

SCIENTIFIC REPORT 2021
PROJECT CODE PN-III-P1-1.1-TE-2019-0554

ABSTRACT

Objectives presented in the research proposal for the **year 2021:**

I. Evaluation of the determinants of private health/life insurance development at the European level. Testing the influence of the cultural and institutional factors over the demand for health insurances (continue from 2020)

Activity 2.1. Testing the hypotheses using panel data econometrics with spatial interactions.

II. Estimating the influence factors of Motor Damage Insurance (MDI) development at the cross-national level. Highlighting the economic and socio-demographic control variables but also those related to individual behavior, aggregated at the national level.

Activity 2.2. Extracting from the academic literature the factors influencing the purchase of Motor Damage Insurance (MDI), aggregation of factors at national level.

Activity 2.3. Construction of the database with the explanatory variables for MDI demand in European countries (Insurance Europe, Worldwide Governance Indicators...).

Activity 2.4. Formulating the hypotheses and modelling the causality between MDI and its determinants using cross-section regressions and panel data econometrics. Discussion of the results and formulation of recommendations regarding the economic policy in the field.

III. Identification of the main characteristics of the national agricultural insurance markets. Estimation of the conditioned size of the market based on panel data for European countries. (to be continued in 2022)

Activity 2.5 Considering the validated factors for agricultural insurances purchase at farmer level we adapt them at country level.

Activity 2.6. Construction a database of specific variables influencing the agricultural insurance demand (survey, International Observatory of Agricultural Insurance, World Bank).

IV. Dissemination of results (to be continued in 2022)

Activity 2.7. Update of the web page of the project, preparation of the annual scientific report, paper elaboration, dissemination of results

- A. Paper presentation at the European Conference of Financial Services – ECFS 2021, organized by the Institute of Financial Studies (ISF), București - online, 11 March 2021
- B. Paper presentation at The XV World Conference of the Spatial Econometrics Association, Online -Tokyo, May 26-28, 2021
- C-D. Papers presentation at The Nineteenth Annual EEFS Conference, Online – University of London, 23rd –25th of June 2021

- E. Paper presentation at Annual Scientific Conference of Romanian Academic Economists from Abroad, ERMAS 2021- 7th Edition, Faculty of Economic Sciences, „Lucian Blaga” University from Sibiu, 28-30 July, 2021
- F. Article publication in WOS indexed journal, *Amfiteatru economic*, Q2 quartile IF (yellow zone) –award-winning result in the competition UEFISCDI- PRECISI.
- G. Article submission at the WOS indexed journal, *European Journal of Health Economics*, Q1 quartile IF (red zone) – status: Revise and Resubmit.
- H. Article submission at the WOS indexed journal, *Economic modelling*, Q1 quartile IF (red zone) – status: Revise and Resubmit.
- I. Article submission at the WOS indexed journal, *Economic research*, Q2 quartile IF (yellow zone) – status: Under Review.
- J. Article submission at journal published by prestigious publicists (Springer), *Journal of Spatial Econometrics*, - status: Revise and Resubmit.

TECHNICAL AND SCIENTIFIC DESCRIPTION

1. Obtained results and their dissemination

A. Elaboration and presentation of the article IS VOLUNTARY HEALTH INSURANCE A DETERMINANT OF THE EUROPEAN POPULATION LONGEVITY A PANEL DATA APPROACH, Authors: Dragoș Simona Laura, Mureșan Gabriela Mihaela, Mare Codruța, Purcel Alexandra Anca, Dragoș Cristian Mihai at the European Conference of Financial Services – ECFS 2021, București - online, 11 March 2021 – *Objective I and IV*

B. Elaboration and presentation of the article SPATIAL PROCESSES IN THE EUROPEAN MOTOR INSURANCE, Authors: Mare Codruța, Dragoș Simona Laura, Mureșan Gabriela Mihaela, la The XV World Conference of the Spatial Econometrics Association (SEA), Online -Tokyo, May 26-28, 2021 – *Objective II and IV*

C. Elaboration and presentation of the article VOLUNTARY HEALTH INSURANCE AND INFORMAL PAYMENTS FOR HEALTHCARE IN EUROPEAN OECD COUNTRIES, Authors: Purcel Alexandra Anca, Dragoș Cristian Mihai, Mare Codruța, Dragoș Simona Laura, la The Nineteenth Annual EEFS Conference, Online – University of London, 23rd –25th of June 2021 – *Objective I and IV*

D. Elaboration and presentation of the article A SPATIAL ASSESSMENT OF THE EUROPEAN MOTOR INSURANCE DEMAND – DIFFUSION EFFECTS AND INFLUENCE FACTORS, Authors: Purcel Alexandra Anca, Dragoș Simona Laura, Mare Codruța, Mureșan Gabriela Mihaela, Purcel Alexandra Anca la The Nineteenth Annual EEFS Conference, Online – University of London, 23rd –25th of June 2021 – *Objective II și IV*

E. Presentation of the article VOLUNTARY HEALTH INSURANCE AND INFORMAL PAYMENTS FOR HEALTHCARE IN EUROPEAN OECD COUNTRIES, Authors: Purcel Alexandra Anca, Dragoș Cristian Mihai, Mare Codruța, Dragoș Simona Laura, Annual Scientific Conference of Romanian Academic Economists from Abroad, ERMAS 2021- 7th Edition, Faculty of Economic Sciences, „Lucian Blaga” University from Sibiu, 28-30 July, 2021 – *Objective I and IV*

F. Publication of the article SOCIO-ECONOMIC, MACRO-FINANCIAL DETERMINANTS AND SPATIAL EFFECTS ON EUROPEAN PRIVATE HEALTH INSURANCE MARKETS, Authors: Mureșan Gabriela Mihaela, Dragoș Cristian Mihai, Mare Codruța, Dragoș Simona Laura, Pinte

Alexandra, in the WOS indexed journal **Amfiteatru Economic (AE)**, Q2 quartile IF (yellow zone) – award-winning result in the competition UEFISCDI- PN-III-P1-1.1- PRECISI-2021-54033 (2000 lei) – *Objective I and IV*

G. Submission of the article DOES VOLUNTARY HEALTH INSURANCE IMPROVE HEALTH AND LONGEVITY? EVIDENCE FROM EUROPEAN OECD COUNTRIES, Authors: Dragoș Simona Laura, Mare Codruța, Dragoș Cristian Mihai, Mureșan Gabriela Mihaela, Purcel Alexandra Anca, in the WOS indexed journal **European Journal of Health Economics**, Q1 quartile IF (red zone), Q2 quartile AIS (yellow zone) – status: Revise and Resubmit - *Objective I and IV*

H. Submission of the article VOLUNTARY HEALTH INSURANCE AND INFORMAL PAYMENTS FOR HEALTHCARE IN EUROPEAN OECD COUNTRIES: A NONLINEAR CS-ARDL APPROACH, Authors: Purcel Alexandra Anca, Dragoș Cristian Mihai, Mare Codruța, Dragoș Simona Laura, in the WOS indexed journal **Economic Modelling**, Q1 quartile IF (red zone) – status: Revise and Resubmit - *Objective I and IV*

I. Submission of the article EUROPEAN MOTOR INSURANCE DEMAND: A SPATIAL APPROACH OF ITS EFFECTS AND KEY DETERMINANTS, Authors: Dragoș Simona Laura, Mare Codruța, Mureșan Gabriela Mihaela, Purcel Alexandra Anca, in the WOS indexed journal **Economic Research**, Q2 quartile IF (yellow zone) – status: Under Review - *Objective II and IV*

J. Submission of the article SPATIAL PROCESSES IN THE EUROPEAN MOTOR INSURANCE, Authors: Mare Codruța, Dragoș Simona Laura, Mureșan Gabriela Mihaela, in the journal published by prestigious editors (*Springer*), **Journal of Spatial Econometrics** - status: Revise and Resubmit - *Objective II and IV*

K. Update of the project's web site: <http://insurstruct.granturi.ubbcluj.ro> with general informations about the project, objectives for the first 2 years and the obtained results in the period September 2020 – November 2021. Preparation of the scientific and technical report. - *Objective IV*

L. Preparation, based on the study of the specialized literature in the field, of the questionnaire regarding the influencing factors of the agricultural insurance application by Dragoș Simona Laura, Mureșan Gabriela Mihaela, Mare Codruța, Dragoș Cristian Mihai and Purcel Alexandra Anca. The questionnaire includes objective and subjective items (Likert scale) introduced as a result of the debates between the team members. After the pre-test, the questionnaire was handed over for application to the Agency for the Financing of Rural Investments (AFIR). - *Objective III*

2. Research issues (correlated with the project objectives)

Objective I, Activity 2.1. Evaluarea determinanților asigurărilor private de sănătate la nivel european și analizarea influenței factorilor instituționali asupra asigurărilor de sănătate

After identifying the influence factors of the health insurance demand and after data collection and database creation we started the analysis at European level for the demand of private health insurance (expressed as insurance density). (Article SOCIO-ECONOMIC, MACRO-FINANCIAL DETERMINANTS AND SPATIAL EFFECTS ON EUROPEAN PRIVATE HEALTH INSURANCE MARKETS).

For a sample of 30 European countries, we have assessed the macroeconomic factors that determine the development of the private health insurance sector. There is a high heterogeneity in terms of health insurance density in the analyzed sample, due to the past of each society and the level of socio-economic development.

The Western group of countries was democratic after the 2nd World War, leading to a certain type of development and social education. There is a significant clusterization process in Europe, with Western states having a much higher purchasing power and standard of living. Our **results clearly show a positive relationship between the GDP and the health insurance density**. The private health insurance sector developed in countries where the economic environment allowed for private intervention in the economy, bringing a much higher quality in the private health sector than in the public one. This cluster of countries also has the most developed financial markets and a high level of financial literacy of the citizens. The **health insurance contract**, in respect to other such products, is seen as **a luxury product**, so **a high standard of living is necessary for a person to buy such a contract**.

The Eastern, ex-communist states, have a long history of publicly sustained sectors, with a very important gap in the economic and financial education of their inhabitants. In these socialist nations, the inhabitant was used to be provided with all the social security issues by the state.

Another important result is the **significant and positive influence of the level of human development and financial development on the private health insurance sector** in Europe, emphasizing the transmission channels on which actors in this domain should interfere in order to increase the demand for such products.

The spatial analysis has clearly shown that **the positive relationship between the level of development and the health insurance sector** has materialized in a **East-West clusterization** in Europe, with Eastern countries having much lower levels. Our second assumption was not validated, even if previous studies in the field of insurance have shown contagion and diffusion processes for different types of insurance products. As there is a very high interaction in Europe, we have expected such contagion and diffusion to be present for the private health insurance market due to the high mobility of people, goods and capital. **The present analysis emphasized the lack of spatial contagion and diffusion processes**, meaning that the **private health insurance sector**, in comparison with other types of insurance, is **more influenced by the internal, domestic conditions specific to each country**. This impact is so high, that it cancels the transmission channels and the information coming from outside a certain nation. **Authorities** interested in developing the private health insurance market **should address the internal specificities of each national market** and create products according to the country's financial and social development.

Within the Objective 1, we also investigated the **effect of voluntary health insurances (VHI) over health and longevity** for a sample of European OECD countries (Articolul DOES VOLUNTARY

HEALTH INSURANCE IMPROVE HEALTH AND LONGEVITY? EVIDENCE FROM EUROPEAN OECD COUNTRIES). The applied methodology was dynamic panel with threshold and hierarchical cluster. The estimations show that **VHI** is a **significant determinant of longevity and health**, the **relationship** between the variables being characterized by a **threshold effect**, whose estimated value is **around 6,3% from the total financing of healthcare** (*for values under the threshold the influence of VHI over health and longevity is more pronounced than for countries above the threshold*). The results of the study can be used at national level for stimulating the regulating organisms to reach a satisfactory level of VHI.

In a third study analysing the health insurance demand in European OECD countries (the article VOLUNTARY HEALTH INSURANCE AND INFORMAL PAYMENTS FOR HEALTHCARE IN EUROPEAN OECD COUNTRIES: A NONLINEAR CS-ARDL APPROACH), we investigated the motives inciting the individuals from different countries to supplement the offer of the public healthcare system. Two research hypotheses emerged: 1) *Which are the reasons why individuals in some states are more prone to supplement their medical care beyond the offer of the public (compulsory) healthcare system (schemes)?* 2) *Besides, what type of additional medical care prevails across countries?* The results show a negative effect of public healthcare spending over the voluntary healthcare expenses. These results are robust, they are not influenced by the ex communist countries regime, nor the predominant type of VHI (supplementary or complementary). Moreover, financial development and financial institutions influence significantly the prevalence between VHI and OOP (out of the pocket payments).

Objective II, Activity 2.2. Extracting from the academic literature the factors influencing the purchase of Motor Damage Insurance

At macroeconomic level the demand for nonlife insurance was studied in terms of *density* (Trinh, Nguyen & Sgro, 2016) or *penetration* (Park & Lemaire, 2012; Petkovski & Jordan, 2014). The study of Sherden (1984) emphasises the inelasticity of the motor auto insurance market.

The main influence factors for the non-life insurance market are the following:

- *income* has a positive impact over the (Beenstock et al., 1988; Browne et al., 2000; Esho et al., 2004; Park & Lemaire, 2012, Treerattanapun (2011).
- *education*, used as an indicator of risk aversion, exerts a positive influence over the non-life insurance consumption (Curak & et al., 2013; Park & Lemaire, 2012; Treerattanapun, 2011; Ofoghi & Farsangi, 2013).
- *institutional factors* - Browne, Chung & Frees (2000); Esho et al. (2004); Dragos & Dragos (2013); Kjosevski & Petkovski (2015);
- *cultural factors* - Treerattanapun (2011); Park and Lemaire (2012); Trinh, Nguyen & Sgro (2021);

- *urbanization* - Born & Bujakowski (2021), Trinh et al. (2021) - a positive impact over the motor insurance demand;

- *unemployment* – negative influence over motor insurance demand - Chitiyo (2017); insignificant effect - Beenstock et al. (1988), Born & Bujakowski (2021) - mixed results.

- *population density* - Mills (1967) – negative influence over motor insurance demand, Melia et al., (2018) – individuals living in urban areas perceive a higher risk of car accidents, generating a higher demand of voluntary motor insurances.

At *microeconomic level* the demand is closely related to the insureds behaviour (Hsu et al., 2014). *Financial factors*, like income, received the highest attention in the literature (Bolderdijk et al., 2011; Dragoş & Dragoş 2017). The influence of *psychologic factors* or related to the mental health of the driver is also addressed by Dula et al. (2010), finding a positive relationship between the *general anxiety* and the probability to adopt a dangerous driving behavior.

Objective II, Activity 2.3. Construction of the database with the explanatory variables for MDI demand in European countries

In the two articles submitted for review: (1) SPATIAL PROCESSES IN THE EUROPEAN MOTOR INSURANCE MARKET and (2) EUROPEAN MOTOR INSURANCE DEMAND: A SPATIAL APPROACH OF ITS EFFECTS AND KEY DETERMINANTS, we used data from 31 European countries (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Latvia, Luxembourg, Malta, Holland, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden, Spain, Switzerland, Turkey and United Kingdom), for the period 2014 – 2016. In the two studies we integrated financial, socio-demographic, institutional, psychologic and cultural factors for characterizing the demand for automobile insurances at macroeconomic level.

Objective II, Activity 2.4. Formulating the hypotheses and modelling the causality between MDI and its determinants using cross-section regressions and panel data econometrics. Discussion of the results and formulation of recommendations regarding the economic policy in the field.

In the last period, the connections between regions/ countries intensified, and a clear effect of diffusion can be observed concerning the behaviour towards automobile transportation.

We studied the **effect of HDI and urbanization**, along with other **socio-economic** (population density, unemployment) and **institutional factors over the motor insurance market in 31 European countries**. The dependent variable was **motor insurance density**.

We used Spatial Econometrics methods – **Spatial Panel Econometrics** – to explore the **existence of diffusion processes** in the spatial interactions on the motor insurance market. In the first stage we used a descriptive evaluation based on maps, then we applied a Durbin Spatial Panel Data Model, by defining first the Spatial Weight Matrix. Estimations were performed in GeoDa, GeoDaSpace și STATA 15.

The descriptive analysis based on maps emphasized that, at European level, there are countries with a low density of motor insurance density with respect to the considered factors, meaning that **their national markets are under-developed with respect to the societies' potential**.

On the other hand, **the estimation shows that HDI and urbanization exert a positive impact** on the development of the motor insurance demand in Europe. However, **population density and unemployment do not seem to favor** the consumption of such products, but, on the contrary, they exhibit a reverse influence on the motor insurance market. These findings are robust to the introduction of a wide range of institutional factors and also income inequality, but sensitive to the emerging and former communist countries group. The results show that **Voice and accountability is no longer significant for emerging and former communist countries**, indicating the importance of a supportive legal framework, and free access to information relative to insurance sector development.

The results also show **significant clusterization processes**, along with **contagion and diffusion** ones, manifest on the motor insurance market, conditioned by the level of HDI, probability of loss, unemployment, and quality of institutions.

Our findings offer important and useful recommendations to legislators from Europe: HDI and urbanization represent key factors for the motor insurance demand, showing an effective mechanism for market development. The negative influence over government efficiency over the motor insurance demand is due to excessive bureaucracy, low quality of road infrastructure, low level of satisfaction with roads and highways. For emerging countries, the focus of state authorities should be on a higher efficiency in using the public funds for improving the road infrastructure quality, which significantly impacts the development of motor insurance demand.

Objective III, Activity 2.5. Considering the validated factors for agricultural insurances purchase at farmer level we adapt them at country level

For identifying the relevant influence factors for the development of agricultural insurances we proceeded with literature review.

The crop insurance demand is mainly studied at *microeconomic level*, on a sample basis, the statistical unit being the agricultural farm. The main influence factors for the crop insurance demand identified are:

- *income* - Stojanović et al. (2019) , Olila & Pambo (2014), Gulseven (2014) – positive influence

- *education* - Olila & Pambo (2014), Gulseven (2014), Carrer et al. (2019) - positive influence
- *farm size* - Stojanović et al. (2019), Carrer et al. (2019) - positive influence
- *the cultivated area* – Enjorlas et al. (2012) – positive influence
- *the number of crops* - Enjorlas et al. (2012) – positive influence
- *the risk exposure* – Enjorlas et al. (2012) - positive influence
- *the volume of previous indemnities*- Enjorlas et al. (2012) positive influence
- *the perceived risk level* - Stojanović et al. (2019) - positive influence

At macroeconomic level the only identified study is of Sihem (2019), showing, for American and European states, that the crop insurance demand is positively influenced by the cultivated area, premium subsidising premiums, farmers level of education and efficiency risks, while the insurance premium has a negative effect.

Objective III, Activity 2.6. Construction a database of specific variables influencing the agricultural insurance demand

The project team considered the literature, conceptualizing the specific variables for crop insurance demand. For the database collection we opted for elaborating and applying a questionnaire, representatively at national level.

The questionnaire drawn up by the project team was pre-tested, in order to estimate the non-response ratio. Concerning the methodology of constructing the questionnaire we mention that it contains objective items (binary items with a dual form of response yes/no) as well as subjective items (the respondent can use a Likert scale from 1 to 5 or can respond freely).

The questionnaire has 26 questions, grouped in four categories: 1) socio-demographic factors like age, gender, urban/ rural, education, marital status; 2) the financial education of the respondents measured through 7 questions; 3) the characteristics of agricultural farms – the type of cultivated crop, the cultivated area, the size of the farm; 4) behavioral factors – previous experiences with insurances, trust in insurers, the risk aversion of the farmer, the fear to suffer losses.

Data collection was done by the Agency for the Financing of Rural Investments (AFIR), a number of 721 questionnaires resulted. This volume of the sample insures representativity in relation with all the variables included in the study. The **database** was delivered to the project team in the month of November 2021, allowing continuing the research with the identification of the different behavioural patterns of the Romanian consumers of crop insurance, through econometrics.

Conclusions

For the second stage of the project reporting, all the assumed objectives were realized integrally, the budgetary expenses being made in a justified manner

The project management was ensured by the project director who also took care of the preparation of the monthly financial-accounting supporting documents and their upload on the platform, as well as the preparation of the scientific and technical report.

Project director,
Professor PhD. Simona Laura DRAGOS