INSTITUTIONAL DRIVERS OF LIFE INSURANCE CONSUMPTION: A DYNAMIC PANEL APPROACH FOR EUROPEAN COUNTRIES[1]

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ABSTRACT

The motivation of this study resides in the very heterogeneous development of life insurances across European nations. Our research focuses on a sample of 32 European countries, observed for the period 2002-2012. We use the xtabond2 dynamic panel methodology in order to explain the main drivers of the life insurance consumption (measured as life insurance density) at national level. The results show that the most significant institutional factor is governance effectiveness. The socio-economic and demographic factors used in previous empirical studies have been kept as control variables. Among them, in our study the most significant are: income distribution exerting a positive effect and education and interest rate with a negative influence over the life insurance consumption. The outcomes of our article can be the basis for improving governance policies in order to create an institutional system of right incentives for a sustainable development of life insurances.

Keywords: Institutional factors, European countries, life insurance consumption, dynamic panel

JEL Classification: G22, C23

INTRODUCTION

Life insurance is of great importance to a modern society, economic growth being characterized by the soundness of a national insurance market Outreville (1996). Previous

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studies have examined life insurance consumption for over 50 years, considering its role in sustaining the individual welfare. Even if the drivers of life insurance consumption are a research topic receiving great attention in the existing literature, in recent years few studies deepened cross-disciplinary assessment, examining the influence of institutional variables on various financial indicators.

Our effort contributes to the literature by analyzing the influence of institutional factors on life insurance, which, until now, has not been sufficiently addressed due mainly to lack of databases in this field. We consider the methodology of Kaufman et al. (2010) in constructing appropriate measures of governance and the fact that individuals base their insurance purchasing decisions on perceptions regarding the healthiness of the institutional environment – Chang and Lee (2012). In our paper we want to ascertain to what extent the status of the institutional environment affects the willingness of individuals to enter a life insurance contract. Because subscribing life insurance implies the maximization of a utility function depending on different influence factors - Outreville (1996), we estimated the life insurance consumption by using the dynamic panel data approach of Roodman (2009), which improves the work of Arrelano and Bond (1991) and Arrelano and Bover (1995). To our knowledge this is the first study employing the difference and system GMM for estimating institutional drivers of life insurance subscriptions to European countries.

To measure insurance development we use the life insurance density. For assessing the connection between life insurance development and institutional factors we control for other potential factors influencing life insurance consumption: GDP per capita, education, Gini index of income distribution, inflation deflator, urbanization rate, interest rate, age dependency ratio.

The empirical results of this paper, by employing GMM models on a dynamic panel data set of 32 countries for the period 2002-2012, have shown that life insurance consumption depends on its previous level, on the long run governance indicators (government effectiveness), Gini index of distribution of incomes, education, inflation and interest rate.

The remainder of the paper is organized as follows. Section 2 reviews previous studies regarding the influence of socio-demographic, economic and institutional determinants on life insurance consumption. Section 3 describes the methodology and the data used. Section 4 presents our results and discussions and section 5 concludes.

LITERATURE REVIEW

Millo and Carmenci (2015) considers that life insurances have as main functions: to *protect the income* of the dependents in case the insured dies (term life), to *protect the lifetime income of the insured* in case of lower earnings after retirement (annuities, pensions) and to *save* money (capitalization). Beenstock et al. (1986) has defined the first situation as "life protection", the second situation as "income protection" and the third situation as "pure saving". In both studies of Beenstock et al. (1986) and Millo and Carmenci (2015) the premium income for life protection is a function of income, old and young dependency ratio, female participation rate to workforce and social security systems. They also consider the premium from pension plans as depending of income, old dependency ratio and social security payments, while the savings depending on the bank deposits per capita.

Considering its role in sustaining the individual welfare, the life insurance market has been extensively analyzed in the literature. Millo and Carmenci (2015) concludes that only the term of *consumption* is suitable for defining the total yearly premium volume of a market. Even if previous studies (Browne and Kim (1993), Zietz(2003), Li et al. (2007)) use both terms of consumption and demand, the difference consist in the fact that consumption represents the equilibrium generated by the market interaction between demand and supply.

Outreville (1996) considers that subscribing a life insurance implies the maximization of a utility function depending on wealth, income distribution, interest rates and prices (insurance premium and administration costs). Beenstock et al. (1986) consider the supply dependent on the insurance cost and on risk conditions of life insurers: interest rates, life expectancy, prices of substitute products. For considering the ability of salespeople in shaping the demand they add two supply side variables: density of bank counters and insurance agencies / population. In Millo and Carmenci (2015) the density of bank counters is not found significant, while the density of insurance agencies is a positive factor, dedicated agents being a main force in shaping the market. Beck and Webb (2003) use property rights protection as influence factor for the insurers' cost function in order to study the drivers of the supply.

In a study which analyzes the results of the last 50 years concerning the life insurance consumption (at household level) Liebenberg et al. (2012) emphasize a positive correlation with income, but concerning education the results diverge. The studies of Beenstock et al. (1986), Browne and Kim (1993) and Beck and Webb (2003) show a direct interaction between life insurance and the level of income.

If we refer to the Gini index of income inequality a recent study of Feyen et al. (2011), uses a measure of income inequality as the fraction of income held by the richest 20 percent of the population and finds a positive correlation with life insurance consumption. Previously, Beck and Webb (2003) suggested that even if life insurance was a luxury good, the demand for life insurance is still not significantly influenced by the income distribution. On a panel of 10 OECD countries, Beenstock et al. (1986) found a negative correlation between the Gini coefficient and life insurance demand. They concluded that rich people do not need insurance protection while poor people have limited demand because they operate under budget constraints. So the middle class has the greatest interest in life insurance products due to having a level of income from which these products became affordable.

In most of the studies education is significant, but the signs differ. A positive correlation appears in Truett and Truett (1999), Browne and Kim (1993), Li et al. (2007) and Feyen et al. (2011), while the studies of Duker (1969), Anderson and Nevin (1975) and Auerbach and Kotlikoff (1989) show a negative correlation of life insurance demand with education. Outreville (2012) considers that a high level of education raises the availability and capability to manage risks by your own, lowering the life insurance demand. Because education is a proxy for the degree of risk awareness of the population and of the degree of financial sophistication, Millo and Carmenci (2015) implies that better educated people are able to better diversify their portfolios, holding riskier assets and thus reducing the proportion of safe assets as life insurance. According to their study on the Italian life insurance market, better education is associated with disintermediation (the need for insurers professional risk management decreases).

Most of the studies which included the interest rate in the analysis of the life insurance demand considered the real government bond yields (Outreville (1996) – no effect, Li et al. (2007) – negative effect) or the lending rates (Beck and Webb (2003) - positive effect) because the rates of return for life insurances are not observable at country level.

Outreville (1996) observes a negative effect of the inflation ratio over the demand for life insurance in emerging markets, along with a monopolistic market structure. The negative correlation of life insurance demand and inflation was also emphasized by Beenstock et al. (1986), Browne and Kim (1993), Ward and Zurbruegg (2002) and Feyen et al. (2011). Alhassan and Biekpe (2016) stress that recent deflation and lower interest rates pressure life insurers to adapt their businesses to the politics of ultra-low interest rates of the European Central Bank.

Zingales (2003) signalizes a common issue for the empirical studies in the life insurance domain: we have too many highly correlated variables and few countries for correctly identifying the effect. A wide range of relevant development indicators have high values in developed countries: independent and efficient juridical system, high level of trust, low corruption, more developed financial markets. At the same time developing countries are mainly agrarian countries characterized by inflation, low level of education and monopolistic insurance market.

Because life insurance is a contract between the insurer and the insured and it constitutes one of the main investments on the stock markets, the quality of the institutional environment is an important variable in promoting life insurance activities - Guerineau and Sawadogo (2015), Chang and Lee (2012).

Rule of law is a measure of the degree to which people in a country trust the legal system to settle disputes and enforce contracts. Ward and Zurbruegg (2002) find a positive influence of the rule of law over the life insurance demand for Asia as well as for OECD countries. Most of the following factors (education, rule of law, size of social security) do not have time variation or time variation is too small so they cannot be included in fixed effects analysis. Beck and Webb (2003) prove that the impossibility of appealing the violation of life insurance contracts by insurers may reduce the value of these contracts and may impede the consumers to subscribe important sums for life insurance products. Guerineau and Sawadogo (2015) consider that the lack of property and contract enforcement obstructs life insurer's capacity to invest efficiently and control the price of their products.

According to Knack and Keefer (1995, 2002) the strengthening of property rights can generate a motivation to subscribe a life insurance. A correct and precise definition of the contractual clauses is a main driver for maintaining the cooperation, showing the importance of legal settlements over the development of life insurances. Guerineau and Sawadogo (2015) prove that effecting enforcement and legal rules protect life insurer policyholders against losses or damages. Esho (2004) also considers that a favorable legal environment and protection of property rights may reduce transaction costs, thus supporting the development of the life insurance market. In a more recent study on the Italian life insurance market Millo and Carmenci (2015) concluded that property rights protection and the rule of law is not an important determinant of life insurer purchasers in an advanced democracy.

Outreville (2008) considers that the developed countries are seen as having sound governance, while Chang and Lee (2012) show a direct relation between the level of income

and the governmental environment in low income countries, for high income countries this factor not being significant. The governmental environment is represented by a global index based on the six governance indicators of Kaufman et al. (2010). Lee et al. (2013) found that under efficient governance, making efforts to reduce the country risks in political, financial and economic aspects, the sensitivity of insurance demand on the income change decreases. Levine (1999) finds that financial intermediaries are better developed in countries with legal and regulatory systems that give a high priority to the effective enforcement of contracts.

Some studies investigate the effect of the political risk over the life insurance density. Lee et al. (2013) prove that when the political risk is lower, the income elasticity of insurance demand decreases in high income countries, with common law origin and integrated bank-insurance activities. Previously, Ward and Zurbruegg (2002) have shown that the political stability has a positive effect on the life insurance expansion in developed and developing countries. According to Beck and Webb (2003) the lack of political stability can reduce the economic perspective for potential purchasers and suppliers of life insurance products, thus discouraging the development of life insurance market. They also found that if fraud is present in claims reporting, the price of insurance rises, and its affordability decreases.

On a panel of developed and developing countries, Feyen et al. (2011) have found that the government efficiency in the regulatory process is positive and significant. They also consider that a generous social security system could reduce the incentives and the need to buy retirement products from the life insurance sector. This idea was previously discussed by Kim (1988), Meng (1994) and Beck and Webb (2003) who considered that social security systems displace private insurance, providing income replacement against old age. Millo and Carmenci (2015) also prove for the Italian insurance market that social security schemes, as part of governmental services, affect the life insurance demand negatively. Although countries with highly developed social security systems have a low level of life insurance, the comparison between countries with different security systems is valid only if heterogeneity is controlled. Feyen et al. (2011) consider that disaggregated social security expenditures should be used in testing the effect of social security systems over the life insurance demand, but this data isn't available at country level.

DATA AND METHODOLOGY

The sample of the present research consists of 32 European countries considered for the 2002 – 2012 period. Analyses were conducted in STATA 14.

We evaluate the influence of the six World Governance Indicators - WGI (World Bank, 2015) upon the development of the life insurance market in Europe. We used Kaufmann's et al. (2010) governance indicators because individuals base their decisions on perceptions regarding the healthiness of the institutional environment from a country and these indicators are a consistent measure for those perceptions. The robustness of the results was tested with the help of several control variables dealing with economic, social and demographic characteristics of the countries in the sample. The list of the variables used is presented in Table 1.

Table 1. Variables used in the analysis.

Dependent variable	
INSURANCE_DENSITY	Insurance density is calculated as the ratio of total insurance premiums (in US dollars) to total population.
Institutional variables – WGI components (independent)	
VOICE_ACCOUNTABILITY	Voice and accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
POLITICAL_STABILITY	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.
GOVERNMENT_EFFECTIVENESS	Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
REGULATORY_QUALITY	Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that allow and promote private sector development. This table lists the individual variables from each data sources used to construct this measure in the Worldwide Governance Indicators.
RULE_LAW	Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
CONTROL_CORRUPTION	Control of corruption captures perceptions of the extent to which public power is exercised for private gain,

	including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interest.
Socio-economic variables (control)	
GINI_INDEX	Gini index measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution.
AGE_DEPENDENCY	Age dependency ratio (% of working-age population) is the ratio of dependents (younger than 15 or older than 64) to the working-age population (ages 15-64). Data is shown as the proportion of dependents per 100 working-age population.
INFL_GDP_DEFL	Inflation, GDP deflator (annual %), as measured by the annual growth rate of the GDP implicit deflator, shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.
INTEREST_RATE	Long term interest rate for convergence purposes, with 10 years maturity are provided by the statistics for EU Member States relate to interest rates for long-term government bonds denominated in Euro for euro area Member States and in national currencies for Member States that have not adopted the Euro at the time of publication.
ENROL_TERTIARY	Gross enrolment ratio, tertiary, both sexes (%) is expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.
URBAN	Urban population (% of total) refers to people living in urban areas as defined by national statistical offices.
GDP_CAP	GDP per capita (constant 2005 US $): GDP per capita is gross domestic product divided by midyear population, representing the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

Source of data: World Bank (2015), Insurance Europe, European Central Bank

Table 2 presents the descriptive statistics for the considered variables and as can be seen the average values for the governance indicators are quite high, considering the fact that our sample includes 20 European developed countries and 12 European emerging economies.

Tabel 2: Descriptive statistics

	MIN	MAX	AVERAGE	ST DEV	COEF VAR
INSURANCE_DENSITY	2.966	4511	943	967	1.025
VOICE_ACCOUNTABILITY	40.87	100	84.10	13.43	0.160
POLITICAL_STABILITY	13.27	100	73.87	18.63	0.252
GOVERNMENT_EFFECTIVENESS	43.54	100	82.94	13.40	0.161
REGULATORY_QUALITY	51.47	100	84.85	10.52	0.124
RULE_LAW	44.98	100	81.67	15.55	0.190
CONTROL_CORRUPTION	32.20	100	79.92	15.87	0.199
GINI_INDEX	23.72	42.18	31.51	3.633	0.115
AGE_DEPENDENCY	38.10	56.78	48.19	3.802	0.079
INFL_GDP_DEFL	-10.15	37.42	3.294	3.988	1.211
ENROL_TERTIARY	10.33	116.6	61.29	17.05	0.278
INTEREST_RATE	0.62	45.0	5.30	3.83	0.724
URBAN	49.86	97.73	72.80	11.94	0.164
GDP_CAP	3156	87772	29051	19559	0.673

The *INSURANCE_DENSITY* variable has a far more high relative variation compared to other variables, which makes us suppose a non-linear pattern. The idea is also sustained by the strong asymmetrical distribution of the variable (see figure 1). As a consequence, in regressions we apply transformations over initial variables (natural logarithm). More precise justification concerning the form of the regressions can be found in the description of methodology.

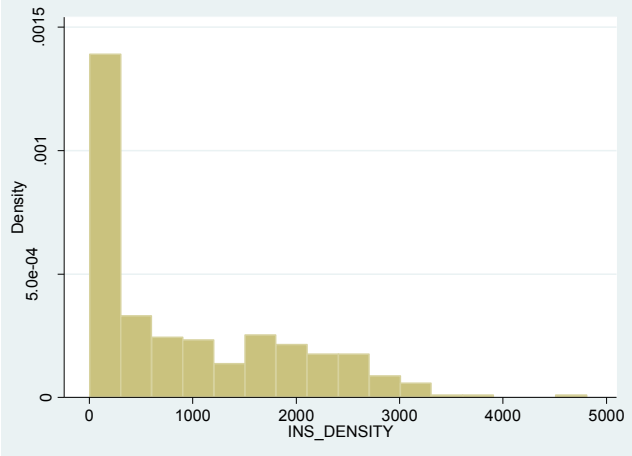

Fig. 1: Asymmetrical distribution of the *INSURANCE_DENSITY variable*

In line with previous works of Feyen et al. (2011) and Alhassan and Biekpe (2016) we estimated dynamic panel models – using the improved version of Roodman (2009) – to assess the determinants of life insurance consumption in Europe. While Feyen et al. (2011) employ Arrelano - Bover (1995) panel estimation for European countries, Alhassan and Biekpe (2016) use the Roodman's (2009) methodology for estimating drivers of life insurance

subscriptions in African countries. In our approach we assume that insurance variables can be affected by their past realizations.

The first step was to see the time properties of the variables used. In this sense, we have applied unit root and autocorrelation tests. All variables proved to be highly autocorrelated. Several integration orders were obtained, but most of the variables, including the dependent one, were I(1)[2].

Taking into consideration all the features of our data we have followed the methodology presented by Roodman (2009) that implemented difference and system GMM with different types of corrections. Variables were used in their logarithmic form[3].

We have first estimated the regression models between the life insurance density with each of the WGI scores. Simulations were conducted with different types of specifications and instruments, starting from the first lag and the first difference of the variables (difference and level estimators presented in Anderson & Hsiao (1981)). Regardless of the factor used, the best quality was obtained for the variant with the first lag of the dependent and the first lag of the governance indicator. Lags of 2nd order and longer of the dependent variables proved to be insignificant in all simulations conducted. When building the final form of the model, we also took into account the works of McKinnish (2002) and Bellemare et al. (2015) in respect to lagged explanatory variables included in the model.

Thusly, the final model employed was:

$$INSURANCE\_DENSITY = const. + \alpha L.INSURANCE\_DENSITY_i + \beta_1 WGIcomponent_i + \beta_2 L.WGIcomponent_i + \mu_{it} \quad \text{eq. (1)}$$

where L denotes the first lag of the variable (t-1), i stands for the individual and μ_{it} represents the error term, with all the assumptions given by the applied methodology. The individual fixed effects of each country analyzed were not included anymore in eq. (1) as the first step in the methodology employed is to remove them through transformations based on differentiation. Results associated with eq. (1) are models (1) – (6) presented in table 3. The components of Worldwide Governance Indicators (WGI), considered successively as explanatory variables are those from table 1.

Coefficients obtained in eq. (1) are on short-run, as also emphasized by Pop Silaghi et al. (2014). This means that they show an immediate reaction of the dependent variables based on an increase in the independent. The methodology allows for the computation of the long-run coefficients and their significance. For the purpose of our analysis we were interested in the second aspect. Two of the six WGI components turned out to be significant in eq. (1): the government effectiveness and the rule of law. For these two explanatory variables we have applied the Wald test to evaluate the statistical significance of the true value of the long-run coefficients. The Wald coefficient test is a Chi[2] type test, based on the maximum likelihood

[2] These results are not presented in the article but are available upon request.
[3] Consequently, we will not use the "ln" symbol in equations, presuming it is understood.

estimation. In our case it was applied in the nonlinear form, with H_0: c = 0 (Engle, 1983), where:

$$c = \frac{\beta_1 + \beta_2}{1 - \alpha}$$

Only the long-term coefficient of the government effectiveness is statistically significant. Consequently, the rest of the analysis focuses on this WGI component as main explanatory factor. As stated above the robustness of the results is evaluated with the help of several control variables. Thusly, eq. (1) was re-specified in the form:

$$INSURANCE\_DENSITY = const. + \alpha L.INSURANCE\_DENSITY_i + \beta_1 GOVERNMENT\_EFFECTIVENESS_i + \beta_2 L.GOVERNMENT\_EFFECTIVENESS_i + \beta_3 X_{it} + \mu_{it} \quad \text{eq. (2)}$$

where X_{it} stands for the control variable considered (see table 1). Results are presented in table 5, models (7) to (13).

Control variables significant in eq. (2) were then kept and progressively introduced in eq. (3), controlling for composite effects of the socio-economic aspects they account for.

$$INSURANCE\_DENSITY = const. + \alpha L.INSURANCE\_DENSITY_i + \beta_1 GOVERNMENT\_EFFECTIVENESS_i + \beta_2 L.GOVERNMENT\_EFFECTIVENESS_i + \beta_j X_{itj} + \mu_{it} \quad \text{eq. (3)}$$

where X_{itj} stands for the control variables considered and significant in eq. (2) (see table 5). Results are presented in table 6, models (14) to (16).

In all cases of respecification, the Wald coefficient test was applied to evaluate the statistical significance of the long-run coefficient of the WGI component, *GOVERNMENT_EFFECTIVENESS.*

All models were specified in the robust form. We present the overall Wald test for the significance of the model, the probability associated with the Hansen test for the instruments (Hansen, 1982; Hansen et al., 2008) and the Arellano and Bond test for autocorrelation AR(2) (Arellano & Bond, 1991) as measures of model quality. In all cases, probabilities associated with the tests show that the models are good.

RESULTS AND DISCUSSIONS

The simple regression models presented in table 3 show that only two Worldwide Governance Indicators are, on short term, significant factors for the development of the life insurance market in Europe. These are the government effectiveness and the rule of law, reflecting that immediate changes in the life insurance density are due to a temporary increase

of those factors. In the case of control of corruption, the lagged value is significant, but at the 10% level. However, in both cases, one of the coefficients is positive, while the other is negative. That is why we have assessed their statistical significance on long-run, using the Wald test.

Table 3. Influence of the Worldwide Governance Indicators upon the life insurance market – regression results (short-run coefficients based on eq. (1)).

Dependent variable: *Insurance_Density*						
Indep. Variables	(1)	(2)	(3)	(4)	(5)	(6)
L.Insurance_Density	0.938*** (0.018)	0.972*** (0.007)	0.927*** (0.027)	0.952*** (0.014)	0.965*** (0.023)	0.928*** (0.042)
Voice_Accountability	0.131 (0.754)	-				
L. Voice_Accountability	0.260 (0.887)	-				
Political_Stability		0.269 (0.278)				
L. Political_Stability		-0.261 (0.24)				
Government_Effectiveness			-1.287*** (0.501)			
L. Government_Effectiveness			1.808*** (0.528)			
Regulatory_Quality				0.590 (0.558)		
L. Regulatory_Quality				-0.138 (0. 639)		
Rule_Law					-1.84** (0.828)	
L. Rule_Law					1.895*** (0.66)	
Control_Corruption						-1.224 (1.016)
L. Control_Corruption						1.751* (1.03)
Constant	-1.316 (0.836)	0.184 (0.729)	-1.813* (0.973)	-1.672 (1.324)	0.022 (1.157)	-1.83 (1.725)
Wald chi^2	43645	25155	14859	16380	22467	8748
Prob.	0.000	0.000	0.000	0.000	0.000	0.000
Hansen test (prob.)	0.993	0.989	0.998	0.992	0.989	0.994
Arellano-Bond AR(2) (prob.)	0.930	0.706	0.963	0.742	0.914	0.976

Coefficient (Robust standard errors).
*** - significant at 1%, ** - significant at 5%, * - significant at 10%.
Source: own computations in STATA 14.

Table 4. Statistical significance for the long-run coefficients of government effectiveness and rule of law.

Variable	**Wald Chi^2**	**Prob.**
Government_Effectiveness	28.77	0.000

Rule_Law	0.04	0.834

Source: own computations in STATA 14.

By using the Wald test, on long term, only the effectiveness of the government stands (see table 4). Consequently, the rest of the analysis focuses on this institutional factor.

Considering the methodology of Kaufman et al. (2010) when constructing Government effectiveness indicator, the obtained result means that life insurance is better developed in countries with quality public services (education, health) and credible and stable government's policies independent from public pressures. The bureaucratic quality and satisfaction with infrastructure are also positively influencing life insurance consumption because they are a part of this measure. To a closer look we can observe that all this components have higher values in developed countries, generating a higher consumption of life insurances. The problem arises in emerging economies where the under-development of those aspects generates low levels of life insurance subscriptions.

Due to the fact that Europe is very heterogeneous in respect to economic and social development, we have passed from general, absolute evaluation, to conditional assessment of the subject. In this respect, we have considered several control variables (described in the methodological part) along with the government effectiveness, to account for the specific conditions of the countries and the way they may influence the development of the life insurance market. In all estimated models, the first lag of the dependent variable and the level and the first lag of the institutional factor are highly significant. Additionally, the level and the lag of government effectiveness have different signs, thing that led to the evaluation of their long-term significance. The lack of significance was accepted when using the urbanization rate and the GDP/capita as controls.

We observe that the first lag of the life insurance density is highly and positively significant, while the GDP per capita control variable is not. Our sample consists of 20 out of 32 developed European countries where the life insurance sector represents a higher proportion of total insurance and where people have a culture of life insurance. It has been proved by Liu (2015) that insurance buyers are more likely to be influenced by collective intelligence than by insurance experts. We may consider it a herding behavior described by Asch (1956) as a social phenomenon of individuals that are strongly influenced by the decisions of others. So if their friend and families own life insurances and share positive experience the consumers will also purchase life insurance in the near future.

Table 5. Regression analysis with control variables taken individually.

Dependent variable: *Insurance_Density*							
Indep. Variables	(7)	(8)	(9)	(10)	(11)	(12)	(13)
L.Insurance_Density	0.899*** (0.03)	0.927*** (0.032)	0.935*** (0.028)	0.91*** (0.035)	0.935*** (0.023)	0.916*** (0.022)	0.924*** (0.073)
Government_Effectiveness	-1.116** (0.56)	-1.289** (0.503)	-1.116** (0.52)	-1.132** (0.506)	-1.296*** (0.496)	-1.148** (0.459)	-1.286** (0.497)

L. Government_Effectiveness	1.952*** (0.544)	1.804*** (0.525)	1.688*** (0.528)	1.825*** (0.544)	1.5*** (0.477)	1.707*** (0.542)	1.801*** (0.473)
GINI_Index	0.016** (0.008)	-	-	-	-	-	-
Age_Dependency	-	-0.001 (0.008)	-	-	-	-	-
Infl_GDP_Defl	-	-	0.015* (0.009)	-	-	-	-
Enrol_Tertiary	-	-	-	-0.004* (0.002)	-	-	-
Interest_Rate	-	-	-	-	-0.028** (0.012)	-	-
Urban	-	-	-	-	-	-0.002 (0.003)	-
GDP_Cap	-	-	-	-	-	-	0.004 (0.172)
Constant	-3.56*** (0.933)	-1.734 (1.196)	-2.14* (1.157)	-2.244* (1.253)	-0.323 (0.942)	-1.762 (1.071)	-1.824 (1.313)
Hansen test (prob.)	0.991	0.993	0.994	0.996	0.998	0.996	0.995
Arellano-Bond AR(2) (prob.)	0.687	0.962	0.713	0.824	0.925	0.967	0.960
Wald Chi^2	3655.6	16241	26906	6526.2	16964	11351	15078
Long-run coefficient testing							
Wald Chi^2	31.21	27.69	29.61	33.53	1.35	17.52	0.93
Prob.	0.000	0.000	0.000	0.000	0.245	0.000	0.336

Coefficient (Robust standard errors).
*** - significant at 1%, ** - significant at 5%, * - significant at 10%.
Source: own computations in STATA 14.

Regressions with individual control variables show that out of the eight socio-economic aspects considered, only four are statistically significant: the Gini index, the inflation rate, tertiary school enrollment and the interest rate (table 5). While the first three regression models also have long-run significant coefficients for the governance indicator, the last one does not.

The income distribution, expressed through the Gini coefficient is statistically significant showing a direct relation with life insurance density suggesting that life insurance is seen as a product for high income persons. Our results concerning the level of tertiary education are in line with the findings of Outreville (2012) who considers that a high level of education raises the capability to manage risks by your own, lowering the life insurance demand. The interest rates negatively influence life insurance consumption for the European market, result also found by Lenten and Rulli (2006) for the Australian life insurance market and Li et al. (2007) for OECD countries. Higher interest rates may induce consumers to reduce their life insurance purchases given the anticipation of higher returns in other types of money accumulation (investments in real estates, gold).

We proceeded with the progressive introduction of the four significant control factors in the regression models, to account for their co-joint influence.

Table 6. Dynamic panel regression models – Government effectiveness and control variables.

Dependent variable: *Insurance_Density*			
Indep. Variables	(14)	(15)	(16)
L.Insurance_Density	0.899*** (0.03)	0.91*** (0.032)	0.903*** (0.029)
Government_Effectiveness	-0.994* (0.568)	-0.918 (0.561)	-0.777* (0.416)
L. Government_Effectiveness	1.551*** (0.464)	1.487*** (0.471)	1.343*** (0.453)
GINI_Index	0.019** (0.008)	0.017** (0.008)	0.01 (0.009)
Infl_GDP_Defl	-	0.011 (0.009)	0.005 (0.009)
Enrol_Tertiary	-	-	-0.003 (0.003)
Interest_Rate	-0.033*** (0.011)	-0.031*** (0.009)	-0.032*** (0.012)
Constant	-2.288** (1.107)	-2.357** (1.072)	-1.866 (1.219)
Hansen test (prob.)	0.993	0.994	0.991
Arellano-Bond AR(2) (prob.)	0.727	0.989	0.974
Wald Chi^2	6487.76	15818.53	7809.48
Long-run coefficient testing			
Wald Chi^2	13.34	14.95	10.33
Prob.	0.000	0.000	0.001

Coefficient (Robust standard errors).
*** - significant at 1%, ** - significant at 5%, * - significant at 10%.
Source: own computations in STATA 14.

Because of the existing correlations between the institutional variable and the control variables we can see that as long as we control for socio-economic factors only the negative significance of interest rate remains valid.

CONCLUSIONS

Having as motivation the heterogeneous development of life insurances in countries across Europe, this paper explains the drivers of the life insurance consumption from a sample of 32 countries for the 2002-2012 periods. We consider as control variables different socio-economic and demographic factors analyzed in previous studies. We focused on investigating the role of different institutional variables on the life insurance because life insurance is a contractual agreement which implies that legal rules should influence its development. The econometrical models are estimated using Roodman's (2009) methodology of dynamic panel by implementing difference and system GMM with different types of corrections.

The empirical results show that the income distribution, school enrollment and interest rate play an important role in driving life insurance consumption in Europe. The six governance indicators have been analyzed successively in distinct regressions. The long run coefficients show that *government effectiveness* is the main driver of the life insurance density from European countries. This governance indicator constructed by Kaufman et al. (2010) measures different aspects concerning the quality of public and civil services from a country.

Out of these, the most susceptible to influence the life insurance market are excessive bureaucracy, satisfaction with education system, state failure (the risk the state is unable to exclusively guarantee law and order), policy instability and quality of public administration. Unfortunately there is no available data to analyze separately the influence of those concepts.

The obtained results are subsequent to economic reasoning. In our sample there are 12 former communist countries in which the perception of individuals over the degree of independence of the economic environment from political pressures influences decisively the development of different components of the financial system: banking, capital markets and insurances.

The findings of our study may have implications in designing measures for increasing life insurances in developing countries. Efforts for a better institutional development are recommended mostly in former communist European countries. This path adopted by the banking system, proved to be efficient and turned up in its rapid growth in the years of transition to a market economy. In the European insurance system, a large part of the population of former communist countries do not perceive the protective role of insurances, as it results from empirical macroeconomic studies. The measures for improving governance levels, especially those of protecting the insured's rights, may have positive reactions also in the non-life insurance market.

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