THE IMPACT OF EASTERN EUROPEAN CULTURE ON THE INTERNATIONAL TRADE

R.M. Ammar ZAHID[*], Aurelia ILIEȘ[**]

Abstract

Business and economic decisions of individuals are influenced by cultural values. The current study investigates the impact of Eastern European culture on international trade. Well known Hofstede (1980) cultural dimensions are measured with unique proxies and their impact on the international trade (imports and exports) of Eastern European Countries (EEC) is analysed. Standalone and panel (fixed effect) regression models have been applied to the 20 years' data (1996-2015) of three representative countries (Poland, Lithuania, and Romania). Overall power distance is decreasing while uncertainty avoidance is increasing in the Eastern European countries over the time. The results show that power distance has a significant negative relationship with both imports and exports while individualism has a significant positive relationship with the imports and exports of the EEC. Uncertainty avoidance and masculinity vs femininity dimensions have no significant impact on the international trade of the region. Findings of the study may help the policy makers to increase the international trade of these countries by focusing on the influence of particular cultural dimensions.

Keywords: Eastern European Culture, International trade, Hofstede cultural dimensions, Imports, Exports

Introduction

Past four decades witnessed a dynamic research in the field of international business and it is likely to accelerate in future, as the process of economic globalization is continuously increasing (Venaik and Brewer, 2010). Comparative cultural research is becoming more widespread and understanding different culture received great importance (De Mooij and Hofstede, 2010). The impact of culture is widespread in all spheres of our lives. It has a strong influence on social systems and behaviour (Hofstede, 1980). Culture 'influences how people think, communicate, and behave' (Salacuse, 2004), affecting the ways businesses are conducted around world, the transaction costs, and finally, the volume of international trade. Some recent empirical studies found that cross-societal cultural differences are negatively related to bilateral trade flows (Shafer, Smith, and

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ISBN 978-606-714-502-1 | ISSN 2393-2384 | ISSN-L 2392-8867

Linder, 2005; Tadesse and White, 2010). Language, lifestyle and values are different from a society to another directly impacting the sales/purchase behaviour which is why we tend to believe that cultural values play an important role in international trade.

The main objective of the current study is to analyse the impact of cultural values on international trade of Eastern European Countries (EEC). In line with Chung (2007) we used the famous cultural dimensions by Hofstede; individualism, power distance, uncertainty avoidance and masculinity (Hofstede, 1980) and established their relationship with the international trade (imports and exports) of the three representative countries of Eastern Europe i.e. Romania, Poland, and Lithuania. Further, we also compared the trend in cultural dimensions of countries with each other. As well as, the impact of each country specific cultural values on the international trade.

Hofstede cultural dimensions are measured with the proxies used in prior studies (Noravesh, Dianati Dilami, and Bazaz, 2007; Sudarwan and Fogarty, 1996; Zahid, Taran, and Simga-Mugan, 2017). Specifically, Power Distance (PD) is proxied by Internet usage ratio, Urbanization rate, and Literacy rate. Uncertainty Avoidance (UA) is represented by Investment rate, Savings rate, and GDP growth rate. The divorce rate, Marriage rate, and Higher education rate are used as proxies for Individualism (IND). Healthcare budget ratio, Individual income, and Gender employment gap are used to represent Masculinity (MvF). International trade is measured by Imports and Exports of the countries. Panel regression with fixed effects and standalone regressions have been applied for the 20 years' data ranging from 1996 to 2015.

Overall, results show that there is a decrease in power distance and an increase in uncertainty avoidance and masculinity over the time in EEC, individualism shows a mixed trend. The findings suggest that power distance and individualism dimensions of the Hofstede cultural values have a significant impact on both imports and exports of EEC, while masculinity vs femininity and uncertainty avoidance does not have a significant impact on international trade. Panel regression coefficients show that an increase in power distance decreases the international trade (both imports and exports) while an increase in individualism dimension increases the imports and exports of the region. Country specific results show that individualism has a negative relationship with the exports of Poland, Lithuania, and Romania. Also, an increase in the femininity dimension of Romania increases the international trade of the country both in imports and exports.

The current study is novel in analysing the impact of cultural values on the international trade of EEC. To the best of our knowledge, it is the first attempt to link the unique cultural values of EEC with international trade. For the statistical analyses, we used data for a period of 20 years, from 1996 to 2015. The policymakers can use the findings of the current study to boost the international trade of the region by focusing on certain aspects of the culture.

Rest of the paper adopts the following structure: Section 2 presents the literature review and hypothesis development, Section 3 explains the data sources and methodology used and Section 4 is devoted to the presentation of empirical

findings and discussion of the results. The final section concludes the study with some limitations and future research motivation.

1. Literature review

Extant literature defines culture in a number of different ways. The degree of complexity of culture makes it hard to reach consensus in embracing a generally accepted definition of this concept. Cultural studies received great attention during mid-twenties, because of its comprehensive influence on all aspects of human behaviour. Linton, a recognized scholar of culture studies defines culture as ‘‘the configuration of learned behaviour and results of learned behaviour whose component elements are shared and transmitted by the members of a particular society’’ (Linton, 1945). Kroeber and Kluckhohn (1952) considered culture as the patterned ways of thinking, feeling and reacting. And the foundations of culture are made up of conventional ideas and values. Another view that prevails among the scholars is that culture is represented by a set of values, traditions, norms, and beliefs that are shared in a society. Hofstede (1980) defines culture as “the collective programming of the mind which distinguishes the members of one group from another”. Following the same logic, Rossi (1989) names it ‘unconscious infrastructure’, idea that is embraced by Schein (1985) too when he speaks about culture as ‘basic assumptions and beliefs that operate unconsciously’. Also, Cateora (2007) summarizes five elements of culture including cultural values, rituals, symbols, beliefs, and thought processes.

Cultural models are meant to define different patterns of thinking and behaving in dealing with issues related to the functioning of groups or individuals in societies. For the purpose of understanding cultural differences, several models have been developed, such as the Hofstede Model (Hofstede, Hofstede, Minkov, and Vinken, 2008), research conducted by Schwartz and Bilsky (1987), Hampden-Turner and Trompenaars (1993), and GLOBE Model (House, Hanges, Javidan, Dorfman, and Gupta, 2004). Among these the Hofstede Model has been extensively used in empirical studies (De Mooij and Hofstede, 2010).

In current global environment international trade plays key role in the economic growth and prosperity of countries. Previous studies also point out that national culture has significant impact on the wealth of nation. Understanding national cultural differences requires a deep knowledge of different behaviours and the motives for certain behaviours. For this reason, number of cultural frameworks were developed using different dimensions in order to better describe and characterize cultural differences. One of the most widely recognized frameworks for classifying national cultures is developed by the social psychologist Geert Hofstede who used data from the IBM employees in order to derive the cultural value dimensions, as we know today. The data has been collected with surveys, conducted between 1967 and 1973 reflecting information on more than 60 countries. Over 116,000 IBM employees were questioned about their work, a study that revealed four main cultural dimensions: power distance, individualism/collectivism, uncertainty avoidance, and masculinity/femininity.

The most important cultural dimension identified in Hofstede's research is nevertheless power distance, measuring the degree to which a culture accepts the distribution of power in a society. Different cultures have various ways of accepting status differences, the role of cultural dimensions being simply to account for different preferences and priorities and how to approach them on a daily basis.

Eastern European countries have many common cultural aspects. These countries are bounded not just by their geographic proximity, but also by a common destiny revealed in their history, forming a distinctive cluster within the European region (Albu *et al.*, 2017). The selected countries for this study are representative of the mixed characteristics of the Eastern European region and they also followed a similar development path. Nevertheless, historical events marked the values of these countries, especially German Nazi influence and Soviet dominance over the last century. It is considered that old soviet countries are more inclined to accept the hierarchical ruling and high social-class differences, are more obedient and have fear of authorities (Brancu, Guðmundsdóttir, Gligor, and Munteanu, 2015). The communism fall played a great role in transforming the beliefs of these countries through the exposure to occidental influence, democratic values, business internationalisation, liberty to travel and work abroad. Even though Poland, Romania, and Lithuania are members of the European Union and are sharing European values and beliefs there is much to be done on the orientation towards autonomy and equality values, individualism and competition.

It is widely recognized that cultural differences are important factors that may impinge on various aspects of international relations, including international trade. Lee (1966) argues that the root cause of most international business issues is the unconscious reference to one's own cultural values. Further, Doney and Cannon (1997) point out that ‘‘[the] researcher in the future should examine the role of national cultures in buyer–seller relationship”. A recent study by Kristjánsdóttir *et al.,* (2017) analyses the effect of international trade on different national cultures and finds significant positive effects on countries' international trade. It considers an international trade of 21 countries, using World Bank data through an estimated function of the Hofstede cultural dimensions, GDP and population, and for the time period from 2000 to 2011. Using a gravity-model setting, they found that only the MvF dimension significantly affect international trade. Researchers analyse cross-country variations of international trade, using gravity models, findings indicate that the volume of international trade increases between areas that are geographically close to one another (Beckerman, 1956; Isard and Peck, 1954; Kristjánsdóttir, 2012, 2016). Similarly, (Borchert and Yotov, 2017) and Calì and Mulabdic (2017) also studied cross-country variations in exports. Also, exports are considered to be represented by a function of the economic size and distance between countries (Larue and Mutunga, 1993).

Following the recent literature, two main hypothesizes are considered to be addressed in this paper:

Hypothesis 1: International trade of EEC is affected by national cultural dimensions.
Hypothesis 2: International trade of EEC is affected differently by different cultural dimension.

The first hypothesis is based on the previous analyses on the relationship between culture and international trade, mostly on the exports component (Chaiyabut, 2013; Ghemawat and Reiche, 2011; Nes, Solberg, and Silkoset, 2007).

The second hypothesis assumes that international trade is affected differently by each cultural dimension. Previous analyses on the relationship between international trade and the Hofstede cultural dimensions are those by Chung (2007), (Hancıoğlu, Doğan, and Yıldırım, 2014) and (Kristjánsdóttir, 2016) concluding that cultural dimensions have different impacts on the variations in international trade volume.

2. Data and research design

The objective of the current study is to analyse how the cultural dimensions of Eastern European Countries impact their international trade. Eastern European region has further three sub clusters; Visegrad countries (i.e. the Czech Republic, the Slovak Republic, Hungary, and Poland), the Baltic countries (i.e. Estonia, Latvia, and Lithuania) and the South Eastern group (i.e. Bulgaria, Romania and Slovenia) (Matousek and Sarantis, 2009). The sample of the study includes one representative country from each cluster of eastern European countries, Romania, Poland and Lithuania. Data for the period of 20 years extending from 1996 to 2015 has been downloaded from the World Bank, OECD statistics, and Eurostat websites. It covers the period pre and post EU membership, so the effect of EU membership on culture transformation will also be observed.

Cultural dimensions are theoretical concepts which cannot be directly measured. Based on the previous literature and theory, a series of proxies are used to represent the cultural dimensions (Noravesh *et al*., 2007; Sudarwan and Fogarty, 1996; Zahid *et al*., 2017). These cultural dimensions score each country on a scale of 0 to 100. The following variables have been used as proxies, in order to represent each cultural dimension:

1. Power distance (PD) represents the extent of hierarchical relations among individuals. It is measured by three proxies:

a. *Internet usage ratio* (Individuals using the Internet as % of total population). The use of modern technology through the dissemination of information is viewed as a way to freely express one's own thoughts on different aspects of day-to-day life including legislative matters (Sudarwan *et al*. 1996). Availability of information creates a higher degree of equality among individuals and as a result, a low power distance.
b. *Urbanization rate* (Urban population as % of total). A population that is concentrated in cities has better chances to be informed on different aspects that affect their well-being and it also gains access to more

resources than people living in rural areas. How people live is how they will think about the society overall (Noravesh *et al*., 2007; Zahid *et al*., 2017), this resulting in a low power distance.

c. *Literacy rate* (Adult literacy rate of population over 15 years old %). Education shape people's thoughts and beliefs and also raise awareness of the individual's rights. Thus, societies with high levels of education are more inclined towards equality values, respectively, low power distance (Sudarwan *et al*., 1996).

2. Uncertainty Avoidance (UA) is based on the assumption that the expectations and attitude towards future reflect society's attitude towards risks. It is also measured by three proxies:

a. *Investment rate* (Gross fixed capital formation as % of GDP). This is considered to account for the investment policies and the risk-taking level that all the investments require. Therefore, a high level of investments involves risk-taking that means scoring low on uncertainty avoidance. (Sudarwan *et al*., 1996).

b. *Savings rate* (Gross domestic savings as % of GDP). Savings usually reflect fear of the unknown, of the unpredictable, a prudential financial behaviour being adopted. In this respect, high savings means high uncertainty avoidance (Sudarwan *et al*., 1996).

c. *GDP growth rate* (Changes in GDP growth as annual %). The GDP growth rate is used to account for the economic stability of the countries. The fear of future risks is diminished when thinking of economic stability, the score for uncertainty avoidance being low (Sudarwan *et al*., 1996).

3. Individualism (IND) reflects the extent of unity among people within a community. Three proxies are used to measure it:

a. *Divorce rate* (per 1000 persons) and

b. *Marriage rate* (per 1000 persons). These two proxies are meant to surprise the institution of the family due to the idea that a society's inclination towards marriage or divorce will conclude on the individualism or on the single-status orientation. In this case, a low marriage rate and a high divorce rate will reflect a high level of individualism.

c. *Higher education rate* (Total student enrolment at Bachelor degree as % of total population). It is considered that highly educated people are more inclined to the individualistic behaviour. They have better jobs, higher earnings and they are also more independent (Sudarwan *et al*., 1996).

4. Masculinity (MvF) is based on the dominance of a particular gender characteristic in a society. It is also measured by three proxies:

a. *Healthcare budget ratio* (Health expenditure as % of GDP). Usually, healthcare combined with carefulness and welfare are characteristics associated with female behaviour while strength, competition or power desire are characteristics attributed to male. In this regard, a high level of healthcare facilities reflects a feminist society, while the inclination on high financial gains is viewed as a male denomination.

b. *Individual income* (GNI per capita, PPP current international USD). Same logic as the previous.
c. *Gender employment gap* (Difference between the employment ratios of male vs female population). This indicator accounts for gender roles in a society. If the workforce distribution is dominated by the male population, it will reflect a masculine culture (Sudarwan *et al*. 1996).

5. International trade is defined as the exchange of goods and services across the borders (between the countries). Therefore, it is measured from both dimensions that are Imports and Exports. Hence, imports of goods and services (% of GDP) and exports of goods and services (% of GDP) of the countries have been used as proxies for the international trade.

To analyse the influence of Eastern European Countries culture on the international trade, panel and standalone regression models have been applied. The cross section and time period fixed effects specification have been used to account for heterogeneity among countries, for country specific events. Two panel least regression models with fixed effect are estimated, as follow:

$$Imports_{i,t} = \alpha + \beta_1 PD_{i,t} + \beta_2 UA_{i,t} + \beta_3 IND_{i,t} + \beta_4 MvF_{i,t} + \gamma_1 LnP_{i,t} + \gamma_2 GDP_{i,t} + \mu_{i,t} + e_{i,t} \quad (1)$$

$$Exports_{i,t} = \alpha + \beta_1 PD_{i,t} + \beta_2 UA_{i,t} + \beta_3 IND_{i,t} + \beta_4 MvF_{i,t} + \gamma_1 LnP_{i,t} + \gamma_2 GDP_{i,t} + \mu_{i,t} + e_{i,t} \quad (2)$$

where *i* represents the country and *t* time. $PD_{i,t}$ represents the power distance of *i*'s country for the period *t*. Similarly, $UA_{i,t}$ = Uncertainty Avoidance of country *i* for the time *t*, $IND_{i,t}$ = Individualism dimension of country *i* for the period *t*, and $MvF_{i,t}$ = Masculinity vs Femininity of country *i* for time *t*. *LnP* = Natural logarithm of Population, and *GDP* = GDP growth rate are the control variables. $\beta_{1,2,3,4}$ are the coefficients of cultural dimensions, $\gamma_{1,2}$ are the coefficients of control variables, $\mu_{i,t}$ represents the fixed effects and $e_{i,t}$ represents the error term.

Further, to see the effect of cultural dimensions' country wise, following multiple regression models have been estimated, one by one for each country:

$$Imports_t = \alpha + \beta_1 PD_t + \beta_2 UA_t + \beta_3 IND_t + \beta_4 MvF_t + \gamma_1 LnP_t + \gamma_2 GDP_t + e_t \quad (3)$$

$$Exports_t = \alpha + \beta_1 PD_t + \beta_2 UA_t + \beta_3 IND_t + \beta_4 MvF_t + \gamma_1 LnP_t + \gamma_2 GDP_t + e_t \quad (4)$$

Similar to panel regressions, PD_t represents the power distance for the time *t*. UA_t = Uncertainty Avoidance for the time *t*, IND_t = Individualism dimension for the time *t*, and MvF_t = Masculinity vs Femininity of for time *t*. *LnP* = Natural logarithm of Population, and *GDP* = GDP growth rate are the control variables. $\beta_{1,2,3,4}$ are the coefficients of cultural dimensions and $\gamma_{1,2}$ are the coefficients of control variables.

3. Empirical results and discussion

Descriptive statistic

Table 1 exhibits the results of the descriptive statistics of the selected proxy variables for the overall sample and country wise. The last column provides the values of F-Ratio also known as group means difference test (null hypothesis: means of different groups are the same). F-Ratio values reject the null hypothesis for most of the variables, meaning that they have statistically different values among the countries. F-Ratio fails to reject the null hypothesis only in the case of Internet usage, GDP growth, and Individual Income. Although the mean values of the variables are close to each other in Lithuania, Poland, and Romania (showing regional similarities), F-Ratio results suggest that each country have unique cultural characteristics. Internet usage ratio has the highest standard deviation among all the countries and Literacy rate has the lowest standard deviation. Overall, variables have a uniform data distribution.

Table 1. Descriptive statistics

Country		Lithuania			Poland			Romania			Overall			F ratio
Dimensions	Proxies	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	
Power Distance	PD1	37.23	40.06	27.25	36.84	41.70	25.08	23.66	23.08	19.57	32.57	32.48	24.61	(2.041)
	PD2	66.80	66.77	0.21	61.26	61.40	0.44	53.52	53.45	0.52	60.53	61.40	5.51	(5168)***
	PD3	99.73	99.73	0.07	99.67	99.68	0.10	98.18	98.60	0.67	99.19	99.65	0.82	(101)***
Uncertainty Avoidance	UA1	21.21	20.64	3.19	20.73	20.34	1.95	24.71	24.30	5.04	22.22	21.64	3.98	(7.18)**
	UA2	15.93	16.07	3.15	19.53	19.70	2.00	17.73	16.20	4.31	17.73	17.92	3.56	(6.011)**
	UA3	5.59	6.68	5.53	4.13	4.07	1.71	3.49	4.04	4.54	4.40	4.56	4.27	(1.283)
Masculinity vs Femininity	MF1	6.38	6.43	0.48	6.24	6.23	0.45	4.99	5.32	0.75	5.87	5.97	0.85	(35.55)***
	MF2	49.36	49.53	1.00	45.26	45.16	0.40	45.27	45.00	0.79	46.63	45.67	2.09	(189.6)***
	MF3	15786	15255	7262	15786	14240	5846	11927	10375	5824	14500	13325	6502	(2.465)
Individualism	IN1	3.25	3.20	0.15	1.49	1.65	0.30	1.57	1.60	0.12	2.10	1.70	0.84	(473)***
	IN2	6.05	6.00	1.01	5.51	5.40	0.58	6.36	6.25	0.84	5.97	5.90	0.89	(5.39)**
	IN3	1.52	1.53	0.04	1.45	1.43	0.06	1.24	1.25	0.11	1.40	1.43	0.14	(79.42)***
International trade	XP1	55.69	51.15	15.93	35.15	35.90	8.48	32.65	32.81	5.18	41.16	37.86	14.90	(27.21)***
	IM1	61.46	58.06	12.67	37.38	37.49	6.84	39.46	40.68	4.17	46.10	42.42	13.90	(47.56)***
	N	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	60.00	60.00	60.00	

Note 1: PD1 represents Internet usage ratio *(% of total population)*, PD2 Urbanization rate *(%)*, PD3 Literacy rate *(%)*, UA1 Investment rate *(% of GDP)*, UA2 Savings rate *(% of GDP)*, UA3 GDP growth rate *(%)*, MF1 Healthcare budget ratio *(% of GDP)*, MF2 Gender employment, MF3 Individual income *(PPP current international USD)*, IN1 Divorce rate *(per 1000 persons)*, IN2 Marriage rate *(per 1000 persons)*, IN3 Higher education rate (*% of population over 15 years old)*, XP1 Exports of goods and services (% of GDP), IM1 Imports of goods and services (% of GDP).
Note 2: ***, **, and * indicates significance level at 0.001, 0.05, and 0.01, respectively.

Figure 1. (Appendix A) shows the evolution of the socio-economic proxies used to account for the cultural dimensions for the period analysed.

We can observe a decreasing power distance in the Eastern European countries due to the increased access to modern technology by the wide population of these countries as a result of the internet usage. High values of urbanization can be observed for Poland and Lithuania and it has an increasing trend for Romania too. Literacy rate has a similar trend which is why we can conclude that power distance overall is decreasing.

Gross fixed investment rate, savings rate, and GDP growth rate has high fluctuations over the time, especially during a 2007-2009 financial crisis. Even though we can see an increase in gross fixed investment rate in that period, saving rate and GDP growth rate are on the verge of collapsing being more evident in the Lithuania case. It can be assumed that these fluctuations indicate a change in attitudes towards risk and uncertainty and that the increase in savings rate after the crisis would reflect an increase in the overall uncertainty avoidance.

The proxies used for the individualism dimension vary significantly over time indicating rather oscillations of individualist tendencies than an orientation towards individualism on the three countries. Divorce rate and marriage rate tend to fluctuate more, while higher education rate has slight fluctuations.

From the proxies used to account for masculinity/femininity dimension, only individual income can be retained to confirm the orientation of the countries towards masculinity. Gender employment gap and changes in the healthcare budget ratio have a rather unclear evolution which is why is difficult to relate them to the masculinity/femininity transition.

Overall, graphs of cultural dimensions indicate that there is a changing pattern over the time in the cultural dimensions of each country, evidence being consistent with studies conducted by Sudarwan and Fogarty (1996). Also, trends for individual countries seem to be close to each other while the differences reflect aspects related to the specifics of each country.

Pearson Correlations coefficient

Before estimating the final model, it is important to check the correlations and multicollinearity between the explanatory variables. Table 2 presents the results of Pearson correlation estimation. Same as expected, most of the proxy variables used have significant high correlations with each other, such as Higher Education rate and Divorce rate proxies used to represent the Individualism dimension is significantly positively related with Masculinity vs Femininity and Power Distance dimension while significantly negatively related with Uncertainty dimension proxies. Hence, Marriage rate proxy for Individualism has been used in further analysis. Similarly, one proxy for each dimension is selected to avoid the high correlation problem. So, Healthcare budget ratio (% of GDP), Urbanization rate (%), and Savings rate (% of GDP) are used to represent the Masculinity vs Femininity, Power Distance and Uncertainty Avoidance respectively.

Further, VIF (variance inflation factor) test is applied to check the multicollinearity assumption, overall scores being less than 2. This means that estimations of regression analysis are not biased by collinearity threat.

Table 2. Pearson Correlations Coefficient Matrix

	IN1	IN2	IN3	MF1	MF2	MF3	PD1	PD2	PD3	POP	UA1	UA2	UA3	LNP	GDP
IN1	1														
IN2	0.14	1													
IN3	0.57***	-0.25**	1												
MF1	0.43***	-0.12	0.82***	1											
MF2	0.89***	0.12	0.45***	0.36***	1										
MF3	0.24**	0.22**	0.40***	0.64***	0.13	1									
PD1	0.25**	0.26**	0.37**	0.66***	0.13	0.97***	1								
PD2	0.76***	-0.19	0.84***	0.70***	0.75***	0.25**	0.22**	1							
PD3	0.45***	-0.22	0.90***	0.89***	0.35	0.50***	0.47***	0.82***	1						
POP	-0.87***	-0.25**	-0.23**	-0.10	-0.81***	-0.03	-0.04	-0.43***	-0.06	1					
UA1	-0.14	0.42***	-0.12	-0.26**	-0.32**	-0.06	-0.08	-0.37**	-0.21	-0.06	1				
UA2	-0.30**	0.02	0.07	0.25**	-0.40***	0.68***	0.61***	-0.16	0.23**	0.39***	0.21	1			
UA3	0.22*	0.04	0.26**	-0.01	0.10	-0.09	-0.11	0.19	0.19	-0.14	0.29**	0.10	1		
LNP	-0.95***	-0.17	-0.44***	-0.30**	-0.91***	-0.12	-0.12	-0.66***	-0.30**	0.96***	0.08	0.37**	-0.17	1	
GDP	0.14	-0.02	0.24**	-0.01	0.01	-0.11	-0.12	0.16	0.20	-0.04	0.26**	0.13	0.99***	-0.08	1

Where PD1 represents Internet usage ratio (% of total population), PD2 Urbanization rate (%), PD3 Literacy rate (%), UA1 Investment rate (% of GDP), UA2 Savings rate (% of GDP), UA3 GDP growth rate (%), MF1 Healthcare budget ratio (% of GDP), MF2 Gender employment, MF3 Individual income (PPP current international USD), IN1 Divorce rate (per 1000 persons), IN2 Marriage rate (per 1000 persons), IN3 Higher education rate (% of population over 15 years old), LNP Natural Logarithm of Population and GDP is the Gross Domestic Product per capita.

*, **, *** denote significance at the 10%, 5% and 1% significance levels respectively

The objective of the current study is to find the impact of cultural values on the international trade, for that purpose eight regressions are being estimated, two panel regression with country and period fixed effects and six standalone multiple regressions (two for each country). The model and equations are given in the methodology section. The results are given in Table 3.

Model 1 (M1) presents the impact of cultural dimensions on the imports of the overall sample. Overall, as hypothesized, cultural dimensions have a significant impact on the imports of Eastern European Countries (EEC). Specifically, the findings suggest that power distance and individualism have a significant impact on the imports of EEC the rest of the variables having no significant impact. So, different cultural dimensions affect differently the imports of the region. A unit increase in power distance decreases imports (% of GDP) by 4.45 times. So, when there is low power distance, people are more oriented to purchase the imported products or acquire the services from the other countries. Surprisingly, a unit increase in individualism increases imports (%age of GDP) by 4.34 times.

Model 2 (M2) exhibits the relationship of culture with the exports of EEC. Similar to Model 1, only power distance and individualism variables have a significant impact on the exports. These findings are consistent with our hypothesis. An increase in power distance decreases the exports and an increase in individualism increases the exports of the EEC. The model fit test shows that both models explain more than 95% of the variation in the variables.

Since our analysis used the country level data, there may be present heterogeneity which affects the model predictability. Country and period fixed effects are applied to the regression to account for unobserved heterogeneity. The

validity of the model is measured with the redundant fixed effect tests (Likelihood ratio test), both f-statistics and chi-square values suggesting that the fixed effect model gives more appropriate estimates.

Table 3. Regressions results

	Panel (Fixed effects)		Poland		Lithuania		Romania	
	M1	M2	M3	M4	M5	M6	M7	M8
Dependent variable	**Imports**	**Exports**	**Imports**	**Exports**	**Imports**	**Exports**	**Imports**	**Imports**
Power Distance	-4.45	-6.12	-6.29	-3.50	21.78	25.68	-0.54	4.18
	(1.62)**	(2.05)**	(6.46)	(4.82)	(7.53)	(8.91)	(2.24)	(2.91)
Uncertainty Avoidance	-0.18	0.04	0.18	1.27	1.85	2.39	0.18	0.72
	(0.42)	(0.53)	(1.03)	(0.77)	(1.36)	(1.61)	(0.37)	(0.48)
Masculinity vs Femininity	-1.87	-1.67	-0.31	3.71	-4.23	-8.54	3.96	6.80
	(1.80)	(2.27)	(3.75)	(2.80)	(3.24)	(3.83)	(2.07)**	(2.70)**
Individualism	4.34	4.04	0.77	-2.60	-0.16	-5.60	-0.33	-2.83
	(1.43)**	(1.80)**	(1.82)	(1.36)**	(1.59)	(1.89)**	(0.67)	(0.87)**
Natural log of Population	-44.70	-64.54	-734.58	-851.76	-171.56	-281.47	24.45	131.83
	(31.16)	(39.37)	(179.56)***	(134.11)***	(69.39)**	(82.10)**	(55.18)	(71.84)**
GDP growth rate	0.26	0.00	0.24	0.14	0.02	-0.49	0.62	0.57
	(0.23)	(0.29)	(0.48)	(0.36)	(0.46)	(0.55)	(0.13)**	(0.17)**
R-Square	0.97	0.96	0.92	0.97	0.96	0.96	0.83	0.81
F-Test	(37.85)***	(26.92)***	(23.41)***	(68.44)***	(49.92)***	(56.66)***	(10.65)**	(9.49)**
Redundant Fixed Effects Tests								
Cross-section F	(6.51)**	(7.67)***						
Cross-section Chi-square	(20.49)***	(23.51)***						
Period F	(1.87)**	(1.86)**						
Period Chi-square	(44.85)***	(44.58)***						
Cross-Section/Period F	(6.68)***	(7.57)***						
Cross-Section/Period Chi-square	(101.00)***	(107.20)***						

Note 1: ***, **, * indicate statistical significance at 0.01, 0.05 and 0.10 level, respectively.
Note 2: The standard errors are shown in parentheses below the coefficients.

M3 (Model 3) and M4 (Model 4) provide the results for the impact of Hofstede cultural dimensions on the imports and exports of Poland respectively. Findings suggest that there is no significant impact of cultural dimensions on the imports. However, a unit increase in individualism dimension decreases exports (% of GDP) by 2.6 times. M5 (Model 5) and M6 (Model 6) present the results for

Lithuania. Findings reveal that similar to Poland, only individualism dimension has a significant relationship with exports. An increase in individualism decreases the exports of Lithuania. Model fit tests show that all four models explain more than 95% of the variation in the variables.

M7 (Model 7) and M8 (Model 8) exhibit the relationship of Romanian cultural values with its imports and exports respectively. Results show that only masculinity vs femininity has a significant relationship with imports of Romania. An increase in femininity will increase the imports (% of GDP) by 3.9 times, while with respect to exports, masculinity vs femininity and individualism have a significant impact. An increase in femininity increases exports and an increase in individualism decreases the exports.

Overall, individualism dimension of Hofstede cultural values is most significant in both panel and standalone model.

Conclusions

Cultural values play a major role in shaping the behaviour and decision making of societies. The purpose of the paper was to analyse the impact of national cultural dimensions on the international trade of three Eastern European Countries. A unique set of proxies adopted from previous literature has been used to measure the Hofstede cultural dimensions. Based on the analyses performed it can be assumed that there is a decrease in power distance and an increase in uncertainty avoidance and individualism in the Eastern European countries. Overall, trends for individual countries seem to be close to each other while the differences reflect aspects related to the specifics of each country.

Panel regression with fixed effects and standalone multiple regression models have been used to estimate the impact of cultural dimensions on the international trade. The findings suggest that power distance and individualism have a significant impact on the imports of Eastern European Countries (EEC), the rest of the variables having no significant impact. The country specific analysis shows that there is no significant impact of cultural dimensions on the imports in Poland. Masculinity has a significant relationship with imports in Romania. Only individualism dimension has a significant relationship with exports in Poland and Romania. Overall, results show that an increase in power distance will consist of a decrease in both imports and exports, while a decrease in individualism will increase imports and exports of Romania, Lithuania, and Poland.

Findings of the current study indicate that variations in national culture are affecting trade between countries. Power distance has an inverse relationship with both imports and exports which is why policy makers should focus on reducing power distance in order to enhance the trade with other countries. The main limitation of the current study is the use of the proxies for the cultural dimensions analysed, more appropriate indicators can be used in future researches. Also, there is a lack of theoretical background in linking the cultural dimensions with international trade. Further research could apply our findings and seek to analyse more closely why these cultural dimensions affect international trade in this way.

Acknowledgments: Authors thank reviewers and participants of "EURINT 2018 Reflecting on Europe's (dis)order: scenarios for the EU's future" international conference held at Alexandru Ioan Cuza University of Iasi, for their valuable suggestions and comments to an earlier version of this study.

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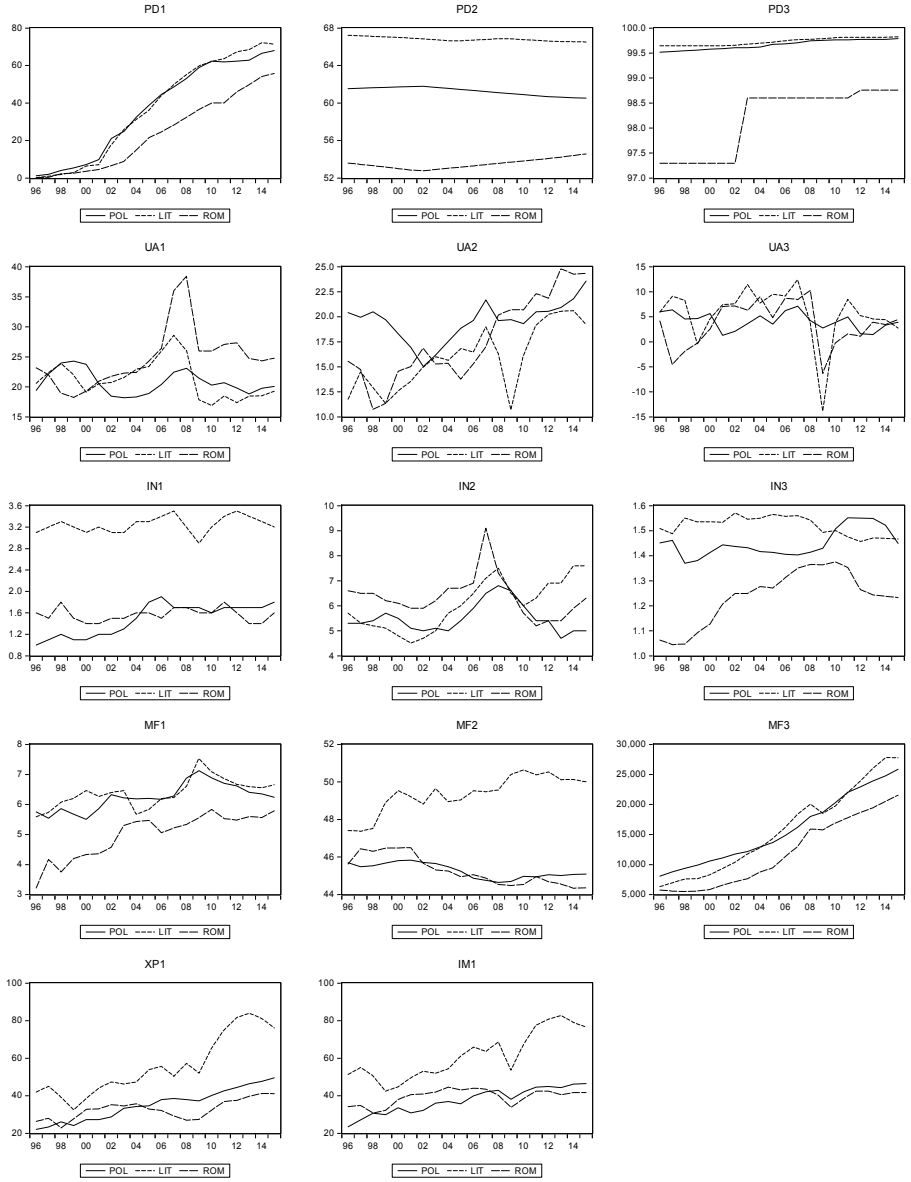
Appendix A

Figure 1. Evolution of Hofstede proxies over the time



Where POL represents Poland, LIT = Lithuania, ROM= Romania and PD1 Internet usage ratio *(% of total population)*, PD2 Urbanization rate *(%)*, PD3 Literacy rate *(%)*, UA1 Investment rate *(% of GDP)*, UA2 Savings rate *(% of GDP)*, UA3 GDP growth rate *(%)*, MF1 Healthcare budget ratio *(% of GDP)*, MF2 Gender employment, MF3 Individual income *(PPP current international USD)*, IN1 Divorce rate *(per 1000 persons)*, IN2 Marriage rate *(per 1000 persons)*, IN3 Higher education rate (*% of population over 15 years old)*, XP1 Exports of goods and services (% of GDP), IM1 Imports of goods and services (% of GDP).