Associate Professor Codruța MARE, PhD
Babes-Bolyai University, ClujNapoca
E-mail: codruta.mare@econ.ubbcluj.ro
Associate Professor Simona Laura DRAGOȘ, PhD
Babes-Bolyai University, Cluj Napoca and
Orleans University, Laboratory of Economics of Orleans, France
Professor Ingrid-Mihaela DRAGOTĂ, PhD
The Bucharest University of Economic Studies
Gabriela Mihaela MUREȘAN, PhD Student
Claudia Andreea UREAN, PhD Student
Babes-Bolyai University, ClujNapoca

SPATIAL CONVERGENCE PROCESSES ON THE EUROPEAN UNION'S LIFE INSURANCE MARKET[1]

Abstract. *Starting from the idea that interactions exist in the European Union, we have implemented Spatial Econometrics methods to assess the occurrence of absolute, conditional or club β-convergence on the EU life insurance market. The life insurance density was used as a proxy for the development of the life insurance market in our analysis for 27EU countries, during the period 2002 – 2014. The absolute β-convergence was accepted by the spatial regression analysis. Spatial influences were accounted for by using the longitude and latitude as exogenous variables, together with the spatially lagged variable for the dependent. From all the economic, cultural and institutional determinants considered in our analysis, only the Hofstede's uncertainty avoidance index proved to be statistically significant. The positive correlation coefficient between this cultural dimension and the growth rate of life insurance density in the European Union proves that countries with a higher level of uncertainty avoidance will experience higher growth rates.*

Keywords: *life insurance, convergence, European Union, spatial econometrics, Hofstede's cultural dimensions.*

JEL classification: G22, C21, C31, O47

Introduction

The economic cohesion was one of the main declared goals of the European Union, for valuing the potential of a common market for services and

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goods(Wild, 2016). In the financial literature we find in the studies of Goldberg (2007) and Badahir and Valev (2015) the approach of a “knowledge gap” between the developed and emerging countries. If emerging markets will follow the developed ones in the field of financial development, we can look forward to a convergence process. On the contrary, if the “gap” between them increases, we can speak about divergence. Due to the fact that in the EU insurance industry, as an important part of the tertiary sector, there is a significant gap between life and non-life sectors, we choose to analyse this market from the convergence point of view.

The main goal of the convergence studies in the European Union is to evaluate the degree in which this process occurs, taking into account the main principles on which this construction is based. The large structural differences between old and new member states are usually assessed through variables related to the wealth of the nation, such as GDP, incomes, etc. The empirical evidence prove that there are different types of convergence processes in the European Union (see, for example, Dall`Erba, 2003; Dall'Erba and Le Gallo,2008; Mare, 2014), and a continuous process of integration (economic, social, cultural, etc.) should also manifest on the insurance market. Due to the fact that non-life insurance market includes a compulsory part, we chose to analyse the life insurance market, where the decision is subjected only to the personal decision of the client. The importance of this study is emphasized by major disparities between the weights of life insurance industry in emerging and developed markets (in developed countries the life sector is far more developed then in emerging ones).To the best of our knowledge, this is the first study focused on emphasizing the convergence process on the insurance market and on the analysis of its economic, social, institutional and political determinants at the European Union level. Moreover, the influence of these factors is enhanced by the different cultural backgrounds. In this context, we extend our analysis by taking also into account the Hofstede’s cultural dimensions (Hofstede, 2011). Until now, this type of studies was made only for the financial services market. The novelty of the study is that it also provides the first application of spatial econometrics as the methodological approach used to study the process of convergence for the EU life insurance industry.

A convergence process implies a significant relationship between the initial level of the market and its growth rate during the analysed period. If this relationship is true, an absolute β-convergence process occurs. This means that EU member countries tend to move towards a single steady-state on the insurance market. The existing literature reveals that conditional or club β-convergence processes appear in the European Union, especially due to the existence of structural differences (see Fischer and Stirbock, 2004; Feldkircher, 2006, among others).

The remaining of the study is organized as follows. Section 2 shortly presents the leading trends in the EU life insurance industry and its main determinants. Section 3 describes the database and methodology. Section 4 presents the empirical results, and the last section concludes.

An overview of the determinants of the life insurance market

The analysis of the life insurance market (SwissRe, 2015) reflects that in the Western European countries the life insurance penetration, which considers written premiums from life insurance policies as a percentage of GDP, is 4.77%, while in the Central and Eastern European countries is only 0.53%. The level of this indicator at the European Union level is 2.96%.

The statistical data also show that this market stagnates after the financial crisis from 2008, while in emerging markets life insurance growth rates slow down compared to the period before crisis. However, on the Western European life insurance market, we can see a recovery trend, when gross written premiums raised in 2014 (compared to 2013) with 5.8%, representing the highest growth after crises since 2007. This rise was due mostly to the increase in saving products.

The life insurance premiums for the CEE countries have dropped by 2.1% in 2014 (compared to 2013), but overall, the downward trend has slowed down in most of these countries. In countries such as Hungary, Slovakia or Baltic States, the gross written premiums from life insurance industry increase, while in Slovenia, Czech Republic and Romania the drop has been stabilized.

Considering the real standing of the European life insurance market and the fact that convergence processes have been identified in EU in terms of standard of living, the aim of this study is to deeply investigate those processes on this market.

The existing literature has been already proved that the demand for life insurance is affected by a very wide range of indicators, such as economic, demographic, socio-cultural and institutional determinants. Among economic determinants, the income level is one of the most important factor on the decision to buy a life insurance policy, either the level of household income is used, or the aggregate economic data. Empirical evidence supports a positive correlation between income and life insurance demand (Truett and Truett, 1990; Browne and Kim, 1993; Outreville, 1996; Ward and Zurbruegg, 2002; Beck and Webb, 2003; Chang and Lee, 2012). Moreover, the impact of GDP per capita on life insurance consumption increases as the economy matures (Chang and Lee, 2012). In this context, can be relevant to point out the diversity of methodological approaches used to examine the relation between economic development and life insurance demand from the commonly used linear models to "the S-curve model" of Carter and Dickinson (1992) and Enz (2000) (non-linear models) and also studies in which the data set is split between developed and, respectively, developing economies (Ward and Zurbruegg, 2002; Sen, 2008). A more recent study of Chang and Lee (2012) used another non-linear model, a threshold regression model to solve the potential endogeneity issue when investigating the relationship between these two variables, next to other determinants. They prove that the impact of the explanatory variables found as determinants for life insurance do vary with the level of economic development.

Some of the abovementioned studies also use as economic determinant for life insurance demand the inflation factor and it is already proved the negative impact exerted by this explanatory variable (Browne and Kim, 1993; Outreville, 1996; Ward and Zurbruegg, 2002; Beck and Webb, 2003; Chang and Lee, 2012; Lee and Chang, 2015). The negative correlation between these two variables can be explained through the negative impact exerted by inflation to the long term monetary benefits provided by a life insurance policy, by eroding the insured amount which will be received by the policyholder in the future. However, in the existing literature, the results are mixed. For example, not all the studies in this field find a relation between inflation and life insurance demand. For example, Elango and Jones (2011) do not confirm it for a sample of 35 emerging markets, analysed for the period 1999-2008, neither when they use the life insurance density as dependent variable, nor when the life insurance growth rate are used instead. A similar result is found by Hwang and Gao (2003) for China. More recent studies, such as Lee and Chang (2015) find a puzzling result of a positive correlation between life insurance demand and the inflation rate, for 50 countries analysed during the period 1996-2005.

The importance of institutional framework and political stability of a country has been already proved in a number of studies until this moment, including in the field of life insurance industry. The legal rules are obviously important for this sector, based on the contractual obligations assumed by both parties and it is expected that the life insurance industry to develop more if the insured persons feel protected by the legal system and the enforcement of the law is implemented. Moreover, the soundness of this legal environment depend on the political context and, for example, the control of corruption can significantly affect the trust in the insurance system in general, and particularly the life insurance one, due to the particular long term engagements. Hence, using an average of six indicators measuring voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption, Beck and Webb (2003) prove that institutional differences can explain some of the variation in life insurance consumption across countries. Also, Chang and Lee (2012) find that these types of institutional determinants have a positive impact on life insurance development, but especially in low-income countries. In high-income countries, this effect is marginal. In a very recent study, Lee and Chang (2015) use the worldwide governance indicator (WGI) constructed by Kaufmann, Kraay, and Mastruzzi (2010) to evaluate the influence of national governance environments on the development of life insurance sector. They use four indicators: government effectiveness, regulatory quality, rule of law, and control of corruption. A higher score represents a better institutional quality. They prove that country-specific characteristics such as governance environment influence the effect of financial reform in life insurance industry.

In his basic model, Hofstede (1980) proposes four cultural dimensions: low versus high power distance, low versus high uncertainty avoidance, individualism versus collectivism, and masculinity versus femininity. Afterwards, Bond supported by Hofstede (Hofstede and Bond, 1988) introduced a new dimension, respectively long versus short term orientation. In 2010, Michael Minkov has added to the model another cultural dimension, the indulgence versus restraint (Hofstede, 2011).

In the existing literature little research was made regarding the effect of culture on the demand for life insurance products. Kirkman, Lowe and Gibson (2006) recommend that researchers should not consider only one dimension from Hofstede's model in their studies as from their review of 64 studies of culture using Hofstede's dimensions. Chui and Kwok (2008) examine the influence of culture on the consumption patterns of life insurance policies across 41 countries. They use only four out of six Hofstede's cultural dimensions and conclude that culture plays a significant role in explaining differences in life insurance consumption. They found out that individualism has the highest level of significance, followed by power distance and masculinity. They explain that the degree to which people insure themselves is not related to uncertainty avoidance. Instead, more life insurance policies are sold in individualistic cultures than in collectivistic ones.In other words, if a person dies early, in collectivistic cultures they can count on other family members to take care of their dependents, while in individualistic cultures one relies on institutions (like insurance companies, banks) to support their dependents and not on family members.

Extending Chui and Kwok's work, Park and Lemaire (2011) analysed the impact of the fifth Hofstede cultural dimension, the Long-Term Orientation, on life insurance consumption in 27 Asian countries. They find that Long-Term Orientation has a strong positive influence on life insurance consumption, leading to the conclusion that life insurance demand is bound to increase in Asia.

Methodology and data

To test for β-convergence processes using spatial data, the spatial weights matrix has to be constructed. The coefficients of this matrix indicate the influence of neighbours to the spatial unit *i* (i.e. the type of spatial structure and the spatial dependence intensity). As in the European Union there are island countries like Malta and Cyprus, the ordinary contiguity matrix, based on common geographical frontiers would lead to misspecification and false results. For these type of countries, the matrix would consider that they have no interaction with the others, which is false in the case of the European Union, where dependences are high among member states.

In this case, there are two alternatives to define the spatial weights matrix: distance-based and k-nearest neighbours. Anselin (2005) points out that the k-nearest neighbour type may be more efficient in such cases. Different alternatives to construct the spatial weights matrix are presented in the literature (see, for example, Prochniak and Witkowski, 2014). Additionally, Getis and Aldstadt (2004) present the evolution of criteria based on which the most suitable type of spatial weights matrix can be established and come up with their own method based on several quality indicators.

Considering all these, we have created more types of spatial weights matrices, both in the distance-based and the k-nearest neighbour forms. The final decision was made based on our dependent variable, following the methodology of Getis and Aldstadt (2004). Thus, we compare the values of:

- The AIC criterion for the model with the dependent variable and its spatial lag variable given by a specific matrix. The better the matrix specification, the lower the value of the AIC.
- The Moran I statistic, with its parameters obtained in the randomization procedure: the better the fit given by the matrix, the higher the pseudo p-value obtained.
- The Moran I statistic computed for the residuals of the model. If the matrix if efficient, there should be no spatial autocorrelation left in the residual values.
- The correlation coefficient between the variable and its spatial lag. The higher the coefficient, the better the fit.

Results for several types of matrices are presented in Table 1.The results clearly shows that the best performances are obtained for the distance-based spatial weights matrix constructed in the Arc distance mode at a threshold of 1490 km between the centroids of the spatial units.

Convergence analyses in the β form are based on the model of Robert Barro and Xavier Sala-i-Martin (1992, 2004). Considering *Y* as our dependent variable ,the general form of the model specified is:

$$\frac{1}{T} \times \ln(\frac{y_{iT}}{y_{i0}}) = a + \beta \ln(y_{i0}) + u_i \quad (1)$$

This model allows us to compute the convergence speed (2) and the half-life period (3), in order to see the intensity of the convergence process (T is the number of years in the analysis, while β is the regression coefficient obtained in eq. (1).

$$b = \frac{-\ln(1+T\times\beta)}{T} \quad (2)$$

$$\tau = \frac{-\ln(2)}{\ln(1+\beta)} \quad (3)$$

For the convergence process to occur and to be stable, the regression coefficient has to be negative and to have values between 0 and 1 in modulus. If the β coefficient is negative, but in modulus > 1, then there is a convergence process, but it is not stable, as its variance increases in time. When this coefficient has positive values, there is no absolute β-convergence.

Table 1.Performance of different spatial weights matrices

Type of matrix	AIC	Moran				Moran Residuals		CorrCoef
		I (pseudo p-value)	Mean	S.D.	Z-Value	Value	Prob.	
4 neighbours	-38.29	0.0063 (0.244)	-0.0391	0.065	0.695	0.537	0.591	0.011
5 neighbours	-38.55	0.0514 (0.058)	-0.0389	0.057	1.589	0.251	0.802	0.098
6 neighbours	-38.53	0.0422 (0.058)	-0.0379	0.05	1.607	0.418	0.676	0.094
8 neighbours	-38.78	0.0214 (0.085)	-0.0374	0.041	1.419	0.796	0.426	0.056
9 neighbours	-38.48	0.0291 (0.039)	-0.0389	0.038	1.796	0.835	0.404	0.085
10 neighbours	-38.57	0.0323 (0.024)	-0.0399	0.035	2.042	0.912	0.362	0.101
11 neighbours	-38.44	0.0215 (0.037)	-0.0391	0.033	1.840	1.128	0.259	0.074
Euclidean distance threshold	-38.72	-0.0264 (0.346)	-0.0394	0.055	0.236	0.7963	0.426	-0.125
Euclidean distance 20	-38.76	-0.0345 (0.399)	-0.0379	0.048	0.071	0.731	0.464	-0.132
Arc distance 1490 km	-38.82	-0.0322 (0.404)	-0.037	0.051	0.094	0.741	0.459	-0.140
Arc distance 1000 km	-38.30	0.0009 (0.275)	-0.0328	0.055	0.612	0.456	0.648	0.023

Source: own simulation using GeoDa 1.6.7 and Excel

If any spatial arrangement occurs, this will be emphasized by the descriptive analysis based on maps. In this case, the classical OLS model is not suitable and spatial influences will be included in the model. Thusly, we have constructed first the OLS model and then assessed the presence of spatial influences based on the Lagrange Multiplier values. We use control variables to check for conditional convergence processes. We consider the Index of Economic Freedom, Hofstede's cultural dimensions, economic and political factors and latitude and longitude to assess for clusterization processes. Equation (1) was re-specified in the form of equation (4). When tests requested, spatial autoregressive or spatial error correction models were also constructed.

$$\frac{1}{T} \times \ln\left(\frac{y_{iT}}{y_{i0}}\right) = a + \beta \ln(y_{i0}) + \gamma \ln(X) + u_i \qquad (4)$$

Due to data availability, we include in our database the27 countries that joined the European Union before Croatia, for the period 2002 – 2014.Croatiawasnot included in the analysis as it became a member only in the last part of the analysed period, so we consider the integration effect of being much lower in this case.

In order to test the β-convergence process on the European Union's life insurance market we considered the life insurance density. Table 2 presents all the variables used in the analysis. Both dependent and independent variables were log transformed(see also equation (1)).

Table 2. Dependent and the explanatory variables used in the analysis

Type of variable	Notation	Description
1.ENDOGENOUS	RDEN	Annual average growth rate of the life insurance density in the analyzed period.
2.EXOGENOUS	LNDEN2002	Life insurance density in 2002.
2.1. Economic	LNIIEF	Growth rate of the Index of Economic Freedom (overall score)
	IR	Inflation rate (annual variation, in %) during the analysed period, using the GDP deflator
2.2. Culture	LNPOWER	Hofstede cultural dimension: Power distance index
	LNINIDIVID	Hofstede cultural dimension: Individualism versus collectivism
	LNMASCULIN	Hofstede cultural dimension: Masculinity versus femininity
	LNUNCERT	Hofstede cultural dimension: Uncertainty avoidance index
	LNLONGTERM	Hofstede cultural dimension: Long term orientation versus short term normative orientation
	LNINDULG	Hofstede cultural dimension: Indulgence versus restraint
2.3. Institutional and political determinants	LNVOICE	Annual average growth rate of the score for Voice and Accountability
	LNSTAB	Annual average growth rate of the score for Political Stability
	LNGOVEF	Annual average growth rate of the score for Government Effectiveness
	LNREGQ	Annual average growth rate of the score for Regulatory Quality

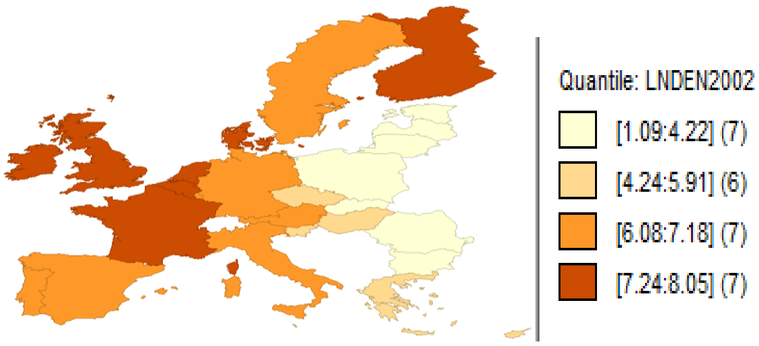
	LNRLAW	Annual average growth rate of the score for Rule of Law
	LNCORUP	Annual average growth rate of the score for Control of Corruption
2.4. Exogenous spatial	XCTRD	Longitude
	YCTRD	Latitude
	W_RDEN	Spatial lag of the endogenous variable

Source: own construction

Results[2]

The first step of our analysis consisted in the descriptive evaluation of data based on maps. The quartile maps constructed for the life insurance density are presented in Figures 1 - 3, for the beginning of the analysed period (2002), at theend of period (2014) and the average annual growth rate of life insurance density (see Table 2) .

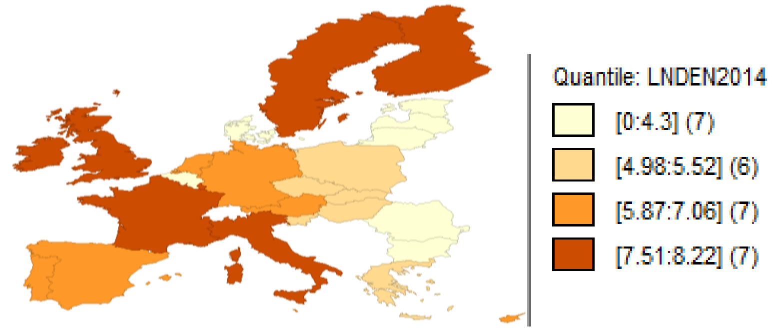
Figure 1. Quartile map for life insurance density in the European Unionin2002



Source: own construction in GeoDa 1.6.7

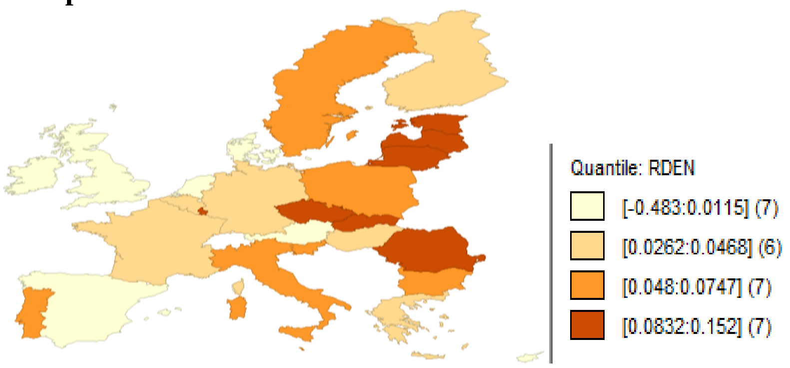
[2] For all analyses, additional information and results are available upon request.

Figure 2. Quartile map for the life insurance density in the European Union in 2014



Source: own construction in GeoDa 1.6.7

Figure 3. Quartile map for the life insurance density growth rate in the European Union



Source: own construction in GeoDa 1.6.7

These figures clearly show significantly higher life insurance densities in older EU members, especially at the beginning of the analysed period, but with higher growth rates in the younger EU ones. Additionally, when we compare Figures 1 and 2, we can see that some countries have switched groups in time, as their life insurance density has increased. Based on these results, we can expect significant convergence process in the European Union.

Using the model presented in equation (1) we obtain the following results (see Table 3).

Table 3. Results for the analysis of the convergence process on the life insurance market in the European Union

Variable	**Coefficient**	**Std.Error**	**t-Statistic**	**Probability**
Constant	0.1745105	0.0576854	3.02521	0.006
LNDEN2002	-0.02585412	0.009936271	-2.601994	0.015

Source: own calculations in GeoDa 1.6.7

All tests confirm the validity of the model. The coefficient for the life insurance density in 2002 is significant, negative and with values in modulus between 0 and 1. This means that an absolute β-convergence process occurred in the European Union during the analysed period. In time, life insurance market adjusts and integrates, and countries with lower life insurance density levels tend to grow faster. By computing eq. (2) and (3) based on the results for eq. (1) we obtain a convergence speed of 3.15% and a half-life period of 26.46 years. This means that if the convergence speed remains the same (3.15%), in approximately 26.5 years, half of the discrepancies between different national life insurance markets from the European Union will be diminished.

Table 4. Conditional convergence regression analyses :results foreq. (4)

Variables	Constant Coef. (p-value)	LNDEN2002 Coef. (p-value)	Control Coef. (p-value)	R^2 / adj. R^2	AIC	LM tests
LNIIEF	0.23 (0.005)	-0.033 (0.009)	-0.339 (0.268)	0.25/ 0.19	-44.17	Accept OLS
LNPOWER	-0.16 (0.441)	-0.018 (0.099)	0.076 (0.101)	0.29/ 0.24	-45.84	Accept OLS
LNINIDIVID	0.17 (0.457)	-0.026 (0.029)	-0.001 (0.987)	0.21/ 0.14	-42.76	Accept OLS
LNMASCULIN	0.08 (0.489)	-0.027 (0.013)	0.028 (0.327)	0.24/ 0.18	-43.86	Accept OLS
LNUNCERT (OLS)	-0.38 (0.114)	-0.017 (0.089)	0.122 (0.022)	0.37/ 0.32	-48.78	Accept SAR
LNUNCERT (SAR)	**-0.402 (0.049)**	**-0.019 (0.024)**	**0.133 (0.002)**	**0.47**	**-49.60**	**-**
W_RDEN (SAR)			**-0.65 (0.003)**			
LNLONGTERM	-0.17 (0.543)	-0.021 (0.051)	0.081 (0.219)	0.26/ 0.2	-44.49	Accept OLS
LNINDULG	0.32 (0.108)	-0.011 (0.589)	-0.062 (0.429)	0.23/ 0.17	-43.49	Accept OLS
LNVOICE	0.18 (0.005)	-0.026 (0.015)	0.189 (0.494)	0.23/ 0.16	-43.3	Accept OLS
LNSTAB	0.18 (0.005)	-0.026 (0.016)	0.081 (0.53)	0.23/ 0.16	-43.2	Accept OLS
LNGOVEF	0.17 (0.015)	-0.025 (0.043)	0.021 (0.948)	0.21/ 0.15	-42.77	Accept OLS
LNREGQ	0.18 (0.01)	-0.026 (0.029)	-0.019 (0.938)	0.21/ 0.15	-42.77	Accept OLS
LNRLAW	0.19 (0.066)	-0.028 (0.087)	-0.046 (0.873)	0.21/ 0.15	-42.79	Accept OLS
LNCORUP	0.17 (0.012)	-0.026 (0.032)	0.009 (0.96)	0.21/ 0.15	-42.76	Accept OLS
IR	0.23	-0.029	0.0006	0.24/	-43.84	Accept

	(0.01)	(0.01)	(0.333)	0.18		OLS
XCTRD	0.21 (0.035)	-0.03 (0.029)	-0.001 (0.619)	0.22/ 0.16	-43.04	Accept OLS
YCTRD	0.21 (0.157)	-0.026 (0.018)	-0.0006 (0.8)	0.21/ 0.15	-42.83	Accept OLS
W_RDEN	0.25 (0.001)	-0.031 (0.005)	-1.375 (0.09)	0.3/ 0.26	-46.06	SAR

Source: own calculations inGeoDa 1.6.7

Results in Table 4 show, in almost all cases, that the convergence process remains active (probabilities for the LNDEN2002 coefficients are lower than 0.05). For power distance and long term orientation variables, the significance of the convergence process is acceptable only at the 10% level of significance. Cultural features related to indulgence alter this process. Following Beck and Webb (2003) we have also considered the institutional determinants for the convergence process of the life insurance market in the European Union. The process persists, but it is not conditioned by any of the institutional factors considered. In all cases, probabilities of the control variables turned out to be much higher than the 5% level. Additionally, inflation is not a significant factor in this convergence process. This result could be explained by the fact that, usually, insurance companies adjust their products to inflation.

The best convergence model appears when the uncertainty avoidance index is considered as a control variable in the model. The classical OLS model is not suitable anymore; instead the spatial autoregressive model (SAR) is confirmed by the LM tests. The convergence process remains stable (the coefficient is negative and less than 1 in modulus). The convergence process is positively related to the level of uncertainty avoidance. Uncertainty Avoidance Index (UAI) indicates to what extent a culture members' feel uncomfortable or comfortable in unstructured situations (Hofstede and Bond, 1988). Uncertainty is centred on stability, planning and change, on the need of having norms and regulations. Starting from the idea of Chui and Kwok (2008) that uncertainty avoidance leads to an escape from ambiguity, our results suggest that the perception of life insurance products offering a certain degree of stability will lead to a higher growth rate of the life insurance density, mostly in EU emerging countries.

Additionally, the coefficient of the spatially lagged variable is negative, showing that, on average, countries with high levels of the life insurance density growth rate have neighbours with low levels of this variable. Thusly, the convergence process is occurring.

Conclusions

The main goal of the study was to evaluate if any spatial convergence process occurs on the European Union life insurance market, in the form of the β-convergence. We have started from the idea that, as convergence processes were demonstrated at the level of standard of living, than this should also be present on the insurance market. The results show a significant, stable and valid absolute β-convergence process taking place when the life insurance density is considered as a proxy for the market.

Additionally, several control variables were considered for influences dependent on the economies that form the European Union. From all variables considered, Hofstede's uncertainty avoidance level is significantly influencing the development of the life insurance market. The positive coefficient shows that this cultural dimension is leading to a higher growth rate of the life insurance density. Life insurance products are characterized by uncertainty and ambiguity, so the consumers are more likely to react according to their cultural backgrounds. Some cultures accepts the innovation process going to risk assumption (Denmark, Ireland), while other cultures tries to avoid risk at the highest level (Greece, Portugal). As a consequence, life insurance companies should reconsider their development strategies oriented toward those economies that have a high level of uncertainty avoidance. These countries usually manifest a high level of anxiety facing new technologies and their population reacts negatively at new brands entered on the market, whose names are not known.

REFERENCES

[1]**Anselin, L. (2005),** ***Exploring Spatial Data with GeoDaTM: A Workbook.*** *Center for Spatially Integrated Social Science*; University of Illinois, Urbana-Champaign, Urbana, available at: https://geodacenter.asu.edu/system/files/geodaworkbook.pdf ;

[2]**Badahir, B., Valev, N. (2015),** ***Financial Development Convergence***. *Journal of Banking & Finance*, 56, 61-71;

[3]**Barro, R., Sala-i-Martin, X. (1992),** ***Convergence***. *Journal of Political Economy,* 100 (2), April, 223–251;

[4]**Barro, R., Sala-i-Martin, X. (2004),** ***Economic Growth***. *The MIT Press, Cambridge, Massachusetts, London,* 2nd edition;

[5]**Beck, T., Webb, I. (2003),** ***Economic, Demographic and Institutional Determinants of Life Insurance Consumption across Countries***. *World Bank Economic Review*, 17(I), 51–88;

[6]**Browne, M.J., Kim, K. (1993),** ***An International Analysis of Life Insurance Demand.*** *Journal of Risk and Insurance*, 60, 616–634;

[7]**Carter, R.L., Dickinson, G.M. (1992),** ***Obstacles to the Liberalisation of Trade in Insurance***. *London: Harvester Wheatsheaf*;

[8]**Chang, C.H., Lee, C.C. (2012),** ***Non-linearity between Life Insurance and Economic Development: A Revisited Approach***. *The Geneva Risk and Insurance Review*, 37(2), 223–257;

[9]**Chui, A.C., Kwok, C. C. (2008),** ***National Culture and Life Insurance Consumption***. *Journal of International Business Studies*, *39*(1), 88-101;
[10]**Dall`Erba S.(2003),** ***Distribution of Regional Income and Regional Funds in Europe 1989-1999: An Exploratory Spatial Data Analysis***; Discussion Paper *REAL 03-T-01*, University of Illinois at Urbana-Champaign;
[11]Dall'Erba, S., Le Gallo, J. (2008), ***Regional Convergence and the Impact of European Structural Funds over 1989–1999: A Spatial Econometric Analysis***. *Papers in Regional Science*, 87(2), 219-244;
[12]**Donaldson, W.A. (1977),** ***Inventory Replenishment Policy for a Linear Trend in Demand***. *Operations Research*, 28, 663-670;
[13]**Elango, B., Jones, J. (2011),** ***Drivers of Insurance Demand in Emerging Markets***. *Journal of Service Science Research*, 3(2), 185-204;
[14]**Enz, R. (2000),** ***The S-curve Relation between Per-capita Income and Insurance Penetration***. *The Geneva Papers on Risk and Insurance—Issues and Practice*, 25, 396–406;
[15]**Feldkircher, M.(2006),** ***Regional Convergence within the EU-25: A Spatial Econometric Analysis;*** In: OeNB Workshops (Ed.) *New Regional Economics in Central European Economies: The Future of CENTROPE*, OeNB, Vienna, Workshops n. 9, 101-119;
[16]**Fischer and Stirbock (2004),** ***Regional Income Convergence in the Enlarged Europe, 1995- 2000: A Spatial Econometric Perspective***. Zentrum für Europäische Wirtschaftsforschung GmbH, Mannheim, *ZEW Discussion Paper* n. 04-42;
[17]**Getis, A., Aldstadt, J. (2004),** ***Constructing the Spatial Weights Matrix Using a Local Statistic***. *Geographical Analysis*, 36: 90–104;
[17]**Goldberg, L. (2007),** ***Financial Sector FDI and Host Countries: New and Old Lessons*** *; Economic Policy Review*, Federal Reserve Bank of New York, 1-17;
[19]**Hofstede, G. (1980),** ***Culture's Consequences: International Differences in Work-Related Values***. *Sage*, Beverly Hills, CA;
[20]**Hofstede, G. (2011),** ***Dimensionalizing Cultures: The Hofstede Model in Context***. *Online Readings in Psychology and Culture, 2* (1);
[21]**Hofstede, G., Bond, M. H. (1988),** ***The Confucius Connection: From Cultural Roots to Economic Growth***. *Organizational Dynamics*, 16, 4-21;
[22]**Hwang, T.,Gao, S. (2003),** ***The Determinants of Demand for Life Insurance in an Emerging Economy- The Case of China***. *Managerial Finance*, 29(5/6), 82-96;
[23]**Kaufmann, D., Kraay, A., Mastruzzi, M. (2010),** ***The World Governance Indicators: Methodology and Analytical Issues***. *World Bank policy research working paper*, no.5430 (Washington, D.C.: The World Bank, Development Research Group, Macroeconomics and Growth Team);

[24]**Kirkman, B. L., Lowe, K. B., Gibson, C. B. (2006),** ***A Quarter Century of Culture's Consequences: A Review of Empirical Research Incorporating Hofstede's Cultural Values Framework***. *Journal of international business studies*,37(3), 285-320;
[25]**Lee, C.C., Chang, C.H.(2015),** ***Financial Policy and Insurance Development: Do Financial Reforms Matter and how?***. *International Review of Economics & Finance*, 38(C), 258-278;
[26]**Mare C. (2014),** ***Scenarios and Prospectives Regarding the Euro Introduction on the Romanian Market***; *Eikon Publishing;, ISBN 978-973-757-888-4, Universitas collection, Cluj-Napoca;*
[27]**Outreville, J.F. (1996),** ***Life Insurance Markets in Developing Countries***. *Journal of Risk and Insurance*, 63(2), 263–278;
[28]**Park, S., Lemaire, J. (2011),** ***Culture Matters: Long-term Orientation and the Demand for Life Insurance***. *Asia-Pacific Journal of Risk and Insurance*;
[29]**Prochniak, M.,Witkowski, B.(2014),** ***Alternative Weighting Schemes in Spatial Analysis of GDP per Capita Convergence***. *Quantitative Methods in Economics,* XV(2), 198 – 208;
[30]**Sen, S. (2008),** ***An Analysis of Life Insurance Demand Determinants for Selected Asian Economies and India***. *MSE Working Papers*, 36, Madras School of Economics;
[31]**Truett, D.B., Truett, L.J. (1990),** ***The Demand for Life Insurance in Mexico and the United States***: *A Comparative Study*. *Journal of Risk and Insurance,* 57, 321–328;
[32]**Ward, D.,Zurbruegg, R. (2002),** ***Law, Politics and Life Insurance Consumption in Asia***; *The Geneva Papers on Risk and Insurance—Issues and Practice*, 27, 395–412;
[33]**Wild, J. (2016),** ***Efficiency and Risk Convergence of Eurozone Financial Markets***. *Research in International Business and Finance*, 36, 196-211.