EMPIRICAL REVISITING OF THE MACEDONIAN MTPL INSURANCE CASE AND THE UNDERLYING FACTORS OF INFLUENCE

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ABSTRACT
Motor third-party liability insurance (MTPL) remains one of the dominant insurance classes in the Macedonian economy even besides the government regulated tariff system imposed. Pinpoint the key variables of interest has spurred debates for a prolonged period but without growing results in global literature, decreasing the ability to observe relationships important for the future liberalized system. Through a fixed effects panel regression this paper estimates the impact of MTPL premiums, claims, number of contracts, and market share on MTPL premium dynamics during the 2012-2021 period. The Macedonian empirical case suggests that the previous period number of contracts is not a significant determinant, unlike others. A positive impact is noted for the number of claims per contract, one period lagged MTPL premium per contract and MTPL concentration of the market. Adverse influence is found for the share of MTPL insurance in total GWP per company, one period lagged claims per contract and the market concentration of MTPL claims. Such observations help us understand the underlying forces in a non-liberalized MTPL market and propose business expectations for the future.

Keywords: *MTPL insurance, finance, panel regression.*

JEL classification: *G22, C33.*

1. INTRODUCTION

The concept of insurance can be traced back to 1750 BC in the Code of Hammurabi, with the earliest concepts where the lender would get an additional payment from the borrower in exchange for a promise that the loan would be canceled in case of a stolen ship. However, independent insurance contracts that were unrelated to agreements or loans first appeared in Genoa, Italy in the late 14th century. Ever since, a small fee for underwriting a certain insurable risk has been gradually developed, reaching today's point insurance industry. With the invention of motor vehicles and the consequent development of urban areas, the need for a motor insurance rose. Third-party liability seemed to be an insurable risk worth of attention, soon after becoming compulsory in most countries. Motor Third Party Liability Insurance (MTPL) makes sure that any injuries to individuals or damage to their property that results from an accident for which the driver and/or the owner of the vehicle were at fault is covered. A vehicle's owner or a legitimate possessor approved by the owner on behalf of the owner may

purchase a policy. In terms of premium volume, motor insurance is typically considered the non-life insurers' strongest segment of business.

This paper studies the topic of motor third-party liability insurance (MTPL) in the Republic of North Macedonia throughout the last decade. As the compulsory insurance is conditional on a car registering, this class remains the dominant in the Macedonian insurance sector waging at about 42% (ISA, 2022) of total gross written premium in non-life insurance. Such levels signal a poorly developed insurance market, with further development hindered by a weak insurance culture among economic agents and general issues with proper risk valuation. Finding the underlying linkages between a collection of variables affecting MTPL insurance premium can aid insurance firms and policy writers in making future business decisions. We employ a quantitative approach while simultaneously using inductive and deductive methods to explain the underlying forces.

Through a fixed effects panel regression framework, we study the individual movements for the respective 11 non-life insurance companies in North Macedonia as well as the total market during the 2012 – 2021 period. The main research hypothesis is that MTPL gross written premium dynamics can be significantly determined by the number of contracts, gross claims liquidated (paid), market share of companies and share of MTPL insurance in total gross written premium (GWP). We also assume that certain autoregressive components may exist as an underlying force, so we observe one period lagged values of the number of policies, premiums and claims.

The paper is set up in the following manner. After the introduction to the research, we pay specific attention to renown work in the field related to insurance, modelling and MTPL determinants, which helps us understand the theoretical framework of our study. Next, a detailed methodological approach is provided focused on data acquiring, descriptive statistics and econometric modelling. Section 4 reviews and discusses the findings before presenting a brief conclusion to the subject.

2. THEORETICAL FRAMEWORK

Insurance businesses serve as risk underwriters, preventing risk-averse people from enduring the full effects of activities that negatively affect them (Spence and Zeckhauser, 1971). A requirement for mandatory vehicle third-party liability insurance evolved because of urban traffic congestion, population growth, and technology advancement. The Macedonian insurance industry has up to now used a bonus-malus tariff mechanism. Since risk appraisal and pooling is the main idea, premium differential amongst insurers, which represents risk heterogeneity, is a valid strategy (Henckaerts *et al.*, 2018). North Macedonia declared interest in liberalizing the MTPL rates more than a decade ago, however the insufficient and sparse data may be a major obstacle in its realization (Tomeski, 2012). It should provide higher competitiveness between companies as the German experience shows, but it should not be blatantly considered a ‘price war’ (Eling and Luhnen, 2008). The price-cutting activities in liability insurance markets was also studied by Harrington and Danzon (1994). Additionally, it has been demonstrated in several instances that the growth of the insurance industry is significantly influenced by the state of the economy (Ward and Zurbruegg, 2000; Skalská, 2018). Born and Bujakowski (2022) point out the importance of monetary stability, consumer safeguards, licensing and trading practices, and government transfers, affecting property-casualty and life-health insurance consumption.

Our study departs from the purely macroeconomic factors that were previously examined in studies of non-life insurance demand (Poposki *et al.*, 2015) and insurance expenditures (Trinh *et al.*, 2016). Instead, we show the innate consumer preferences and the idiosyncratic microeconomic linkages that are unique to each insurance entity. Based on a Latvian study (Spilbergs *et al*., 2021), it is confirmed that macroeconomic shocks (especially those induced

by the COVID-19 pandemic) significantly influence the insurance market and its performance related to premiums and claims.
It is important to note that consumer behavior may also be examined in alternative ways, such as by examining how customers switch between underwriters, as showed though a Markov property system by Blazheska and Ivanovski (2021). Through a simultaneous equations approach, Zanghieri (2017) relates claims frequency, the average cost of claims and premiums for the Italian motor insurance, obtaining better forecasting performance than standard approaches. A significant breakthrough in estimating determinants of profitability and growth in motor insurance business is done by Maichel-Guggemoos and Wagner (2018), using panel data for the German insurance market between 2002 and 2014. Comparing mutuals to listed businesses, they show how they have cheaper premiums, total claims costs, and operational expenditures per contract. Additionally, compared to typical businesses selling through agents or brokers, direct insurance companies have reduced rates and operational costs per contract.
This research introduces an econometric approach in modelling short-term relationship on the Macedonian MTPL insurance market and contributes to the literature as one of the few papers doing so for the case of a Western Balkan economy.

3. METHODOLOGY

This section is devoted to the methodological nexus behind the research. First, a brief explanation of the data acquiring process and the descriptive analytical approach is presented. This will help us understand the condition of the Macedonian MTPL insurance market as well as the existing barriers due to the regulated regime. Next, a detailed revisiting of the most utilized regression methods is provided based on the data at disposal – the panel regression method.

3.1. Data acquiring and analysis

The study is focused on the post-financial crisis of 2008 and analyzes a decade of MTPL insurance dynamics in North Macedonia, throughout the period between 2012 and 2021. Quarterly data has been analyzed for each of the eleven insurance companies in the Macedonian insurance sector. Observations for each variable of interest was obtained through the national ISA reports on business performance of insurance undertakings. The reports are published quarterly with cumulative parameters, so differencing the entire dataset was necessary to obtain information for each of the 40 quarters. Now, a total of eleven non-life insurance companies operate, i.e.: 1) Insurance Makedonija, 2) Triglav Insurance, 3) Sava, 4) Euroins, 5) Winner – Vienna Insurance Group, 6) Eurolink, 7) Grawe non-life, 8) Uniqa, 9) Insurance policy, 10) Halk Insurance, and 11) Croatia non-life.
Each will be analyzed separately and as an integral part of the econometric modeling. A subject of interest to this study are the gross written premium (total GWP), technical premium, and share of insurance operations in GWP. Of particular significance to the research are the motor third-party liability insurance (MTPL gross written premium), the number of contracts concluded (MTPL policies), and gross claims paid for MTPL insurance. Due to the significant seasonal component present in the time-series for each variable of interest, the census X-12 method was employed for seasonal adjustments. Data are portrayed continuously for the insurance companies that faced a process of acquisition in the last decade, labeled as they are named today. Table 1 depicts the summary of descriptive statistics for the seasonally unadjusted general market data.

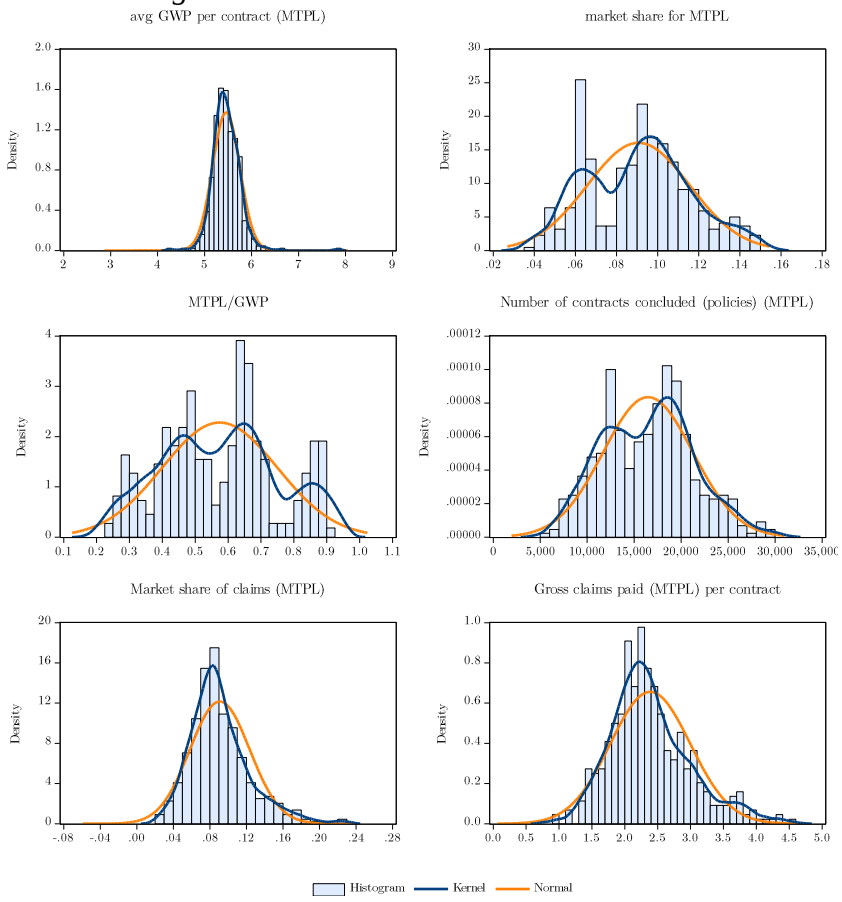
Table 1: Descriptive statistics, seasonally unadjusted panel data (2012Q1 – 2021Q4).

	MTPL premium per contract (in 000 MKD)	Market share of MTPL insurance	MTPL to GWP ratio	Number of MTPL contracts concluded	Market share of MTPL claims	Gross claims per contract (in 000 MKD)
Mean	5.4595	0.0907	0.5746	16478.11	0.0909	2.3878
Median	5.4406	0.0929	0.5884	16788.34	0.0861	2.2981
Maximum	7.8261	0.1486	0.9110	29756.17	0.2279	4.5089
Minimum	4.2787	0.0394	0.2333	5938.081	0.0215	0.9164
Std. Dev.	0.2905	0.0249	0.1751	4775.634	0.0328	0.6082
Skewness	1.3060	0.1326	0.1089	0.1715	1.0184	0.7184
Kurtosis	13.4008	2.3782	2.1710	2.5471	4.7325	3.6753
Observations	440	440	440	440	440	440

(Source: ISA reports on business performance in the insurance industry; Own calculations)

The common sample descriptive stats indicate the premium stability of the compulsory MTPL, which is till date a government regulated class of insurance in North Macedonia. A special tariff and bonus-malus system is employed and since it applies to all non-life insurance companies, significant differences in MTPL premium are unobservant. The average MTPL insurance premium per contract is found to be 5,459.5 MKD while the average MTPL gross claims per contract are 2,387.8 MKD for the period of interest. Even though a positive gap exists, the claims are more volatile with a standard deviation of 608.2 MKD, contrary to 290.5 MKD for the MTPL premium. On average, the insurance companies have 9.07% of market share in the national MTPL insurance with the highest concentration being 14.86%.

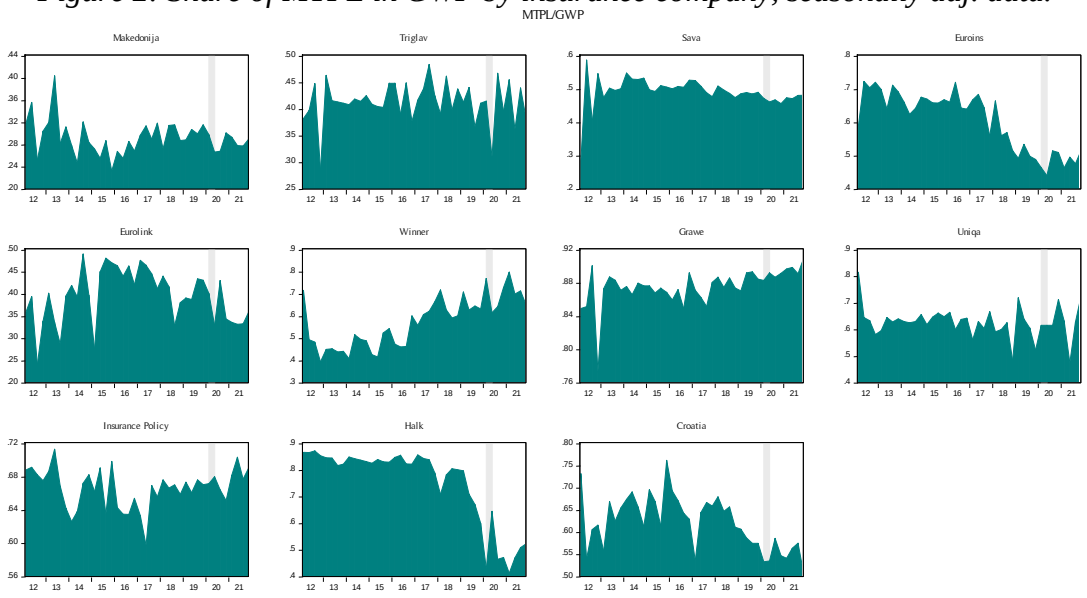
Figure 1: Kernel and normal distributions.



(Source: Own calculations)

The global practice implies that a high share of MTPL insurance in the total gross written premium is a typical characteristic of an underdeveloped insurance market. With an average share of 57.46% in GWP, the compulsory MTPL is the dominant class of insurance in the Macedonian market making it especially underdeveloped. The depicted kernel distributions are a nonparametric representation of the probability density function for each variable, which shows a significant non-normal distribution represented by a larger proportion of tailed outliers in the data. Such properties can be accounted to the different insurance strategies by the companies, as some are exclusively focused on MTPL insurance. The deseasonalized data for share of MTPL gross written premiums in total gross written premiums (GWP) are depicted in Graph 2 with clear disproportions observable between companies with opposing market strategies. The shaded area indicates the first two quarters of 2020 with the COVID-19 pandemic dramatically changing business operations in the following year. While companies such as Winner, Grawe and Insurance Policy increased the share of MTPL in total GWP (65%, 91.1% and 69.2%, respectively), a positive turn towards overall market development of other insurance classes is driven by Insurance Makedonija, Euroins, Eurolink, Halk and Croatia Insurance.

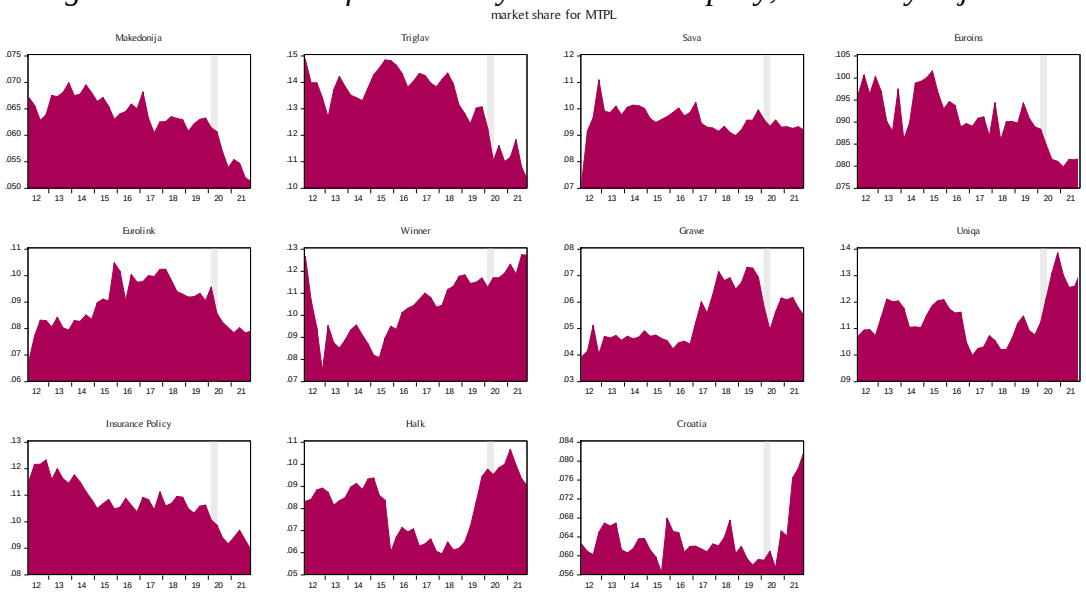
Figure 2: Share of MTPL in GWP by insurance company, seasonally adj. data.



(Source: Own calculations)

The concentration of the Macedonian MTPL insurance market is rapidly changing. For example, Triglav Insurance as former leaders in MTPL market share a decade ago significantly reduced their market share by 4.6 percentage points. Winner approximately returned to the 2011 market share of MTPL (12.7%), with the lowest state of 7.5% reached in 2012Q4. As insured individuals from companies such as Makedonija Insurance, Triglav and Eurolink faced strategy change of business operations of the insurers, they gradually increased the MTPL market shares of Winner, Uniqa and Croatia Insurance.

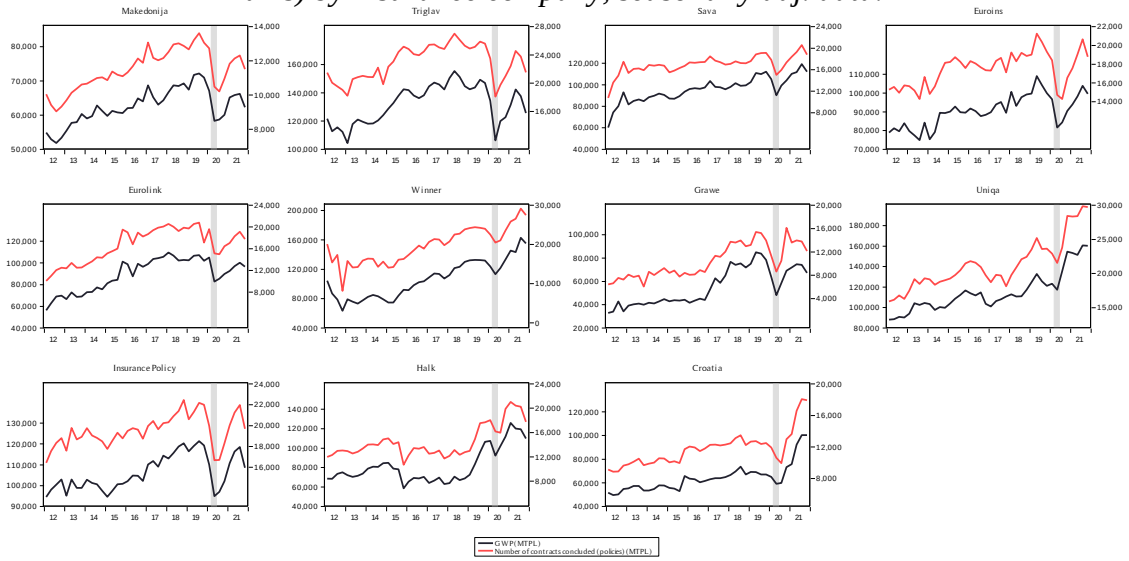
Figure 3: Market share for MTPL by insurance company, seasonally adj. data.



(Source: Own calculations)

The market structure and the regulatory principles employed for the case of compulsory motor third-party liability insurance in North Macedonia are clearly observable through the MTPL gross written premium and the number of MTPL contracts concluded. These two variables follow a remarkably similar dynamic which can be accounted to the government-set tariff system but a significant difference from this relationship is not expected soon or at least not until the full MTPL market liberalization is employed.

Figure 4: Gross written MTPL premium (left axis) and number of contracts concluded (right axis) by insurance company, seasonally adj. data.



(Source: Own calculations)

The volatility difference between the MTPL premium per contract and the MTPL claims per contract is presented in the following Figure 5. The administrative tariff system retains the average premium approximately at 5,500 MKD with minor fluctuations between underwriters. This can be accounted to the uncertainty nature of risks, as predicting the outcome and its

moment of occurrence is relatively impossible. On contrary, GWP is easier to predict as it largely depends on the business activity of insurance companies. The correlation between the gross written premiums and claims is estimated at 0.36403, signaling a moderate but direct relationship.

Figure 5: Average GWP per contract (MTPL) & Gross claims paid per contract (MTPL), seasonally adj. data.

(Source: Own calculations)

Table 2: Covariance and correlation.

Covariance	MTPL per contract	Market share (MTPL)	MTPL/GWP ratio	Contracts	Market share (MTPL claims)	Claims per contract
MTPL per contract	0.08419					
Market share (MTPL)	0.00162	0.00062				
MTPL/GWP ratio	-0.01099	-0.00083	0.03057			
Contracts	121.807	105.377	-131.942	22754849		
Market share (MTPL claims)	0.00254	0.00063	-0.00133	103.5301	0.00107	
Claims per contract	0.06417	0.00005	-0.01544	-97.5237	0.01152	0.36903
Correlation						
MTPL per contract	1.00000					
Market share (MTPL)	0.22468***	1.00000				
MTPL/GWP ratio	-0.21653***	-0.19009***	1.00000			
Contracts	0.08801*	0.88982***	-0.15819***	1.00000		
Market share (MTPL claims)	0.26663***	0.7730***	-0.23286***	0.66220***	1.00000	
Claims per contract	0.36403***	0.00369	-0.14533***	-0.03365	0.57880***	1.00000

***,**,* *indicate 1%, 5%, and 10% significance, respectively.*

(Source: Own calculations)

3.2. Econometric approach

For establishing the econometric relationship between the variables of interest, we use the panel regression model with fixed effects as the most suitable estimation approach suggested by the Hausmann test presented in the following Table 3.

Table 3: Hausmann test.

H_0: *random effects model* H_1: *fixed effects model*			
Test Summary	χ^2 Statistic	χ^2 d.f.	Probability
Cross-section random	103.84740	7	0.0000

(Source: Own calculations)

The fixed effects panel regression can be depicted as

$$y_{i,t} = c_i + \beta_{1i}x_{1i,t} + \beta_{2i}x_{2i,t} + \cdots + \beta_{ki}x_{ki,t} + \varepsilon_{it} \quad (1)$$

where y is the dependent variable of interest for company i at time t, while x_k is the k-th number of independent variables. With β we denote the estimated slope coefficients and c_i is assumed to be the group-specific intercept in the panel regression. In line with classical linear regression models (CLRM), ε is a random error term, assumed to be white noise with $N{\sim}(0, \sigma_i^2)$ distribution. Additionally, if we momentarily omit the time subscripts for simplicity, we can obtain the following reduced form

$$Y_i = c_i + \mathrm{B_i}X_i + \varepsilon_i \quad (2)$$

in which Y is a $(n \times 1)$ vector of the dependent variable per insurer, B is a $(n \times n)$ matrix of slope coefficients, and X is a $(n \times 1)$ vector of independent variables included in the model. Due to the specific nature of the regression model, all variables except the dependent variable are considered exogenous. The proposed econometric model does not include dummy variables and is modeled entirely on seasonally adjusted data.

By using a panel regression model, we avoid the problem of losing too many degrees of freedom and support the goodness-of-fit of the model, since we use quarterly data (40 quarters between 2012Q1 and 2021Q4 to be exact) and estimate a total of 8 coefficients (including the group-specific intercept and the lagged regressors). Alongside the 11 cross-sections (insurance companies), a total of 429 balanced panel observations are reached. The modeled structure in this research has the following form

$$\begin{aligned}\left(\frac{MTPL}{c}\right)_{i,t} = \mu_i + \beta_{1i}\left(\frac{MTPL}{GWP}\right)_{i,t} + \beta_{2i}\left(\frac{CL}{c}\right)_{i,t} + \beta_{3i}\left(\frac{CL}{c}\right)_{i,t-1} + \beta_{4i}c_{i,t-1} \\ + \beta_{5i}\left(\frac{MTPL}{c}\right)_{i,t-1} + \beta_{6i}\left(\frac{MTPL_i}{MTPL_{market}}\right)_t + \beta_{7i}\left(\frac{CL_i}{CL_{market}}\right)_t + \varepsilon_{it}\end{aligned} \quad (3)$$

in which $MTPL$ is the motor third party liability insurance premium, c is the number of MTPL contracts concluded, GWP is the total gross written premium, CL is the MTPL gross claims concluded (liquidated), while $MTPL_{market}$ and CL_{market} are the total market MTPL premium and total market MTPL claims concluded, respectively.

4. RESULTS AND DISCUSSION

Due to the government's mandatory pricing scheme, little variations between firms can be seen in their gross MTPL premium per contract. The existing tariff risk categorization (based on motor power, age, prior insured risk occurrences leading to the bonus-malus system, etc.) and the characteristics of the new insured customers in each company are the only idiosyncratic factors contributing to the variances at this time.

Table 4: Modelling estimates.

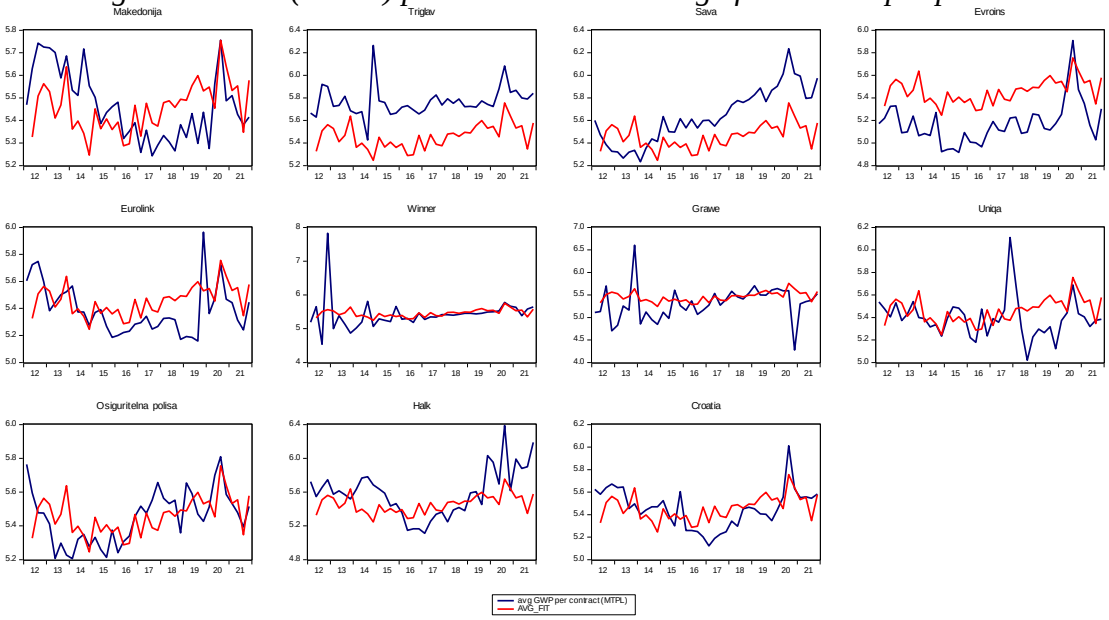
	Model 1		Model 2		Model 3	
	Coefficient	*St. Error*	*Coefficient*	*St. Error*	*Coefficient*	*St. Error*
Group-specific const.	4.5814***	0.3098	4.3077***	0.2984	3.8223***	0.25889
MTPL/GWP ratio	-0.5402***	0.1676	-0.5268***	0.1598	-0.4994***	0.14068
Claims per contr.			0.1462***	0.0225	0.5733***	0.03970
Claims per contr. (-1)	-0.0583***	0.0223	-0.1113***	0.0228	-0.0744***	0.01982
Contracts (-1)	0.0000**	0.0000	0.0000***	0.0000	0.00000	0.00000
MTPL per contr. (-1)	0.2095***	0.0490	0.2162***	0.0467	0.1030**	0.04246
Market share (MTPL)					16.0170***	1.73908
Market share (claims)					-14.6442***	1.19863
R^2	0.3442		0.4049		0.5652	
Adjusted R^2	0.3220		0.3833		0.5472	
F - statistic	15.5171		18.7343		31.4245	
Prob. (F - statistic)	0.0000		0.0000		0.0000	
DW statistic	2.1420		2.1554		1.8714	

***,**,* *indicate 1%, 5%, and 10% significance, respectively.*

(Source: Own calculations)

We used a threefold approach in the modelling, by subsequently adding explanatory variables. The adjusted coefficients of determination show that 32.2%, 38.33%, and 54.72% of the total variation in the MTPL premiums per contract is explained by the first, second, and third model, respectively. The data used are in thousands and percentages, depending on the variable of interest. It is noted that a greater MTPL to GWP ratio lowers the MTPL premium by approximately 500 MKD (526.8 MKD in the second and 540.2 MKD in the first model. The nominal value of claims per MTPL contract has a positive contemporaneous connection, even if it is sign inconsistent with its lagged value; with a 1000 MKD increase in claims per contract increasing the premium by 573 MKD on average, *ceteris paribus*. If we take into consideration the impact of the number of claims per contract from the prior quarter, we discover an inverse connection. The client's mood and views of a firm facing increased claims, together with the number of claims resolved has a significant importance in their decision for buying MTPL insurance from the specific insurer, with a decline of 74.4 MKD on average for the MTPL premium per contract for a 1000 MKD rise in claims, on average. The largest impact is observed in the second model, with the impact waged at 111.3 MKD. It has been found that the influence of the number of contracts signed is minimal and statistically negligible in the last model, even though a significant estimate is obtained in the first two. The dependent variable's lagged value appears to be a substantial predictor of its present value, with growing MTPL premium per contract in the prior period resulting in an average increase in MTPL premium per contract of 103 MKD today. This might be caused by a variety of circumstances, but if the insurance provider adopts an active marketing approach for MTPL insurance, this should attract more new customers and increase the proportion of higher-risk contracts covered by the tariff system. As a result, their insurance contract premium will be greater. As might be predicted, a larger MTPL market share result in a higher MTPL premium per contract. For an average and ceteris paribus 10% greater market share, the accumulation of new and current clients in the hazardous portfolio of an insurance underwriter results in an increase in premium per contract by 1,601.7 MKD. The market share for MTPL claims, on the other hand, exhibits an inverse and substantial connection when the same reasoning is used. This is mainly because customers feel there is an inadequate operations and risk assessment (even if there is a tariff system existing), which is based on their views of the company's reputation.

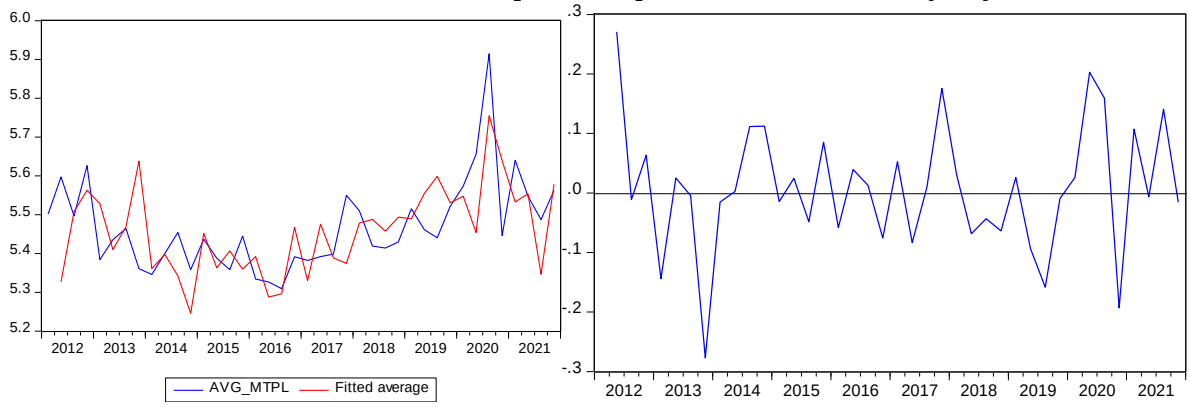
Figure 6: GWP (MTPL) per contract and average fitted value per period.



(Source: Own calculations)

Figure 6 portrays the MTPL premium per contract and the model fitted value for each period observed. This shows how each insurance company stands in relation to the econometric relationship built, noting any larger discrepancies that may indicate larger/lower premium than empirically expected. Larger premiums are notable for Triglav, Sava, as well as Halk Insurance which experiences growing levels in the recent two years. Undervalued premiums can be noted in the cases of Insurance Makedonija, Euroins, Eurolink and Uniqa. It may be expected that on the long run, premiums should converge to their empirical fitted level. Similar inspection can be made in terms of the average market MTPL premium. On average, the market premium of the MTPL insurance is lower than the fitted value, even though a similar dynamic is observed. This may indicate that insurers deliberately avoid greater premium rising, retaining market position.

Figure 7: Fitted values of average MTPL insurance premium per contract and average market MTPL insurance premium per contract, seasonally adj.

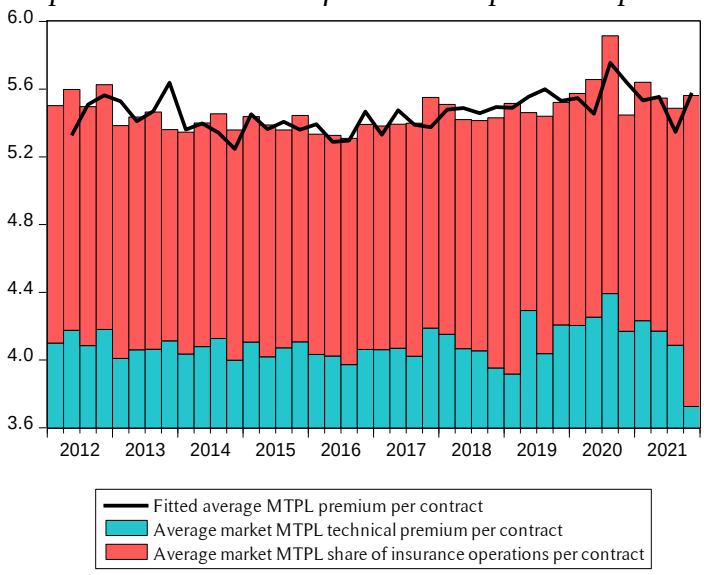


(Source: Own calculations)

On average, technical premiums share in total gross written premium (MTPL) wages between 75 and 70% per contract, with the rest accounting to the share of costs for insurance operations. A notable increase in the share of insurance operations (while the average MTPL GWP changed

inconsiderably) is found in the last quarter of 2021. The continuous proportions may be under serious impact in a setting of a liberalized market. In an event of a higher competitiveness, market premiums are expected to decrease. However, risk cannot be artificially de-valued, so technical premiums should not experience larger changes. As a result, insurance companies would have to dramatically lower the cost of insurance operations, optimizing business complexity and lowering agent provisions. Moreover, a potential operational risk may rise for certain companies with undiversified insurance portfolios. The choice is clear – either lower premiums to remain competitive and risk larger and more frequent claims, risking insolvency, or lose market positioning. We believe that with the introduction of a liberalized market some preexisting foundations may be severed and even though a 'market clearance' is healthy it may prove to be distortion inhibitor without a proper foundation. Appropriate risk valuation though big data analytics and actuarial models is necessary as well as a responsible and timed decisions made by the national supervisors and regulators. The study, however, faces certain limitations. Because it is carried out within a government-regulated system of mandatory insurance the proposed model should not be taken without corrections in a liberalized setting. The correlations between these factors may be disrupted by a conceivable future liberalization since insurance firms' unfettered pricing setting would be primarily influenced by a new approach to risk assessment and corporate strategy. Macroeconomic factors should also have a significant impact on the whole model because they are known to have an impact on business cycles, pricing (particularly fossil fuel costs, which are closely tied to the frequency of driving automobiles), and the disposable income of economic agents.

Figure 8: Fitted values of average MTPL insurance premium per contract and average MTPL technical premium and share of insurance operations per contract.



(Source: Own calculations)

5. CONCLUSION

Focusing on the dominant insurance class in North Macedonia is of key importance for future unfolding trends. The study contributes to the global empirical literature, studying the case of an underdeveloped Western Balkan insurance market. The results of the econometric research proved that the microeconomic factors significantly influence MTPL premium in the Macedonian insurance market. The frequency of claims per contract, one-period delayed MTPL premium per contract (which reflects both the strategy of the insurance business and how the

customer perceives their activities), and MTPL concentration of the market all show favorable effects. One period lagged claims per contract (to account for both the insurance company's and the client's next period decisions) and the market concentration of MTPL claims are shown to have a negative impact on the overall GWP share of MTPL insurance for each firm. Such elements, as well as the general market policies of regulators and supervisors, should be considered for future commercial actions. Specific attention by the ISA should be paid on the settlement of claims since the occurrence of a claim plays a significant role in determining intermarket customer fluctuations between companies. Liberalizing the MTPL insurance market in North Macedonia should be made with caution, as the share of insurance operations in premiums remain substantially high. Greater competition would significantly reduce premiums, meaning that insurance companies would have to optimize the share of insurance operations in the gross premiums paid by customers. Three out of eleven insurance companies have shares of MTPL insurance in their total portfolio above 70%, making them highly dependent on the present regulated price. Market liberalization will consequently reduce their GWP substantially and put significant amount of pressure in reduce the operational costs (predominantly agent and brokerage provisions). In an instance, the most severe cases of MTPL market liberalization often mentioned are Greece, Bulgaria, and Romania which experienced significant market disruptions (such as large numbers of insurance companies going bankrupt or being subject to excessive mergers or acquisitions) due to extremely low premiums and the lack of insurance discipline. On contrary, positive cases in Western European economies, Austria, Hungary, and Slovenia resulted in sustainable competition, better risk selection and premium differentiation among clients. Besides determining the right moment for full liberalization of the market, the national supervisor should consider the acquisition of more precise and big data, which might lay the groundwork for a better MTPL insurance risk assessment. Therefore, sound policies should be introduced by the national regulators, having in mind the broad public interest.

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