Osobne vrijednosti korisnika Interneta: klaster analiza

Rajh, Edo; Budak, Jelena; Žokalj, Mateo

Edo Rajh, Jelena Budak and Mateo Žokalj

Personal Values of Internet Users: A Cluster Analytic Approach

Rujan . September 2016

Radni materijali EIZ-a . EIZ Working Papers

HR EXCELLENCE IN RESEARCH

ekonomski institut, zagreb

Br . No EIZ-WP-1606

Radni materijali EIZ-a
EIZ Working Papers
EIZ-WP-1606

Personal Values of Internet Users: A Cluster Analytic Approach

Edo Rajh
Senior Research Fellow
The Institute of Economics, Zagreb
Trg J. F. Kennedyja 7
10000 Zagreb, Croatia
T. 385 1 2362 298
F. 385 1 2335 165
E. erajh@eizg.hr

Jelena Budak
Senior Research Fellow
The Institute of Economics, Zagreb
Trg J. F. Kennedyja 7
10000 Zagreb, Croatia
T. 385 1 2362 228
F. 385 1 2335 165
E. jbudak@eizg.hr

and

Mateo Žokalj
Student
University of Zagreb
Faculty of Economics and Business
E. mzokalj@net.efzg.hr

www.eizg.hr

Zagreb, September 2016

IZDAVAČ / PUBLISHER:
Ekonomski institut, Zagreb / The Institute of Economics, Zagreb
Trg J. F. Kennedyja 7
10000 Zagreb
Croatia
T. 385 1 2362 200
F. 385 1 2335 165
E. eizagreb@eizg.hr
www.eizg.hr

ZA IZDAVAČA / FOR THE PUBLISHER:
Maruška Vizek, ravnateljica / director

Tiskano u 80 primjeraka
Printed in 80 copies

ISSN 1846-4238
e-ISSN 1847-7844

Contents

Personal Values of Internet Users: A Cluster Analytic Approach

Abstract:
Values are an important topic that has received significant scholarly attention from various academic disciplines. The theoretical framework used for individual values research is Schwartz's value theory that defines ten basic values: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. In order to better understand the motivational background of attitudes and behavior of Internet users, the paper explores the structure of their personal values. A large telephone survey in Croatia in 2016 was conducted on a nationally representative sample of 2,060 Internet users. Values were measured with the Short Schwartz's Value Survey instrument. Internet users are grouped in different value-related groups with K-means cluster analysis. Furthermore, differences among those value-related groups of Internet users are examined with regard to their levels of social trust, computer anxiety, need for privacy online, online privacy concern and demographics. There were three mutually exclusive groups of Internet users found, namely: power-oriented group, self-centered group and self-transcendent group. Significant differences were found among those groups regarding social trust, expressed computer anxiety and need for privacy online. Demographic characteristics in terms of gender, age, education, income, and occupation explain the observed differences among the clusters of Internet users.

Keywords: values, trust, online privacy, Internet users, Croatia
JEL classification: A13, Z13

Osobne vrijednosti korisnika Interneta: klaster analiza

Sažetak:
Akademski interes za sustav vrijednosti je značajan i sve više zastupljen u istraživanjima. U izučavanju individualnih vrijednosti najčešće se primjenjuje teorijski model vrijednosti prema Schwartzu koji definira deset osnovnih vrijednosti: moć, postignuća, hedonizam, stimulativni izazovi, slobodoumlje, univerzalnost, dobrohotnost, tradicija, poštovanje i sigurnost. Kako bi se bolje razumjeli motivi koji pokreću ponašanje i kreiraju stavove korisnika Interneta, u ovom se radu istražuju njihove osobne vrijednosti. Primjenjuje se skraćeni upitnik o osobnim vrijednostima prema Schwartzu u anketi koja je 2016. godine provedena na 2.060 korisnika Interneta u Hrvatskoj. Ispitanici su klaster analizom grupirani u tri skupine za koje se potom ispituje razlikuju li se međusobno po razini povjerenja u institucije i nepoznate osobe, po zazoru od računala i informatizacije, po potrebi za *online* privatnosti i zabrinutosti za privatnost u *online* okruženju, te po demografskim obilježjima ispitanika. Značajne razlike među klasterima opažaju se u razini društvenog povjerenja, zazora od računala i potrebi za *online* privatnosti. Demografska obilježja (spol, dob, obrazovanje, dohodak, zanimanje) objašnjavaju razlike među klasterima korisnika Interneta.

Ključne riječi: vrijednosti, povjerenje, *online* privatnost, korisnici Interneta, Hrvatska
JEL klasifikacija: A13, Z13

1 Introduction[1]

Context matters and culture explains much of the human behavior and social and economic processes in transforming societies (Zmerli and Hooghe (Eds), 2013; Boettke and Coyne, 2009). In post-transition this heritage or path dependency (North, 2000) might be even more important. Values are multifaceted constructs that guide thought and action of individuals and have received significant scholarly attention from various academic disciplines. In literature, values are employed to explain and characterize individuals, groups, and societies, as well as to explain and characterize motivational bases behind various attitudes and behavior.

Therefore, we were intrigued to find out whether, and how well, a set of values of an individual in the post-transition country explains his/her actions, attitudes and behavior. Everyday life in the digital environment shifted our focus to Internet users, who make up about two thirds of the adult population in Croatia. Croatia is in terms of the Digital Economy and Society Index (DESI) considered to be a catching-up country relative to the European Union (EU) average. Regarding the propensity of individuals to use Internet services, Croatia in 2016 scores 0.39[2] and ranks 23rd in the EU because the percentage of regular Internet users in Croatia is 66 percent, while the EU average is 76 percent (DESI, 2015).

We have conducted a large telephone survey in the Republic of Croatia in 2016 on a nationally representative sample of 2,060 Internet users and applied the Schwartz value theory to offer some plausible answers to our research questions: What personal values do Internet users prefer and which ones do they have in common? Could people using the Internet be clustered on the basis of their values, and if so, what explains the differences among groups? Is it all about trust in institutions or in other people? Internet users sharing similar values might have similar computer skills or technological anxiety. On the other hand, they might share the same need for privacy and privacy concerns when online. Finally, demographic characteristics such as gender, age, education, income, and occupation usually stand as explanatory variables in attitudinal studies.

According to our best knowledge, this is the only research on the value sets of individuals that applies the Short Schwartz's Value Survey (SSVS) to a large sample of Internet users in a post-transition country.

The paper is structured as follows. First we provide a literature overview of existing studies on personal values and privacy, with special focus on the differences between values for the society as a whole and values at the individual level. The third section explains the

[1] This work has been fully supported by Croatian Science Foundation under the project 7913.

[2] DESI scores range from 0 to 1; the higher the score, the better the country performance.

Schwartz's Value Survey (SVS) applied and other variables employed to explain the differences in the model. The survey methodology and data are described in section four and results presented in section five. The last section concludes and discusses lines of future research.

2 Literature review

The body of literature investigating the impact of personal values, aggregated in culture, uses Hofstede's (1980) dimensions of national culture. The model of national culture in its initial version consists of four dimensions – Power Distance Index (PDI), Individualism vs. Collectivism (IDV), Masculinity vs. Femininity (MAS) and Uncertainty Avoidance Index (UAI).

Power distance shows the degree to which less powerful members of the society accept and expect unequal distribution of power. In societies with a relatively high score, such as Malaysia and Slovak Republic, the members accept hierarchical distribution of power as a given and do not strive to equalize it among all members of the society.

Individualism indicates the extent to which people's self-image is in terms of "I" rather than "we". Higher values are attributed to societies where it is expected for an individual to take care solely of himself and his closest family (e.g. United States and Australia), while in collectivist cultures a broader group of individuals is inter-connected in exchange for unquestioning loyalty (e.g. Ecuador and Venezuela).

The masculinity dimension represents societal preference towards either material rewards, achievement, heroism and assertiveness or tendency to cooperate with emphasis on care for the weakest members of the society and quality of life in general. Societies with higher score in this dimension (e.g. Slovak Republic and Japan) are characterized as "tougher" with respect to "tender" cultures (e.g. Sweden and Norway).

The uncertainty avoidance dimension expresses the degree to which the members of a society deal with the fact that the future can never be known. As a response, countries exhibiting strong UAI (e.g. Portugal, Greece and Uruguay) tend to preserve conservative and traditional codes of behavior and exhibit intolerance towards unorthodox ideas.

In Hofstede's later work, the fifth dimension of national culture was added. Long-term orientation (LTO) stands for the fostering of virtues for future rewards, in particular, perseverance and thrift. It is believed that LTO prevails in Asian societies, and that Western-type societies are more short-term oriented in relation to the past and present (Hofstede, Hofstede, and Minkov, 2010).

The relationship between culture and privacy concern is a rather new and underexplored area, and it has been in the center of our particular research interest (Budak, Rajh, Recher, 2016; Recher, Budak, Rajh, 2016). It is a widely recognized fact in the literature that there are differences between the cultures with regards to privacy concern (Dinev et al. 2005; Chiou, Chen and Bisset, 2009; Ur and Wang, 2013) and here we build on the previous studies on privacy concern and Hofstede's cultural dimensions.

Milberg, Smith and Burke (2000) argue that cultural values are strongly correlated with privacy concerns of the population. Power distance, individualism and masculinity are positively connected with privacy concern, while uncertainty avoidance shows negative relationship. Bellman et al. (2004) confirm a statistically significant connection between cultural values and privacy concern. However, they identify influence of cultural values only in two dimensions of information privacy concerns, rather than in overall concern for information privacy, and the impact is completely mediated by the regulatory structure. Furthermore, three dimensions of culture (power distance, individualism and masculinity) had opposite direction of impact on privacy concern with respect to the results in Milberg, Smith and Burke (2000), while uncertainty avoidance was not significant. In their study, Brashear, Milne and Kashyap (2006) estimate regression models using primary survey data collected from 18-30 year old users from Brazil, Romania and China. Among Hofstede's four cultural indices, they include uncertainty avoidance and collectivism. Results indicate positive correlation between degree of uncertainty avoidance and collectivism, and information privacy concern. In China, collectivism is the strongest predictor of privacy concern, while uncertainty avoidance is the most significant determinant of privacy concern in Romania and Brazil. Cullen (2009) examines privacy concern on the sample of citizens in Japan and New Zealand, with the latter including ethnic minorities (Polynesian natives) to account for different cultural background. The data are obtained through interviews in focus groups. Her results validate the hypothesis that hierarchical-collectivistic cultures, characterized by high power distance attributes within the collectivistic culture, display higher degree of mistrust and privacy concern. Lili and Min (2014) report that power distance, individualism, uncertainty avoidance, and long-term orientation are positively related to privacy concern, while masculinity is negatively related to privacy concern. Furthermore, individualism and uncertainty avoidance significantly affect privacy concern in both Korea and China, with individualism having stronger effect in South Korea than in China. Also, long-term orientation has a significant effect only in Korea, while power distance is significant only in China.

Privacy concern in general differs from privacy concern when online (see more in Gellman and Dixon, 2011). In the last decade, online privacy became the hot topic of information privacy studies. Cho, Rivera and Lim (2009) surveyed 1,261 Internet users from five cities – Bangalore, Singapore, Seoul, New York and Sydney. Due to the higher relevance in explaining online privacy concern, as well as multicollinearity among indices, only IDV

and UAI were employed in the research. Their findings corroborate evidence of a positive relationship between degree of individualism and online privacy concern. However, negative correlation between UAI and privacy concern is in contrast with previous research; thus, the initial hypothesis is only partially supported. Reay et al. (2013) analyze adoption of Platform for Privacy Preferences (P3P) in a sample of 100,000 websites. In line with previous literature, adoption of P3P varies across cultures. Higher individualism is positively connected with P3P adoption, while the correlation is negative for the power distance measure. A statistically significant connection was not identified for the indices measuring masculinity and uncertainty avoidance. Cecere, Le Guel and Soulie (2015) investigate individuals' Internet privacy concerns with respect to social networking sites on a sample of 22,253 individuals in 26 EU countries. Individualism is negatively related with privacy concerns, which goes in line with findings in Bellman et al. (2004). On the other hand, countries with high levels of masculinity (e.g. Italy and Slovak Republic), power distance (e.g. Bulgaria and Romania) and uncertainty avoidance (e.g. Spain, Portugal and Romania) report relatively higher levels of privacy concern. For PDI and UAI, findings confirm the results of Milberg, Smith and Burke (2000). Miltgen and Peyrat-Guillard (2014) conduct qualitative research on 14 focus groups from 7 EU member states with different socio-economic characteristics. Their research confirms differences regarding online privacy concern with respect to cultural values.

As regards post-transition countries, research on interrelations between cultural characteristics or values and privacy – in particular online privacy concern – is even more rare. In their forthcoming work, Budak, Rajh and Recher (2016) argue that cultural characteristics of a society determine the level of privacy concerns. They employ data for Croatia from two surveys to explore how Hofstede's indices relate to the privacy concern of Croatian citizens and conclude that data on the individual level might explain interrelations between national cultural dimensions and the level of online privacy concerns better than Hofstede's indices.

Despite being the dominant framework in investigating the connection of cultural values and privacy concern, Hofstede's dimensions of national culture have not escaped criticism. Some researchers argue that they are outdated in the world of rapid changes and globalization. Others reproach over-simplification of culture by reducing it to a few dimensions. In line with this argument, Ess and Sudweeks (2005) claim that "having only five or six dimensions for the analysis of culture seems like attempting brain surgery with a bulldozer". Dorfman and Howell (1988) stress the problem of cultural homogeneity, since Hofstede assesses the individual and applies the findings to the overall community. A comprehensive review of criticism of Hofstede's classification can be found in Shaiq et al. (2011). In order to introduce novelty in the research of cultural values and online privacy concern, as well as to overcome the shortcomings of Hofstede's approach, we will employ

Schwartz's Value Survey (Schwartz, 1992). A thorough presentation of the SVS framework is the topic of the next section.

3 Schwartz's Value Survey and model applied

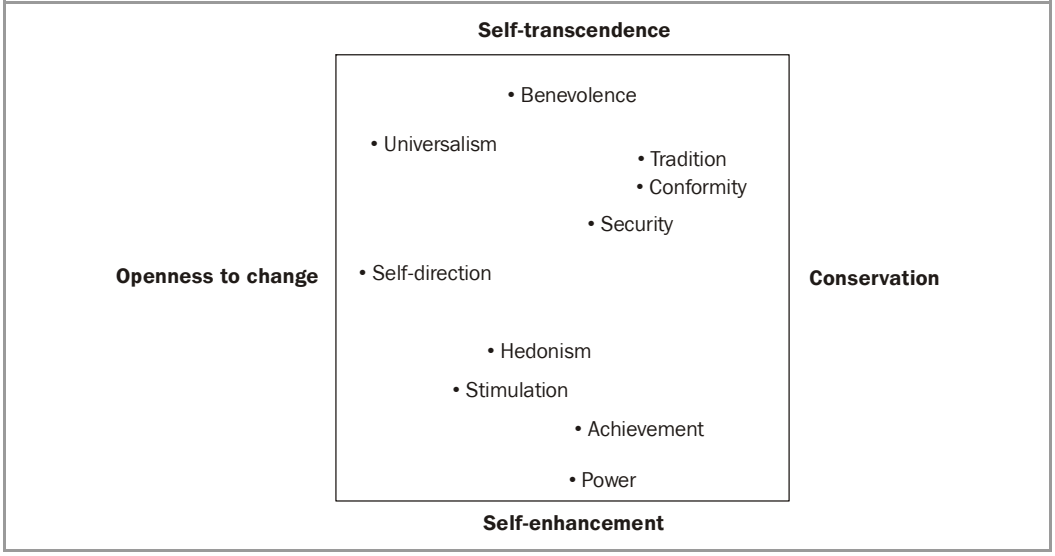
According to Schwartz's value theory (Schwartz, 1992; 2012), there are ten motivationally distinct values driven by universal requirements of human life. These values are, namely, power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. By asking respondents to what extent the listed ideas represent a life-guiding principle for them personally, 57 value items of Schwartz's Value Survey enable the positioning of an individual in a cultural group. Furthermore, the values form a quasi-circular structure because of the different spacing they occupy, as well as the relations among them. Values close to each other are compatible, while diametrically opposite values are unrelated and incompatible.

Also, the quasi-circular structure indicates existence of two-dimensional space, where the dimensions represent basic human problems. On one hand, there is a trade-off between conservation and openness to change. Higher motivation for conservation indicates preference towards maintaining current norms and behavior, while motivation to pursue one's own emotional and intellectual interests is the feature of the openness to change dimension. The second dimension is self-transcendence versus self-enhancement, which concerns the conflict between pursuing the welfare of other people and the individual's personal interests.

Lindeman and Verkasalo (2005) developed a shorter version of the original SVS called the Short Schwartz's Value Survey by attributing 10 value items to 10 values, unlike in Schwarz's original survey where 57 value items were corresponding to 10 values. For example, the respondents were asked to grade the importance as a life-guiding principle of "power, that is, social power, authority, wealth". Their answers were measured on a Likert scale ranging from 0 (opposed to my principles) to 8 (of supreme importance). In their series of studies, they confirmed the validity and reliability of the new scale as well as the quasi-circular structure of the original theoretical framework.

Figure 1 is a graphical depiction of the two-dimensional structure of values. On the far ends of the horizontal axis are two opposite motivations – openness to change and conservation, while the vertical axis separates the inclination between self-transcendence and self-enhancement. Depending on the weight that the individual attributes to a specific value item, he/she can be positioned in a broader group of individuals with similar motivation and cultural values.

Figure 1 **The two-dimensional structure of values**



Source: Lindeman and Verkasalo (2005).

The Short Schwartz's Value Survey has been widely used in different scientific fields, such as environmental economics (Poortinga et al., 2011), medicine (Saher and Lindeman, 2005), theology (Aarnio and Lindeman, 2015), sociology (Gaunt, 2006), and others. However, to the best of the authors' knowledge, this is the first attempt of examining the correlation between privacy concern and personal values using the SVSS methodology.

We were interested in exploring whether there were differences in these values among groups of citizens in Croatia and, if so, what explained the differences between clusters. We assume that socio-demographic characteristics of respondents play the major role here. It seems rational that younger people and/or more educated ones are more driven by wealth, power, ambition and hedonistic style than the rest of the population, with gradual decline with years of age. On the other hand, older people have a relatively higher tendency towards "conservative" values, such as obedience, tradition and politeness. Regarding education attainment level, hedonism and challenging life are the most dominant for people with secondary and tertiary education, while self-enhancement and conservation, with their respective values, gradually decline with years of education. The difference between men and women, and the values they assess as life-guiding, is almost negligible. However, men are more prone to a hedonistic style of life, while women attribute more importance to honesty, equality and politeness.

Within the same demographic group, respondents might share various personal values. We posit that for personal values in post-transition countries, the level of trust in institutions and in other people might be crucial. Social trust is a composite variable indicating the degree of confidence towards strangers and institutions. In order to measure it, two sets of

questions were employed: one designed to estimate the extent of confidence in institutions and another measuring general trust in people (Naef and Schupp, 2009).

For Internet users surveyed, common personal values might be attributed to the similar computer anxiety and need for privacy online standing as a good proxy for privacy concern shared within the group. In our model, therefore, we include survey questions assessing these attitudes as well. Factors affecting computer anxiety refer to the extent of fear or aversion to computerization and/or interactions with computers that is manifested in people (Parasuraman and Igbaria, 1990) and previous research has found that computer anxiety affects users' performance with software (Thomas, 1994). Computer anxiety, in terms of an unpleasant sense, aversion or fear of using computer technology, or frustration about the computerization going on in the digital society, is measured using the adapted items of Parasuraman and Igbaria (1990).

Need for privacy is strongly opposed with the "nothing to hide" argument. As regards the need for privacy when online, three statements were used to explore people's general opinion on preserving anonymity when using the Internet, and about retaining the control and deliberate consent on gathering personal information when online (Yao, Rice and Wallis, 2007).

4 Data and methodology

The survey data employed originate from the large survey we conducted in Croatia at the beginning of 2016. Data were collected by telephone survey. An online phone book was used as a sampling frame. The sample was created based on a one-way stratification by 21 counties. The sample allocated to each stratum was proportional to the assessed number of Internet users in each stratum. Within each stratum a combination of random and systematic sampling was applied. Pages from the phone book were selected using simple random sampling procedure. Sample units within each page were selected applying systematic sampling procedure. The final sample consists of 2,060 Internet users aged 18 or older. The summary statistics of sampled respondents is presented in Table 1.

The measurement instrument included ten questions on values, and ten questions on social trust, need for privacy online and computer anxiety. Each item in the questionnaire was measured by a five-point scale, ranging from 1 (strongly disagree, absolutely no) to 5 (strongly agree, absolutely yes). The demographic variables included gender, age, education, household income, and occupation (see Appendix: Questionnaire).

Table 1 **Summary statistics of sampled respondents, n = 2,060**	
	%
Gender	
Male	49.7
Female	50.3
Age	
18-29	27.2
30-39	26.8
40-49	22.8
50-59	16.8
60+	6.4
Education	
Primary school	0.8
Secondary school	50.2
University and higher education	45.9
Master's degree/doctoral title	3.1
Income	
Up to 2,500 HRK	2.5
2,501-5,000 HRK	14.8
5,001-7,500 HRK	21.9
7,501-10,000 HRK	29.2
10,001-12,500 HRK	13.3
12,501-15,000 HRK	9.6
More than 15,000 HRK	8.8
Occupation	
Owner of the company/craft	2.0
Manager/official	2.1
Professional	29.9
Technician/clerk	18.1
Worker	24.7
Retired	8.7
Student	8.7
Unemployed	5.0
Other	0.7

Source: Survey and authors' calculations.

The collected data were first analyzed in a descriptive manner to determine the public opinion on values, trust and privacy when online. Cronbach's alpha coefficients were calculated to quantify the scale reliabilities. For the second step, exploratory factor analysis was used to identify the factors of personal sets of values. Then, K-means cluster analysis was employed to determine the segments of population with similar values, while differences in respondents' values between the groups were analyzed using chi-square test.

5 Results and discussion

The first step in the analysis was the assessment of construct validity and reliability of scales. The initial measurement instrument with 18 items was tested by using exploratory factor analysis. Principal components analysis was employed to extract the factors. The Kaiser-Guttman rule was used to determine the number of factors to extract. After excluding 8 items with loadings greater than 0.5 on more than one factor and items with loadings lower than 0.5 on their primary factor, the exploratory factor analysis indicated four distinct factors, explaining 68.4 percent of the total variance. The factor loadings were greater than 0.5, which is considered sufficient (Bagozzi and Yi, 1988).

Factors were labelled according to the dominant variables in the factor as follows: factor 1 (P3.2, P3.3, P3.4): social trust in institutions; factor 2 (P4.4, P4.5, P4.6): computer anxiety; factor 3 (P4.2, P4.3): need for privacy online; factor 4 (P3.1, P4.1): social trust in strangers (Table 2).

Table 2 **Exploratory factor analysis results, factor loadings**

Items	Factor 1: social trust in institutions	Factor 2: computer anxiety	Factor 3: need for privacy online	Factor 4: social trust in strangers
P3.1				0.82
P3.2	0.74			
P3.3	0.84			
P3.4	0.85			
P4.1				0.78
P4.2			0.85	
P4.3			0.86	
P4.4		0.86		
P4.5		0.75		
P4.6		0.78		

Source: Survey and authors' calculations.

Confirmatory factor analysis (CFA) was performed to test the convergent and discriminant validity of measures and to detect the unidimensionality of each construct. Unidimensionality is evidence that a single trait or construct underlies a set of measures (Gerbing and Anderson, 1988). The specified measurement model included six uncorrelated factors with uncorrelated measurement errors. The goodness-of-fit index (GFI) and adjusted goodness-of-fit index (AGFI) were 0.98 and 0.95, respectively. The normed fit index (NFI), non-normed fit index (NNFI), comparative fit index (CFI), and RMSEA were 0.94, 0.91, 0.95, and 0.061, respectively. Although the chi-square test was significant, it is important to note that it is sensitive to the sample size. Other model fit indices indicate a reasonable level of fit of the model (Hu and Bentler, 1999). The values of fit indices obtained from the four-factor model represent a substantial improvement over

the values obtained from the one-factor model. The results of confirmatory factor analysis indicate an acceptable level of convergent and discriminant validity, and unidimensionality (Table 3).

Table 3 **Confirmatory factor analysis results and Cronbach's alpha coefficients (α)**

Items	Factor loadings
Social trust – strangers; α = 0.53	
P3.1	0.52*
P4.1	0.85*
Social trust – institutions; α = 0.75	
P3.2	0.70*
P3.3	0.85*
P3.4	0.92*
Need for privacy online; α = 0.63	
P4.2	0.49*
P4.3	0.47*
Computer anxiety; α = 0.72	
P4.4	0.81*
P4.5	1.21*
P4.6	0.73*

Notes: CFA fit indices: GFI = 0.98; AGFI = 0.95; NFI = 0.94; NNFI = 0.91; CFI = 0.95; RMSEA = 0.061.
** Factor loadings significant at p < 0.01 level.*
Source: Survey and authors' calculations.

K-means cluster analysis was employed to classify Internet users in Croatia according to their personal values. The Hartigan index was used as a criterion for determining the number of clusters in a data set. Mean values were calculated for each factor using only the items that remained after the reliability and construct validity assessment. These mean values were taken as an input in the K-means cluster analysis. The K-means cluster analysis indicated three homogeneous segments of citizens (Table 4).

The average mean values for the total sample show that Croatian Internet users have very little esteem for social power (mean = 1.99) and prefer to reach their life goals by being independent, creative, curious, that is, self-directed. Croats strongly believe in the benevolence of being helpful, honest, responsible and loyal. They respect tradition, self-discipline, security and conformity (all mean values above 4).

Table 4 **Results of K-means cluster analysis, mean values**					
Values	**Sample total (n = 2,060)**	**Cluster 1: power-oriented group (n = 701)**	**Cluster 2: self-centered group (n = 749)**	**Cluster 3: self-transcendent group (n = 610)**	**ANOVA**
P2.1 Power	1.99	2.45	2.09	1.35	F = 189.35; p = 0.000
P2.2 Achievement	3.47	3.48	4.02	2.78	F = 219.65; p = 0.000
P2.3 Hedonism	3.72	3.74	4.29	2.99	F = 302.91; p = 0.000
P2.4 Stimulation	3.36	3.62	4.21	2.01	F = 1073.57; p = 0.000
P2.5 Self-direction	4.22	3.99	4.70	3.91	F = 175.24; p = 0.000
P2.6 Universalism	4.40	3.85	4.78	4.58	F = 307.93; p = 0.000
P2.7 Benevolence	4.65	4.19	4.90	4.85	F = 445.77; p = 0.000
P2.8 Tradition	4.02	3.14	4.41	4.54	F = 579.06; p = 0.000
P2.9 Conformity	4.50	3.85	4.85	4.82	F = 705.03; p = 0.000
P2.10 Security	4.30	3.57	4.70	4.64	F = 534.67; p = 0.000

Note: Items were measured on a scale ranging from 1 (absolutely no) to 5 (absolutely yes).
Source: Survey and authors' calculations.

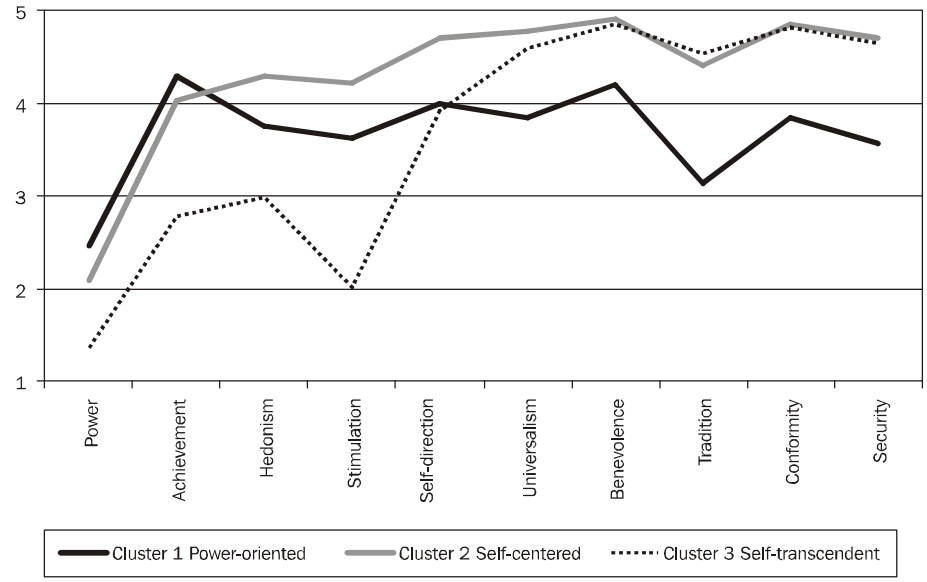
However, three groups of people with different values have been identified as distinguished clusters. Cluster 1 as a power-oriented group has the highest aspiration for achievements, wealth, authority and social power over other people. They do not care much about tradition and may not be described as valuing humbleness, modesty and devotion that go hand in hand with accepting one's role in life. This group has in comparison with the other two clusters the lowest mean value of universalism, benevolence, conformity and security. Members of cluster 1 do not value as much the virtues of helpfulness, forgiveness, showing respect for elderly people, obedience, social justice, equality. Nature, arts, environmental protection and other universalistic concepts do not stand as life-guiding principles for them.

Cluster 2 is a self-centered group because its members are driven by achievement, hedonism, stimulation and self-direction more than people in the other groups (see Figure 1.) They, however, share the similar high level of universalism as members of cluster 3, i.e., the self-transcendent group. This means people of both clusters 2 and 3 are driven by universal values in terms of beauty of nature and arts, environment, wisdom and social justice, as well as world peace and equality. Clusters 2 and 3 have similar appreciation for the values of benevolence, conformity and security, but differ significantly in, for example, stimulation that is not a life-guiding principle for the members of self-transcendent cluster

3, while the self-centered members of cluster 2 appreciate the idea of an exciting life very much.

Cluster 3 is a self-transcendent group whose values are tradition, conformity, benevolence and security, contrasted to low stimulation and hedonism values. Members of this cluster do not strive for power and achievements (Figure 2).

Figure 2 **Personal-value clusters of Internet users in Croatia**



Source: Survey and authors' calculations.

In the core of this research lies the explanation of the differences among clusters. In looking for the attributes of the different value groups of Internet users in Croatia, we first analyzed the demographic characteristics of clusters (Table 5).

In power-oriented cluster 1 there is, as expected, a slight prevalence of male respondents (56 percent of cluster 1 members), while female respondents make up 57 percent of self-transcendent cluster 3. Older people also tend to share the same values of cluster 3, while younger people are more prone to be power-oriented members of cluster 1. Besides these stereotypes, other demographic characteristics are not so evident.

Power-oriented cluster 1 is composed of more educated people (almost 60 percent have university degree or higher), earning an above-average household income (10,000 kuna and more). Striving for success and power is a driving value for company owners, managers, and professionals as well as for students.

Self-centered cluster 2 is a kind of moderate value cluster, with slightly prevalent female members. It attracts Internet population in Croatia aged less than 40 years who in 53 percent of cases have secondary education. The distribution of income subgroups within cluster 2 corresponds perfectly to the average income groups in the whole sample. The largest portion of surveyed professionals and technicians belong to cluster 2.

Table 5 **Differences in demographics among clusters, chi-square test results**

	Sample total (n = 2,060)	**Cluster 1: power-oriented (n = 701)**	**Cluster 2: self-centered (n = 749)**	**Cluster 3: self-transcendent (n = 610)**	**Chi-square test**
Gender	%				
Male	49.7	55.8	46.4	43.1	Pearson chi-square: 20.97; p = 0.000
Female	50.3	44.2	50.6	56.9	
Age	%				
18-29	27.2	36.8	31.2	11.3	Pearson chi-square: 161.71; p = 0.000
30-39	26.8	27.3	27.2	25.7	
40-49	22.8	19.3	22.6	27.2	
50-59	16.8	13.0	14.6	23.9	
60+	6.4	3.7	4.4	11.8	
Education	%				
Primary school	0.8	0.7	0.1	1.8	Pearson chi-square: 68.55; p = 0.000
Secondary school	50.2	39.9	53.3	58.4	
University and higher education	45.9	54.4	44.5	37.9	
Master's degree/doctoral title	3.1	5.0	2.1	2.0	
Income	%				
Up to 2,500 HRK	2.5	2.6	1.3	3.8	Pearson chi-square: 105.74; p = 0.000
2,501-5,000 HRK	14.8	9.3	14.4	21.6	
5,001-7,500 HRK	21.9	20.1	23.6	21.8	
7,501-10,000 HRK	29.2	26.3	30.7	30.7	
10,001-12,500 HRK	13.3	15.8	13.2	10.5	
12,501-15,000 HRK	9.6	11.1	9.9	7.4	
More than 15,000 HRK	8.8	14.8	6.8	4.3	
Occupation	%				
Owner of the company/craft	2.0	3.7	1.9	0.3	Pearson chi-square: 172.30; p = 0.000
Manager/official	2.1	3.9	1.3	1.2	
Professional	29.9	31.4	32.6	24.9	
Technician/clerk	18.1	17.3	18.7	18.4	
Worker	24.7	20.4	24.8	29.3	
Retired	8.7	4.7	6.4	16.2	
Student	8.7	14.3	9.1	2.0	
Unemployed	5.0	3.7	4.7	6.9	
Other	0.7	0.7	0.5	0.8	

Source: Survey and authors' calculations.

When it comes to the distinctive characteristics of cluster 3, middle-aged and elderly people are above national average members of self-transcendent cluster 3, as well as Internet users with primary and secondary education and lower household incomes. Workers, as well as unemployed and retired people are predominantly members of this particular cluster.

Next we proceed with the differences in attitudes observed among clusters (Table 6).

Power-oriented cluster 1 has the lowest recorded social trust in institutions, opposed to the highest social trust in strangers. They do not care much about privacy, as expressed in no need for privacy online and lack of computer anxiety. Self-centered cluster 2 leads in the level of social trust in institutions and seems to be concerned about privacy online given the highest mean value of need for privacy online score. They demonstrate nearly the average computer anxiety. Self-transcendent members of cluster 3, in line with their demographic characteristics, are predominantly reserved towards strangers and more trustful towards judiciary, political and other institutions. When compared to other groups of Internet users, they express the highest computer anxiety and technology aversion.

Table 6 **Differences in attitudes among clusters, ANOVA results**

Values	Sample total (n = 2,060)	Cluster 1 (n = 701)	Cluster 2 (n = 749)	Cluster 3 (n = 610)	ANOVA
Social trust – strangers	2.48	2.60	2.47	2.34	F = 12.94; p = 0.000
Social trust – institutions	2.75	2.65	2.82	2.77	F = 5.77; p = 0.003
Need for privacy online	4.59	4.41	4.71	4.65	F = 51.14; p = 0.000
Computer anxiety	2.94	2.82	2.95	3.06	F = 8.65; p = 0.000

Source: Survey and authors' calculations.

6 Conclusion

This study explores differences in individuals' set of values among Internet users in Croatia. In our first research (Budak, Rajh and Recher, 2016) we employed Hofstede's scores and observed that cultural dimensions explain privacy concern of the Croatian general population. In this research we employ Schwartz's Value Survey which is more appropriate for individuals, and focus our research on Internet users. Our results, in line with the previous ones (Budak, Rajh and Recher, 2016), show that online privacy concerns, measured by the expressed need for privacy when online and by computer anxiety, are related to the set of values of groups of Internet users in Croatia. Trust in institutions and in other people explains the differences between clusters as well. Among demographic characteristics, the most pronounced differences between clusters are found in Internet users' age, level of education and income that is connected with respondents' employment

status and occupation. This study, however, does not provide findings on the direction and strength of causal relations. If, for example, older Internet users share more traditional values, does it make them more anxious about computerization, or concerned about privacy protection? Do individual values, demographic characteristics and social trust stand as antecedents of privacy concerns of Internet users in Croatia? All these interesting questions remain to be further explored in an extended model of online privacy concern.

Appendix: Questionnaire

1. Are you an Internet user? (on any device e.g. smartphone, computer, etc.)
   ❑ Yes ❑ No If YES, continue If NO, stop the interview

2. To what extent do the following ideas represent a life-guiding principle for you personally?
   1 = Absolutely no, 2 = No, 3 = Neither yes nor no, 4 = Yes, 5 = Absolutely yes

2.1. Power, that is, social power, authority, wealth	1	2	3	4	5
2.2. Achievement, that is, success, capability, ambition, and influence on people and events	1	2	3	4	5
2.3. Hedonism, that is, gratification of desires, enjoyment in life, self-indulgence	1	2	3	4	5
2.4. Stimulation, that is, daring, a varied and challenging life, an exciting life	1	2	3	4	5
2.5. Self-direction, that is, creativity, freedom, curiosity, independence, choosing one's own goals	1	2	3	4	5
2.6. Universalism, that is, broadmindedness, beauty of nature and arts, social justice, a world at peace, equality, wisdom, unity with nature, environmental protection	1	2	3	4	5
2.7. Benevolence, that is, helpfulness, honesty, forgiveness, loyalty, responsibility	1	2	3	4	5
2.8. Tradition, that is, respect for tradition, humbleness, accepting one's portion in life, devotion, modesty	1	2	3	4	5
2.9. Conformity, that is, obedience, honoring parents and elders, self-discipline, politeness	1	2	3	4	5
2.10. Security, that is, national security, family security, social order, cleanliness, reciprocation of favors	1	2	3	4	5

3. How much do you trust…
   1 = Absolutely no, 2 = No, 3 = Neither yes nor no, 4 = Yes, 5 = Absolutely yes

3.1. …strangers you meet for the first time	1	2	3	4	5
3.2. …public authorities	1	2	3	4	5
3.3. …police	1	2	3	4	5
3.4. …courts	1	2	3	4	5

4. To what extent do you agree with the following statements?
   1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree

4.1. In general, you can trust people.	1	2	3	4	5
4.2. People have the right to control personal information about themselves when online.	1	2	3	4	5
4.3. There should be no personal information gathering on the Internet without consent.	1	2	3	4	5
4.4. Computers are a real threat to privacy in this country.	1	2	3	4	5
4.5. I am anxious and concerned about the pace of automation in the world.	1	2	3	4	5
4.6. I am easily frustrated by increased computerization in my life.	1	2	3	4	5

5. Gender M F

6. Age: _____

7. Education
   - ❑ Primary school or less
   - ❑ Secondary education
   - ❑ Tertiary education/high school, college, university
   - ❑ Master's degree/doctoral title

8. How many people (including yourself) live in your household _____.

9. Occupation
   - ❑ Owner of the company/craft (own-account worker)
   - ❑ Manager/official
   - ❑ Professional (highly educated e.g. medical doctor, lawyer, bookkeeper, etc.).
   - ❑ Technician/clerk
   - ❑ Worker
   - ❑ Retired
   - ❑ Student
   - ❑ Unemployed
   - ❑ Other, please specify: _____

10. Total net average monthly income of your household
    - ❑ Up to 2,500 kn
    - ❑ 2,501-5,000 kn
    - ❑ 5,001-7,500 kn
    - ❑ 7,501-10,000 kn
    - ❑ 10,001-12,500 kn
    - ❑ 12,501-15,000 kn
    - ❑ More than 15,000 kn

References

Aarnio, K. and Lindeman, M., 2015. Religious People and Paranormal Believers. *Journal of Individual Differences*, Vol.28, pp. 1-9.

Bagozzi, R. P. and Yi, Y., 1988. On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, March, 16 (1), pp. 74-94.

Bellman, S., Johnson, E., Kobrin, S. and Lochse, G., 2004. International Differences in Information Privacy Concerns: A Global Survey of Consumers. *Information Society (20:5)*, pp. 313-324.

Boettke, P. J., Coyne, C. J. 2009. Context matters: Institutions and entrepreneurship. Now Publishers Inc.

Brashear, T., Milne, G. and Kashyap, V., 2006. *Internet Culture And Information Privacy Concerns In Developing Countries*. Salvador, Brasil.

Budak, J., Rajh, E. and Recher, V., 2016. Citizens' Privacy Concerns: Does National Culture Matter?. in: *Surveillance, Privacy and Security*. Routledge (forthcoming).

Cecere, G., Le Guel, F. and Soulie, N., 2015. Perceived Internet privacy concerns on social networks in Europe. *Technological Forecasting and Social Change*, July, Vol. 96, pp. 277-287.

Chiou, A., Chen, J.-c. V., and Bisset, C., 2009. Cross cultural perceptions on privacy in the United States, Vietnam, Indonesia, and Taiwan. U C. Kuanchin, and A. Fadlalla, Online Consumer Protection: Theories of Human Relativism (pp. 284-298). New York: IGI Global.

Cho, H., Rivera, M. and Lim, S., 2009. A Multinational Study on Online Privacy: Global Concern and Local Responses. *New Media and Society*, May, 11(3), pp. 395-416.

Cullen, R., 2009. Culture, identity and information privacy in the age of digital government. *Online Information Review*, 33(3), pp. 405-421.

DESI 2015 Country Profile – Croatia, https://ec.europa.eu/digital-single-market/en/scoreboard/croatia Accessed 21.07.2016

Dinev, T., Masssimo, B., Hart, P., Christian, C., Vincenzo, R., and Ilaria, S., 2005. Internet users, privacy concerns and attitudes towards government surveillance - an exploratory study of cross-cultural differences between Italy and the United States. Proceedings of the 18th Bled eConference: eIntegration in Action, 30. Bled, Slovenia.

Dorfman, P. and Howell, J., 1988. Dimensions of national culture and effective leadership patterns: Hofstede revisited. *Advances in Comparative International Management*, 3, pp. 127-149.

Ess, C. and Sudweeks, F., 2005. Culture and Computer-Mediated Communication: Toward New Understandings. *Journal of Computer-Mediated Communication*, November, 11(1), pp. 179-191.

Gaunt, R., 2006. Couple Similarity and Marital Satisfaction: Are Similar Spouses Happier?. *Journal of Personality*, October, 74(5), pp. 1401-1420.

Gellman, R., and Dixon, P., 2011. Online privacy. Santa Barbara: ABC Clio.

Gerbing, D. W. and Anderson, J. C., 1988. An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment. *Journal of Marketing Research*, May, 25(2), pp. 186-192.

Hofstede, G., 1980. *Culture's Consequences: International Differences in Work Related Values*. Beverly Hills, CA: Sage Publications.

Hofstede, G., Hofstede, G. J., and Minkov, M., 2010. Cultures and organizations: Software of the mind (3rd ed.), New York: McGraw Hill.

Hu, L.-t. and Bentler, P. M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), pp. 1-55.

Lili, W. and Min, D., 2014. Effect of Cultural Factors on Online Privacy Concern. *Journal of Information Technology Applications and Management*, 21(2), pp. 149-165.

Lindeman M. and Verkasalo M., 2005. Measuring Values With the Short Schwartz's Value Survey, *Journal of Personality Assessment*, 85(2), 170-178, DOI: 10.1207/s15327752jpa8502_09

Milberg, S., Smith, H. and Burke, S., 2000. Information Privacy: Corporate Management and National Regulation. *Organization Science*, 11(1), pp. 35-57.

Miltgen, C. and Peyrat-Guillard, D., 2014. Cultural and generational influences on privacy. *European Journal of Information Systems*, March, 23(2), pp. 103-125.

Naef, M., Schupp, J., 2009. Measuring Trust: Experiments and Surveys in Contrast and Combination, IZA Discussion Paper Series, IZA DP No. 4087, Bonn: Institute for the Study of Labor (IZA).

North, D. 2000. Big-Bang Transformations of Economic Systems: An Introductory Note, *Journal of Institutional and Theoretical Economics*, 156(1), pp.3-8.

Parasuraman, S. and Igbaria, M., 1990. An examination of gender differences in the determinants of computer anxiety and attitudes toward microcomputers among managers. *International Journal of Man-Machine Studies*, March, 32(3), pp. 327-340.

Poortinga, W., Spence, A., Whitmarsh, L., Capstick, S., Pidgeon, N. F. 2011. Uncertain climate: An investigation into public scepticism about anthropogenic climate change. *Global Environmental Change*, August, 21(3), pp. 1015-1024.

Reay, I., Beatty, P., Dick, S. and Miller, J., 2013. Privacy policies and national culture on the internet. *Information Systems Frontiers*, April, 15(2), pp. 279-292.

Recher, V., Budak, J., Rajh, E., 2016. Development in digital and post-transition era: online privacy concern approach, 4th REDETE Conference Economic Development and Entrepreneurship in Transition Economies : Assessment of the last 25 years, going beyond the 'transition': proceedings. Banja Luka: Faculty of Economics, University of Banja Luka, 2016. pp. 1225-1237.

Saher, M. and Lindeman, M., 2005. Alternative medicine: A psychological perspective. *Personality and Individual Differences*, October, 39(6), pp. 1169-1178.

Schwartz, S., 1992. Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. *Advances in Experimental Social Psychology*, 25, pp. 1-65.

Schwartz, S. H., 2012. An Overview of the Schwartz Theory of Basic Values. *Online Readings in Psychology and Culture*, 2(1) 1-20. http://dx.doi.org/10.9707/2307-0919.1116

Shaiq, H., Khalid, H., Akram, A. and Ali, B., 2011. Why not everybody loves Hofstede? What are the alternative approaches to study of culture?. *European Journal of Business and Management*, 3(6), pp.101-111.

Thomas, J., 1994. Factors affecting computer anxiety and its effects on ease of use of business software. Managing Social and Economic Change with Information Technology, Proceedings of 1994 Information Resources Management Association. International Conference, Mehdi Khosrowpour (Ed.), pp. 51-52. London, U.K.: IDEA Group Publishing.

Ur, B., and Wang, Y., 2013. A cross-cultural framework for protecting user privacy in online social media. Proceedings of the 22nd international conference on World Wide Web companion, pp. 755-762. International World Wide Web Conferences Steering Committee.

Yao, M. Z., Rice, R. E. and Wallis, K., 2007. Predicting user concerns about online privacy. *Journal of the American Society for Information Science and Technology*, March, 58(5), pp. 710-722.

Zmerli, S., Hooghe, M. (Eds), 2013. Political trust: Why context matters. ECPR Press.

Popis objavljenih Radnih materijala EIZ-a / Previous issues in this series

2016

EIZ-WP-1605 Simon Stickelmann: *The Influence of the European Union Consumer Protection Policy on Croatian Consumers*

EIZ-WP-1604 Bojan Basrak, Petra Posedel, Marina Tkalec and Maruška Vizek: *Searching high and low: Extremal dependence of international sovereign bond markets*

EIZ-WP-1603 Valerija Botrić and Iva Tomić: *Self-employment of the young and the old: exploring effects of the crisis in Croatia*

EIZ-WP-1602 Vedran Recher: *Tougher Than the Rest? Relationship between Unemployment and Crime in Croatia*

EIZ-WP-1601 Iva Tomić: *What drives youth unemployment in Europe?*

2015

EIZ-WP-1505 Petra Palić, Petra Posedel Šimović and Maruška Vizek: *The Determinants of Country's Risk Premium Volatility: Evidence from Panel VAR Model*

EIZ-WP-1504 Sunčana Slijepčević, Jelena Budak and Edo Rajh: *Challenging Competition at Public Procurement Markets: Are SMEs Too Big to Fail? The Case of BiH and Croatia*

EIZ-WP-1503 Ivan Žilić: *Effect of forced displacement on health*

EIZ-WP-1502 Vedran Recher, Jelena Budak and Edo Rajh: *Eye in the Sky: Contextualizing Development with Online Privacy Concern in Western Balkan Countries*

EIZ-WP-1501 Petra Posedel Šimović, Marina Tkalec and Maruška Vizek: *Time-varying integration in European post-transition sovereign bond market*

2014

EIZ-WP-1403 Jelena Nikolic, Ivica Rubil and Iva Tomić: *Changes in Public and Private Sector Pay Structures in Two Emerging Market Economies during the Crisis*

EIZ-WP-1402 Jelena Budak, Edo Rajh and Ivan-Damir Anić: *Privacy Concern in Western Balkan Countries: Developing a Typology of Citizens*

EIZ-WP-1401 Jelena Budak and Edo Rajh: *The Public Procurement System: A Business Sector Perspective*

2013

EIZ-WP-1302 Valerija Botrić: *Identifying Key Sectors in Croatian Economy Based on Input-Output Tables*

EIZ-WP-1301 Ivica Rubil: *Accounting for Regional Poverty Differences in Croatia: Exploring the Role of Disparities in Average Income and Inequality*

2012

EIZ-WP-1205 Hrvoje Mirošević: *Analiza razvojnih dokumenata Republike Hrvatske*

EIZ-WP-1204 Iva Tomić: *The Efficiency of the Matching Process: Exploring the Impact of Regional Employment Offices in Croatia*

EIZ-WP-1203 Jelena Budak, Ivan-Damir Anić and Edo Rajh: *Public Attitudes towards Surveillance and Privacy in Western Balkans: The Case of Serbia*

EIZ-WP-1202 Valerija Botrić: *Intra-industry Trade between the European Union and Western Balkans: A Close-up*

EIZ-WP-1201 Jelena Budak and Edo Rajh: *Corruption Survey in Croatia: Survey Confidentiality and Trust in Institutions*

2011

EIZ-WP-1104 Jelena Budak and Edo Rajh: *Corruption as an Obstacle for Doing Business in the Western Balkans: A Business Sector Perspective*

EIZ-WP-1103 Alfio Cerami and Paul Stubbs: *Post-communist Welfare Capitalisms: Bringing Institutions and Political Agency Back In*

EIZ-WP-1102 Marina Tkalec: *The Dynamics of Deposit Euroization in European Post-transition Countries: Evidence from Threshold VAR*

EIZ-WP-1101 Jelena Budak, Ivan-Damir Anić and Edo Rajh: *Public Attitudes Towards Surveillance and Privacy in Croatia*

2010

EIZ-WP-1003 Marin Božić: *Pricing Options on Commodity Futures: The Role of Weather and Storage*

EIZ-WP-1002 Dubravka Jurlina Alibegović and Sunčana Slijepčević: *Performance Measurement at the Sub-national Government Level in Croatia*

EIZ-WP-1001 Petra Posedel and Maruška Vizek: *The Nonlinear House Price Adjustment Process in Developed and Transition Countries*

2009

EIZ-WP-0902 Marin Božić and Brian W. Gould: *Has Price Responsiveness of U.S. Milk Supply Decreased?*

EIZ-WP-0901 Sandra Švaljek, Maruška Vizek and Andrea Mervar: *Ciklički prilagođeni proračunski saldo: primjer Hrvatske*

2008

EIZ-WP-0802 Janez Prašnikar, Tanja Rajkovič and Maja Vehovec: *Competencies Driving Innovative Performance of Slovenian and Croatian Manufacturing Firms*

EIZ-WP-0801 Tanja Broz: *The Introduction of the Euro in Central and Eastern European Countries – Is It Economically Justifiable?*

2007

EIZ-WP-0705 Arjan Lejour, Andrea Mervar and Gerard Verweij: *The Economic Effects of Croatia's Accession to the EU*

EIZ-WP-0704 Danijel Nestić: *Differing Characteristics or Differing Rewards: What is Behind the Gender Wage Gap in Croatia?*

EIZ-WP-0703 Maruška Vizek and Tanja Broz: *Modelling Inflation in Croatia*

EIZ-WP-0702 Sonja Radas and Mario Teisl: *An Open Mind Wants More: Opinion Strength and the Desire for Genetically Modified Food Labeling Policy*

EIZ-WP-0701 Andrea Mervar and James E. Payne: *An Analysis of Foreign Tourism Demand for Croatian Destinations: Long-Run Elasticity Estimates*

ISSN 1846-4238