EKONOMIA I PRAWO. ECONOMICS AND LAW
Volume 23, Issue 3, September 2024
p-ISSN 1898-2255, e-ISSN 2392-1625
https://apcz.umk.pl/EiP

ORIGINAL ARTICLE
received 16.02.2024; accepted 20.06.2024; published 30.09.2024
Citation: Laskowska, I. (2024). The Development of the Life Insurance Market in Central and Eastern European Countries. *Ekonomia i Prawo. Economics and Law*, 23(3): 477–491.
doi:10.12775/EiP.2024.024

The Development of the Life Insurance Market in Central and Eastern European Countries

IWONA LASKOWSKA
Uniwersytet Łódzki, Wydział Ekonomiczno-Socjologiczny
Rewolucji 1905 r. 39, 90–214 Łódź
e-mail: iwona.laskowska@uni.lodz.pl
ORCID: 0000-0002-1657-5541

Abstract

Motivation: The need to implement the process of economic transformation in the recent past is what significantly differentiates the countries of Central and Eastern Europe from other members of the European Union. Integration into the financial system of the European Union has been an important factor influencing the process of transformation of the life insurance sector and the establishment of the level of competition, as well as the quality and scope of insurance services offered. In addition, the improvement in the macroeconomic situation and the increase in household income have had a significant impact on the growth in demand for insurance products from the life insurance segment. Despite positive changes, the insurance market of Central and Eastern European countries remains a relatively underdeveloped market, and its structure, unlike that of Western European countries, is dominated by property insurance. This points towards a need for further research into the determinants of life insurance market growth in this region of Europe.

Aim: The aim of this paper is twofold. The first part presents an assessment of the level of development of the life insurance market in ten countries of Central and Eastern Europe over the period 2011–2021 using the method of multivariate comparative analysis in dynamic

terms. The second part of the paper is devoted to an attempt to identify the determinants of the development of this market using econometric models for panel data (GMM estimator). Special attention is paid to the impact of economic growth on the life insurance market.
Results: The life insurance market varies widely among the group of countries considered. The trends of change during the period under consideration were also different. The most severe downturn in the life insurance market was recorded in Poland and the Czech Republic. Significant development was observed in Lithuania and Latvia, countries with an underdeveloped market in the past. The econometric models used confirmed the impact of economic development on the life insurance market.

Keywords: life insurance; Central and Eastern European countries; dynamic development index; GMM estimator
JEL: C23, G22, O43.

1. Introduction

Life insurance is a voluntary and additional element of securing the financial future of the insured and their financial dependents (Kurdyś-Kujawska & Sompolska-Rzechuła, 2019). The high share of life insurance in the market structure is generally taken as a testimony to the modernity and maturity of this market (Stroiński, 2010). In 2022, in the premium structure of the insurance market of European countries, life insurance accounted for about 58.8% of total insurance measured by gross written premiums (The Polish Chamber of Insurance (PIU), 2022, p. 52). A different structure of insurance markets is observed in Central and Eastern European countries. The countries of Central and Eastern Europe are relatively new members of the European Union. In many respects, the situation of these countries is similar. They are among the poorer members of the EU, referred to as catching-up economies. The need to implement an economic transformation process in the recent past is what significantly distinguishes this group of countries from other EU members (Kotliński & Warżała, 2020, p. 6).

Integration into the financial system of the European Union has been an important factor influencing the process of transformation of the life insurance sector and the establishment of the level of competition, as well as the quality and scope of insurance services offered. It has created favourable conditions for the transfer of new technologies and management systems. In addition, the improvement in the macroeconomic situation and the increase in household incomes have had a significant impact on the growth in demand for life insurance products (Kozak, 2011, pp. 336–337). Despite positive changes, the insurance market of Central and Eastern European countries remains a relatively underdeveloped market, and its structure, unlike that of Western European countries, is dominated by property insurance (PIU, 2022).

The countries of Central and Eastern Europe are not identical. They differ, for example, in the number and age structure of the population or in gross domestic product, which is the most synthetic measure of economic development. These factors can determine the functioning of the life insurance market (Beenstock et al., 1986; Truett & Truett 1990; Browne & Kim, 1993; Ward & Zurbruegg, 2002; Beck & Webb, 2003; Dragos, 2014; Dragos et al., 2017; Kjosevski, 2012; Sharku et al., 2021).

The aim of this paper is twofold. The first part presents an assessment of the level of development of the life insurance market in ten countries of Central and Eastern Europe over a eleven-year period (2011–2021) using the method of multivariate comparative analysis in dynamic terms. This method allows us not only to rank the objects due to the level of development of the insurance market but also to assess the magnitude of changes that occurred during the period covered by the analysis. The second part of the paper is devoted to an attempt to identify the determinants of the development of this market using econometric models for panel data (GMM estimator). Special attention is paid to the impact of economic growth on the life insurance market (the demand-following hypothesis).

2. Literature review

Countries' insurance markets develop under the influence of many different factors: economic, demographic, social, cultural, and ones dependent on the insurers themselves (Beck & Web, 2003, Outreville 2011, Kabrt, 2022). According to the demand-following hypothesis, economic growth is a primary factor in the development of the insurance sector. As a result of economic expansion, the insurance sector grows due to increasing demand for insurance products and services. Rising real incomes increase investors' and savers' demand for insurance services, leading to the opening of modern insurance institutions and the development of the market (Alhassan & Biekpe, 2016; Chang et al. 2014, Eartl, 2017). Studies show that life insurance consumption is related to the level of economic development (reflected by GDP per capita or individual income), the employment rate and the level of inflation (e.g.: Babbel, 1981; Beenstock et al., 1986; Truett & Truett, 1990; Browne & Kim, 1993; Ward & Zurbruegg, 2002; Beck & Webb, 2003; Celik & Kayali, 2009; Liebenberg et al., 2012; Dragos et al., 2017; Kjosevski, 2012; Ostrowska-Dankiewicz & Simionescu, 2020, Sharku et al., 2021). Non-economic determinants mainly concern demographic variables: old-age dependency ratios, life expectancy, and the gender structure of the population (Zang et al., 2022; Kabrt, 2022; Hodula et al., 2020).

Research work on the drivers of life insurance market development for countries that have undergone economic transition, where non-life insur-

ance dominates, is relatively rare. As evidenced by the research conducted by Kjosevski (2012) concerning Central and South-eastern European countries from 1998 to 2010, GDP per capita and the ratio of health spending to GDP positively affect the demand for life insurance. Inflation, on the other hand, negatively affects the per capita premium. In their study of the life insurance market in Poland, Śliwiński et al. (2013) used principal component analysis combining determinants of the same type into a single variable. The study confirms that economic and financial variables (GDP, financial development) strongly stimulate the demand for life insurance. Ertl's (2017) analyses using dynamic panel models for eight Central and Eastern European countries indicate that economic growth had a positive impact on the development of the insurance market prior to the 2008/2009 financial crisis. In the post-crisis period, GDP growth remained an important factor in the development of the life insurance market, but its role diminished. Sharku et al. (2021) in a study for Albania covering the years 2009–2020 confirmed the significant impact of GDP per capita on life insurance density. The level of unemployment was found to be insignificant. Kabrt (2022) analysed the relationship between key determinants such as income, education, life expectancy, employment and demand for life insurance in the Visegrad countries. His study shows that as the levels of income and education increase, the demand for pension fund investments rises, while the demand for life insurance decreases. Unemployment appears to have a definitely negative impact on interest in this type of insurance, and with higher life expectancy comes increased interest in life insurance products.

The role and direction of the influence of the determinants of life insurance demand may vary depending on the population or the study period, raising the need for further analysis in this regard.

3. Methods

The aim of the first part of the study was to assess the level of development of life insurance markets in Central and Eastern European countries in the years 2011–2021 using multivariate comparative analysis techniques which allow several criteria to be taken into account simultaneously. The analysis used a linear ordering method in a dynamic approach. In this approach, it is possible, in addition to ranking, to quantify changes in the level of the phenomenon under study for individual objects over the study period. The aggregate index, the so-called synthetic variable, is the basis for the construction of a dynamic development index (Mastalerz-Kodzis & Pośpiech, 2015, pp. 24–33). The construction of a ranking using the research apparatus of multivariate comparative analysis requires the selection of diagnostic characteristics reflecting the development of the insurance market in each country.

The availability of statistical data makes it necessary to limit the diagnostic characteristics to basic measures describing the density and penetration of the insurance market and the structure of the market in terms of the share of gross written premiums collected in a given market segment to total gross written premiums. The diagnostic variables used in the study are as follows:

X1 life insurance density (euros per capita),
X2 life insurance penetration rate (%),
X3 the share of gross written premiums collected in the life insurance segment in total gross written premiums (%).

In assessing the level of development of the insurance market, all of the above-presented variables are stimulants, and the data can be presented as the following matrix:

$$X = [x_{ijt}] \text{ (i=1, 2,...,m; j=1, 2,..., n; t=1, 2,..., T)} \quad (1)$$

where x_{ijt} means the value of j-th variable in the i-th object (country) in the year t.

In order to normalise the variables, to standardise their nature and make them comparable, the Strahl quotient method was applied in a dynamic approach. For each diagnostic variable j, its smallest value in the year t was determined[1]:

$$MIN_{jt} = \min_{i=1,2,\dots,m} x_{ijt} \quad (j = 1, 2, \dots, n; t = 1, 2, \dots, T). \quad (2)$$

As a result, for each j-th variable, a T-element {MINj1,MINj2, MINjt} set was obtained. Next, the smallest value that the j-th variable reaches throughout the period of analysis was determined:

$$MIN_j = \min_{t=1,2,\dots,T} (MIN_{jt}) \quad (j = 1, 2, \dots, n). \quad (3)$$

Similarly, the highest value of each characteristic in the years studied was determined:

$$MAX_{jt} = \max_{i=1,2,\dots,m} x_{ijt} \, (j = 1, 2, \dots, n; t = 1, 2, \dots, T). \quad (4)$$

[1] A detailed description of the method used can be found in the paper: Bożeka et al. 2022, pp. 39–61.

and the maximum of these values:

$$MAX_j = \max_{t=1,2,\dots,T} (MAX_{jt}) \quad (j = 1, 2, \dots, n). \tag{5}$$

Due to the stimulant nature of all diagnostic variables, the normalisation of variables was carried out according to the following formulas:

$$z_{ijt}^d = \frac{x_{ijt}}{MAX_j} \tag{6}$$

In the next step, the value of the synthetic variable in the year t was calculated for each i-th object (country):

$$W_{it}^d = \sum_{j=1}^{n} z_{ijt}^d \text{ (i=1, 2, ...,m; t=1, 2, ..., T)} \tag{7}$$

along with the dynamic development index:

$$P_{it}^d = \frac{W_{it}^d}{n}. \tag{8}$$

The P_{it}^d measure takes values in the range [0,1], and its higher value indicates a country with a better developed life insurance market in the year t. This creates the possibility of constructing a ranking of the studied countries. In addition, the dynamic approach used allows us to assess the changes that occurred in the object during the analysed period. If $P_{it1}^d < P_{it2}^d$ this means that the level of development in the year t2 is higher than in the year t1.

Dynamic panel models were used to identify the determinants of life insurance market development, with the dependent variable being the insurance market development index . The starting point for the study is the demand-following hypothesis, according to which the primary factor in the development of the insurance market is economic growth. In empirical research, the above-presented hypothesis is verified by analysing the relationship between economic growth and demand for life insurance. Econometric models remain an essential tool in this type of analysis (Dragos et al, 2018, Bukowski & Lament, 2022, Mare et al. 2019, Eartl, 2017, Ostrowska-Dankiewicz & Simionescu, 2020). In researching the life insurance market, it is important to note the long-term nature of insurance contracts, which means that, among other factors, the past state of this market determines its current state (Dragoş et al., 2019).

In its general formula, the dynamic panel model can be presented as follows:

$$y_{it} = \gamma y_{i,t-1} + \boldsymbol{x}_{it}^{T}\boldsymbol{\beta} + u_{it} = \gamma y_{i,t-1} + \boldsymbol{x}_{it}^{T}\boldsymbol{\beta} + \alpha_i + \varepsilon_{it}, \quad \text{i =1, 2,..., N,} \quad \text{t =2,...,T.} \qquad (9)$$

where:
y_{it} the value of the dependent variable for the i-th object in the period t,
$x_{it} = [x_{kit}]_{kx1}$ – the vector of independent variables with K coordinates,
β – the vector of parameters (Kx1), equal for all i and t,
γ – the autoregressive parameter, measuring the strength of the relationship between the current and lagged values of the dependent variable,
αi – group effects; if αi are random, then αi ~ N(0, σα2),
εit – random component; εit ~ N(0, σε2) for each i, t, (Dańska-Borsiak, 2011).

In order to verify the above hypothesis, dynamic panel models were used, where the dependent variable is the insurance market development index P_{it}^{d}, while the independent variable is a country's GDP per capita:

$$P_{it}^{d}. = \gamma P_{i,t-1}^{d} + \delta GDP\_PC_{i,t} + \boldsymbol{x}_{it}^{T}\boldsymbol{\beta} + u_{it} = \gamma P_{i,t-1}^{d} + \delta GDP\_PC_{i,t} + \boldsymbol{x}_{it}^{T}\boldsymbol{\beta} + \alpha_i + \varepsilon_{it},, \quad (10)$$

i =1, 2,..., N, t =2,...,T.

On the basis of the literature review, variables characterising the labour market situation, demographic variables, inflation levels, and government spending on pensions were also utilised as potential determinants of insurance market condition. A summary of the variables used in the regression analysis is provided below:

- real GDP per capita, thousand euros per capita (GDP_PC),
- unemployment rate (%) (UNEMPL),
- annual inflation rate (INFL),
- pension spending as % of GDP as an approximation of the level of social security (PENSION),
- life expectancy at birth (LIFE_EXP),
- old-age dependency ratio – this indicator is the ratio between the number of persons aged 65 and over, an age when they are generally economically inactive, and the number of persons aged between 15 and 64 (OLD_AGE).

Among the methods proposed for the estimation of dynamic panel models, those based on the generalised method of moments (GMM) are of the greatest practical importance, providing the possibility of obtaining consistent parameter estimators with endogenous independent variables (Blundell & Bond, 2000).

The most important diagnostic tests associated with the generalised method of moments include the Arellano-Bond test, which verifies the presence of second-order autocorrelation, and the Sargan test, which verifies the validity of the instruments used in the estimation process. (Dańska-Borsiak, 2011).

4. Results

The study was conducted for the Central and Eastern European countries affiliated with Insurance Europe. The group of CEE countries consists of Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. The research was based on annual data from Insurance Europe, OECD, PIU and Eurostat databases for the years 2011–2021.

The values of measure indicate a wide variation in the level of development of the life insurance market in the studied group of countries (Chart 1). In the first years of the analysed period, the market was best developed in Poland, followed by the Czech Republic and Slovakia. On the other hand, it was weakest in Bulgaria, where the value of the index was significantly lower than in the other countries of the studied group. Subsequent years saw a significant reduction in the synthetic measure of market development in Poland and the Czech Republic, with the changes more severe in Poland, which was associated with a decline in the value of gross written premiums collected for life insurance linked to insurance equity funds.

After 2018, there was a decline in the value of the index in Croatia and Slovakia, unprecedented in previous periods. Despite the significant deterioration, the situation in Slovakia remained more favourable than in many other countries in the region.

The downturn in the life insurance market did not affect all Central and Eastern European countries. Significant increases in the value of measure were observed in Lithuania and Latvia, countries with historically low levels of market development. A relatively stable situation persisted in the insurance market in Slovenia and Hungary, as well as in Estonia (Chart 1).

Given the dynamic nature of the analysis, it should be noted that in many countries in 2021 there were adverse changes with respect to 2011, which is reflected in the value of the dynamic development index .

The second part of the paper is devoted to an attempt to identify the factors determining the development of the life insurance market. The starting point for the study is the demand-following hypothesis, according to which the primary factor in the development of the insurance market is economic growth. In empirical research, the above-presented hypothesis is verified by analysing the relationship between economic growth and demand for life insurance. Econometric models remain an essential tool in this type of analysis.

The results of the estimation of econometric models for the panel of CEE countries are presented in Table 1. The table shows the results of reduced models with only statistically significant independent variables. The demographic situation was alternatively expressed by the old-age dependency ratio (Model 1) or insurance life expectancy (Model 2). Arellano-Bond AR(2) autocorrelation tests for all models considered indicate that there is no basis for

rejecting the null hypothesis, which thus implies the absence of second-order autocorrelation. The verification of the hypothesis concerning the validity of the instrument matrix (overidentifying restrictions) using the Sargan test indicates that there are no grounds for rejecting it.

The results of the study confirm the important role of GDP per capita for the development of the life insurance market. A positive and statistically significant estimation of the parameter indicates that interest in life insurance increases with the growth of GDP per capita. The economic development of a region determines the economic performance of businesses and household income. The level of income determines many financial decisions resulting in the purchase of insurance or the abandonment of the purchase idea. Increased incomes allow households to direct more of their income toward insurance products. Insufficient income generally eliminates households from the voluntary insurance market.

Life insurance consumption depends on its previous level. The estimation of the parameter with the lagged endogenous variable for all models considered is positive and statistically significant. The reason for this is the long-term nature of life insurance policies.

The results confirm the significant impact of inflation on the dependent variable. The positive sign of the parameter estimation indicates that rising inflation contributes to the development of the life insurance market. The results of previous studies are inconclusive in this regard. While many studies have found a negative relationship between inflation and insurance consumption, Hwang & Gao, 2003, instead find that insurance demand is not negatively affected by higher inflation. Inflation reduces the purchasing power of consumers, which entails lower demand for voluntary insurance. Inflation is reflected in rising insurance premiums, which can result in reduced demand, and it decreases the value of future nominal payouts, as a result, life products with fixed benefits (non-indexed) become less attractive. On the other hand, in an inflationary environment, insurance sums for life protection products become higher. The increase in the price of insurance products should naturally increase the volume of insurance premiums. Risk perception also changes and insurance awareness increases (Sedlmayer, 2023, p. 10), which justifies the positive estimation of the parameter.

Demographic trends expressed in terms of life expectancy and old-age dependency ratio do not affect life insurance favourably in the studied group of countries. The higher value of the old-age dependency ratio of the working-age population to the post-working-age population may result in increased demand for life insurance with the savings and life annuities components, and reduce the demand for life insurance in the event of death (Bednarczyk et al., 2019). The results of research to date in this area have been inconclusive. However, the ageing population, reflected by the growing number of pensioners, may mean reduced demand for insurance due to their lower purchasing power

Also, studies on the role of life expectancy do not provide conclusive results. Previous studies have shown widely varying estimates, ranging from very negative through positive to insignificant (Hodula et al., 2020, p. 9).

The study conducted has not confirmed the impact of the unemployment rate and pension spending as an approximation of social security on the level of development of the life insurance market. However, given that the data used cover a short period (2011–2021) of time, the results obtained should be treated with caution.

5. Conclusion

The life insurance market in Central and Eastern European countries is much less developed than in Western European countries. This market also varies greatly among the group of countries considered. The trends of change during the period under consideration were also different.

In countries with a relatively well-developed life insurance market at the beginning of the period under review (Poland, Czech Republic, Slovakia), there was a significant deterioration. The most severe downturn in the life insurance market occurred in Poland. Since 2014 the premiums of the life insurance sector in Poland were decreasing, which resulted from the systematic reduction of life insurance with insurance capital fund. Despite significant unfavourable changes, the life insurance market in Poland in 2021 remained one of the best developed in the region. Significant development was observed in Lithuania and Latvia, i.e., among countries with a relatively underdeveloped market in the past. In Bulgaria and Romania, the situation in the life insurance market remained the least favourable throughout the analysed period, which was to some extent determined by the economic situation. The econometric models used have confirmed the impact of economic growth on the life insurance market. Confirmation of the demand-following hypothesis allows us to assume that the economic growth of the countries of Central and Eastern Europe will provide an incentive for further development of this segment of the insurance market. Demographic factors may also be an important determinant of the development of the life insurance market. Ageing societies, the growing share of people of retirement age and the falling number of professionally active people, may result in a reduction in the purchasing power of consumers, which requires adapting the insurance offer accordingly. It is advisable to pay special attention to taking actions that can increase trust in the insurance sector and influence the building of insurance awareness. Another important issue is adapting distribution channels to the needs of an ageing society.

Changing customer expectations regarding products and services as well as ways of interacting with insurers, stemming from the COVID-19 pandemic and the uncertain economic situation, contributed to changing consumer

behaviour and accelerated the digitalisation of the sector. The direction of further research should focus on the digitalisation of the life insurance sector in Central and Eastern European countries and its role in the development of this market segment.

The research method used in the study and the results presented above cannot nevertheless provide a basis for an unambiguous assessment of the performance of insurance markets. The result of research using multivariate analysis depends largely on the choice of diagnostic variables. In addition, the study period included in the analysis is relatively short, which points to a need for further research in this area.

Acknowledgements

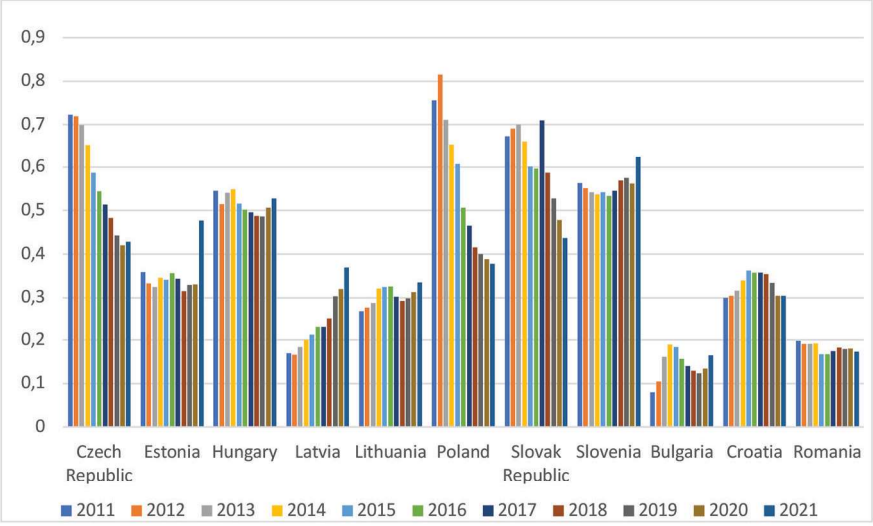
Author contributions: author has given an approval to the final version of the article.

Funding: this research was fully funded by the University of Lodz.

Note: the results of this study were presented at 14th Scientific Conference MASEP 2023 (Measurement and Assessment of Social and Economic Phenomena, 29.11.2023–1.12.2023, Lodz)

Appendix

Chart 1. Synthetic measure of life insurance market development



Source: Own preparation.

Table 1. Results of estimation of life insurance market development models in Central and Eastern European countries

	Dependent variable	
Regressors	Model 1	Model 2
	0.8914*** (0.1063)	0.9826*** (0.1036)
GDP_PC	0.0053*** (0.00216)	0.0055*** (0.002)
INFLATION	0.0030*** (0.0006)	0.0019** (0.0009)
LIFE EXPECTANCY	–	–0.0047** (0.0015)
OLD DEPENDENCY RATIO	–0.0091*** (0.0012)	–
AR(1) test	-1,40076 [0,1613]	-1,67604 [0,0937]]
AR(2) test	-1,52848 [0,1264]	-1,97091 [0,0587]
Sargan test	8,96863 [1.000]	8,43596 [1,0000]
Observations	110	110

Notes: In the table, the constant has been omitted. In brackets, under the parameter estimations, the values of parameter estimation errors are included. Parameters marked with '***', '**' and '*' are significant assuming 1%, 5% and 10% significance levels for the Student's t-test, respectively.
AR(2) test – values of the Arellano-Bond autocorrelation test statistic, in square brackets – p-values for H0: second-order autocorrelation does not occur;
Sargan's test – values of the Sargan test statistic; in square brackets – p-values for H0: overidentifying restrictions are valid (instruments are appropriate).
For models (1) and (2), the number of instruments is 48.
Source: Own preparation.

References

Alhassan A.L., 2016, & Biekpe N. (2016). Insurance market development and economic growth: Exploring causality in 8 selected African countries, "International Journal of Social Economics", Vol. 43 No. 3, pp. 321––339, https://doi.org/10.1108/IJSE-09-2014-0182.

Babbel D. (1981). Inflation, Indexation, and Life Insurance Sales in Brazil. The Journal of Risk and Insurance, Vol. 48, No. 1, pp. 111–135.

Beck, T., & I. Webb. (2003). Economic, Demographic and Institutional Determinants of Life Insurance Consumption across Countries. World Bank Economic Review, 17(1), pp. 51–88. https://doi.org/10.1093/wber/lhg011.

Bednarczyk T.H., Bielawska K., Jackowska B., & Wycinka E. (2019), *Ekonomiczne i demograficzna uwarunkowania funkcjonowania i rozwoju ubezpieczeń*, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk.

Beenstock M., Dickinson G., & Khajuria S. (1986). The determination of life premiums: An international cross-section analysis 1970–1981. Insurance: Mathematics and Economics, Elsevier, Vol. 5(4), pp. 261–270.

Blundell R., & Bond S. (2000). GMM estimation with persistent panel data: An application to production functions. Econometric Reviews, Vol. 19, pp. 321–340, https://doi.org/10.1080/07474930008800475.

Bożeka J., Szewczyk J., Badach E., & Lisek S. (2022). Ocena poziomu rozwoju gospodarczego województw z zastosowaniem metod porządkowania liniowego w ujęciu dynamicznym, Wiadomości Statystyczne. The Polish Statistician, Vol. 67, No. 12, pp. 39–61, https://doi.org/10.5604/01.3001.0016.1613.

Browne M. J., Kim K.. (1993). An international analysis of life insurance demand. The Journal of Risk and Insurance, Vol. 60 (4), pp. 616–634, https://doi.org/10.2307/253382.

Celik S., & Kayali M. M. (2009). Determinant of demand for life insurance in European countries. Problems and Perspectives in Management, Vol. 7 (3), pp. 32–37, https://www.businessperspectives.org/images/pdf/applications/publishing/templates/article/assets/2782/PPM_EN_2009_03_Celik.pdf.

Chang,T., Lee C. & Chang C.H. (2014). Does insurance activity promote economic growth? Further evidence based on bootstrap panel Granger causality test, The European Journal of Finance, 20:12, pp. 1187–1210, https://doi.org/10.1080/1351847X.2012.757555.

Dańska-Borsiak B. (2011). *Dynamiczne modele panelowe*. Wydawnictwo Uniwersytetu Łódzkiego, Łódź.

Dragos S. L. (2014). Life and non-life insurance demand: the different effects of influence factors in emerging countries from Europe and Asia, Economic Research-Ekonomska Istraživanja, 27(1), pp. 169–180, https://doi.org/10.1080/1331677X.2014.952112.

Dragoş S.L., Mare C., & Dragoş, C.M. (2018). Institutional drivers of life insurance consumption: a dynamic panel approach for European countries. Geneva Papers on Risk and Insurance – Issues and Practice, 44, pp. 36––66, https://doi.org/10.1057/s41288-018-0106-3.

Dragos S.L., Mare C., Dragota I.-M., Dragos C.M., & Muresan G.M. (2017). The nexus between the demand for life insurance and institutional factors in Europe: new evidence from a panel data approach. Economic Research Ekonomska Istraživanja, 30:1, pp. 1477–1496, https://doi.org/10.1080/1331677X.2017.1325764.

Ertl, M. (2017). Insurance Convergence and Post-crisis Dynamics in Central and Eastern Europe. Geneva Papers on Risk and Insurance – Issues and Practice, 42, pp. 323–347, https://doi.org/10.1057/s41288-017-0043-6.

Hodula M., Janku J., Casta M., & Kucera A. (2020). On the Determinants of Life and Non-Life Insurance Premiums. Working Paper Series 8/2020. Czech National Bank.

Hwang, T., & Gao, S. (2003). The determinants of the demand for life insurance in an emerging economy – the case of China, Managerial Finance, Vol. 29 No. 5/6, pp. 82–96, https://doi.org/10.1108/03074350310768779.

Kjosevski, J. (2012). The Determinants of Life Insurance Demand in Central and Southeastern Europe. International Journal of Economics and Finance, 4, https://doi.org/10.5539/ijef.v4n3p237.

Kotliński K., & Warżała R. (2020), Euro a proces konwergencji państw Europy Środkowo-Wschodniej. Próba oceny, Instytut Badań Gospodarczych, Olsztyn, https://doi.org/10.24136/eep.mon.2020.11.

Kurdyś-Kujawska A., & Sompolska-Rzechuła A. (2019). Determinanty popytu na ubezpieczenie na życie: przykład rolników z regionu północno-zachodniej Polski. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, Vol. 63, pp. 71–81, https://doi.org.10.15611/pn.2019.7.06.

Lament M., & Bukowski S., (2022), Wybrane determinanty rozwoju rynków ubezpieczeniowych krajów Unii Europejskiej w latach 1999–2019, Wiadomości Ubezpieczeniowe, 2022, nr 4, pp. 61–73, https://doi.org/10.33995/wu2022.4.4.

Liebenberg A., Carson J., & E. Dumm R. (2012). A Dynamic Analysis of the Demand for Life Insurance. Journal of Risk and Insurance, 79 (3), pp. 619––644, https://doi.org/10.1111/j.1539-6975.2011.01454.x.

Mare C., Dragos S.L., & Dragota I.-M. (2019b). The impact of human development on the Romanian life insurance market: A county spatial econometric analysis. Cogent Business & Management, Taylor & Francis. Vol. 6, pp. 1–15, https://doi.org/10.1080/23311975.2019.1707609.

Mastalerz-Kodzis A., & Pośpiech E. (2015). Wielowymiarowa analiza porównawcza w ujęciu dynamicznym na przykładzie wybranych charakterystyk ekonomicznych, Metody Ilościowe w Badaniach Ekonomicznych, Tom XVI/4, 2015, pp. 24–33.

Novovic Buric, M., Bacovic M. M., Cerovic J., & Lipovina Bozovic M. (2017). Factors Influencing Life Insurance Market Development in Montenegro. Periodica Polytechnica Social and Management Sciences, 25(2), pp. 141––149, https://doi.org/10.3311/PPso.10049.

Ostrowska-Dankiewicz A., & Simionescu M. (2020). Relationship between the insurance market and macroeconomic indicators in the EU member states, Transformations in Business & Economics", Vol. 19, No. 51, pp. 175–187.

Sedlmayer S. (2023), Munich Re talking about inflation and its impact on (re)insurance, https://piu.org.pl/wp-content/uploads/2023/06/2023-06-20-Munich-Re-talking-about-inflation-and-its-impact-on-reinsurance.pdf.

Sharku G., Grabova P., & Vullnetari D. (2021). Impact of Economic Factors on Life and Non – Life Insurance Development in Albania – A VECM Analysis. Universal Journal of Accounting and Finance, 9(6), pp. 1280––1296, https://doi.org/10.13189/ujaf.2021.090608.

Stroiński E. (2010), Rynek ubezpieczeń w Polsce na tle sytuacji w Europie Środkowej i Wschodniej, Wiadomości Ubezpieczeniowe 2.

Śliwiński, A., Michalski T., & Roszkiewicz M. (2013). Demand for Life Insurance-An Empirical Analysis in the Case of Poland. Geneva Papers on Risk and Insurance – Issues and Practice, 38, pp. 62–87, https://doi:org/10.1057/gpp.2012.21.

The Polish Chamber of Insurance (PIU), 2022, Raport roczny, https://piu.org.pl/raport-roczny-piu/.

Truett D., &Truett L. (1990). The Demand for Life Insurance in Mexico and the United States: A Comparative Study. The Journal of Risk and Insurance, Vol. 57, pp. 321–328.

Zhang Z., Xu H., Shan S., Lu Y., Duan H., & Yipin Lyu Y. (2022). Exploration of the impact of demographic changes on life insurance consumption: empirical analysis based on Shanghai Cooperation Organization. Economic Research-Ekonomska Istraživanja, https://doi.org/10.1080/1331677X.2022.2134905.