses of the members of these segments to the chosen price strategies EDLP, Hi-Lo and PMG differ significantly. The difference is emphasized most in the segment of respondents who positively perceive the euro's introduction and crisis and response positively to the EDLP as well as PMG strategies and have a positive attitude to compulsive purchasing in the case of reaction to the Hi-Lo strategy. It concerns approximately 23% of the total number of respondents who can be seen as the most interesting for retailers as a result of this information. In contrast, the segment profiting from the crisis is not sensitive to the EDLP, PMG or Hi-Lo strategies and has the attitude not to react to them. From the subjective point of assessment of the own purchase force, the sequence of segments from the highest to the lowest purchase force is as follows: 1. profiting from the crisis, 2. perceiving the euro and crisis positively, 3. euro pessimists, 4. crisis pessimists, 3. euro and crisis pessimists where purchase force is in a statistically significant relationship with the attitude towards the euro's introduction and the crisis. Further information obtained from the data concerns the relationship between the perception of the euro and the crisis as well as between anxiety about the future. The analysis divided the respondents into four segments different from the point of feeling fear and uncertainty about the future. It was proved that this division of respondents corresponds with the above mentioned division into five segments different from the point view of the euro and crisis perception. It was shown that euro and crisis pessimists have the biggest concerns about their own failure and, conversely, those who perceive the

euro and crisis positively have the smallest concerns. However, optimists are afraid of violence most. In summary, it was shown that potential retail customers who are confident and do not suffer from fear of their own failure adopt the euro significantly positively and have a proactive approach to the crisis. Also, potential retail customers who feel sufficiently financially secure adopt the euro significantly positively and have a proactive approach to the crisis. Potential retail customers who have a positive perception of the euro and the crisis are significantly more responsive to the selected pricing strategy. In the next step, it is possible to combine these three aspects *e.g.* by using log-linear analysis. It was possible to obtain the complex information from the data by means of the multi-dimensional approach.

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