"Forecasting of principal directions of Ukrainian insurance market development based on German insurance market indices"

| AUTHORS | Olha Kozmenko
Olha Merenkova
Anton Boyko
Hanna Kravchuk |

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
0	0	0

Olha Kozmenko (Ukraine), Olha Merenkova (Ukraine), Anton Boyko (Ukraine), Hanna Kravchuk (Ukraine)

Forecasting of principal directions of Ukrainian insurance market development based on German insurance market indices

Abstract

The basic aspects of German and Ukrainian insurance markets development are addressed in this paper. Also, their interrelationships are considered based on the forecasting of most relevant descriptions of insurance activity given the time lag. To this end, correlative-regressive analysis is employed. This approach makes it possible to predict the basic aspects of domestic insurance markets activity directions.

Keywords: total premiums, premiums in GDP, premiums per capita, "life" premiums, "non-life" premiums.

Introduction

The forecasting of the basic directions of Ukrainian insurance market development is a necessary condition of subsequent development strategies organization and adjustment of state authority control for insurance activity. In addition to the existing methods of forecasting, such as correlative-regressive analysis, the use of time lag in determining the indicators of insurance market performance is appropriate.

The purpose of the present research is to determine the subsequent directions of Ukrainian insurance market development based on both qualitative and quantitative indices of German insurance market with the focus on time lag establishment.

In the existing literature little attention is devoted to the basic descriptions of domestic insurance activity based on the best practices and progress trends of world countries' insurance markets.

On the basis of publications analysis it has been found that the determining progress trends of the nation's economy takes place on the basis of standard comparison with the leading country taking into account the time lag of basic financial activity indicators. The leading countries experience in the area of insurance as well as insurance market research and its regulation are reflected in Soyoung (1999) [7] and Gutko (2005) [1].

1. Basic results of the research

At the present time, the development of the national insurance market is influenced by global processes in the international economy which stipulates interrelationship of financial markets of different countries. For example, the development of insurance markets of Eastern European countries such as Ukraine for the most part imitates more developed countries such as Germany. This tendency allows to set correlation of insurance activity in countries with different levels of insurance market development and to define basic aspects of less developed insurance markets (Soyoung, 1999).

One of the methods of establishing the basic indicators of insurance market performance is correlative-regressive analysis. It allows to define statistical and correlation dependences among variables (basic descriptions) in the insurance activity.

Using the correlative-regressive analysis makes it possible to foresee the factors of effective development. In this paper we intend to determine progress trends of Ukrainian insurance market using the case of German insurance market indices as a benchmark.

The analysis of German insurance market (see Figures 1-4) reveals that during 2001-2008 insurance premiums took place, and premiums per capita increased by 25%. Accordingly, the total premiums increased from 136124 million euros in 2001 to 170444 million euros in 2008 and premiums per capita increased from 1665 euros in 2001 to 2073 euros in 2008.
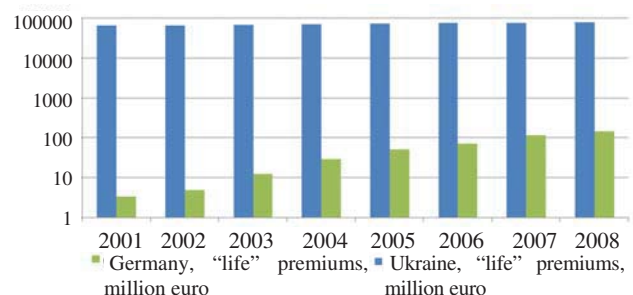
Fig. 1. "Life" insurance premiums in Germany and Ukraine

The growing tendency was seen both for "life" and "non-life" premiums. It was exhibited by these indices growth in 2008 as compared to 2001. As to "life" premiums, they grew 1,24 times; "non-life" premiums grew 1,26 times. The specific gravity of total insurance premiums during the period under study remained

unchanged. Total insurance premiums in GDP during 2001-2005 have increased by 0,60% and from 2005 on, this index oscillation was noticed that was conditioned by the changes in Germany's GDP. A descending tendency was observed only in the context of insurance companies' amount cut. So, in 2008 the insurance companies amount decreased by 9% as compared to 2002.
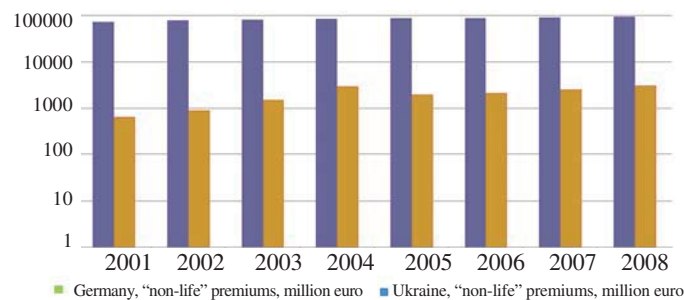

Fig. 2. "Non-life" insurance premiums in Germany and Ukraine

The analysis of German insurance market shown above allows foreseeing the basic progress trends of Ukrainian insurance market. If one considers and generalizes the German and Ukrainian basic insurance performance indicators changes, it is possible to define both a general growing tendency in relation to indices such as total premiums (TP, million Euros), premiums in GDP (PGDP, %), premiums per capita (PC, Euro), "life" premiums (LP, million Euros), and "non-life" premiums (NP, million Euros) (see Figures 1, 2, 3), and a descending tendency with regard to insurance companies amount (C) for Germany (see Figure 4).
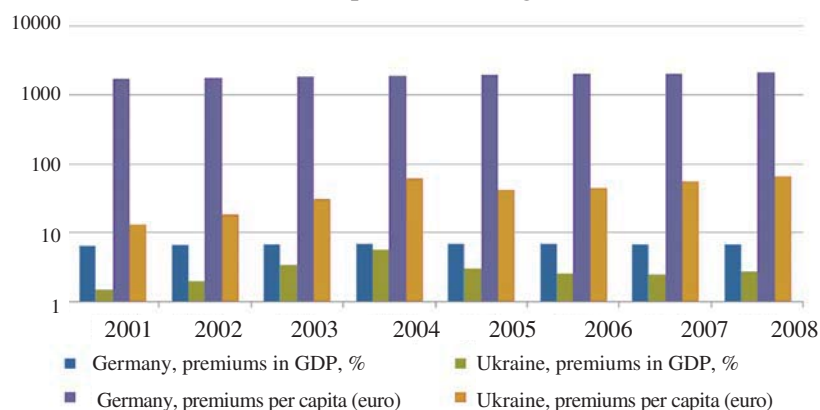

Fig. 3. Premiums in GDP and premiums per capita in the insurance markets of Germany and Ukraine

It is suggested to conduct a research on basic descriptions of insurance activities in world countries as well as to determine their mutual influence taking the subsequent progress trends of the insurance market into account. For this purpose, correlative-regressive analysis was employed. Optimum value of empirical correlation relation is not less than 0,80.

Based on the expected indices (see Table 1), dense reverse communication of insurance performance indicators such as companies' amount is considered (Ukraine/Germany correlation, empirical correlation accounts for -0,934). This testifies there are mutual influence and absorption with regard to volumes of insurance companies which operate in Germany. The Ukrainian insurance market is small capitalized with a great number of captive and narrowly oriented insurance companies (see Figure 4).
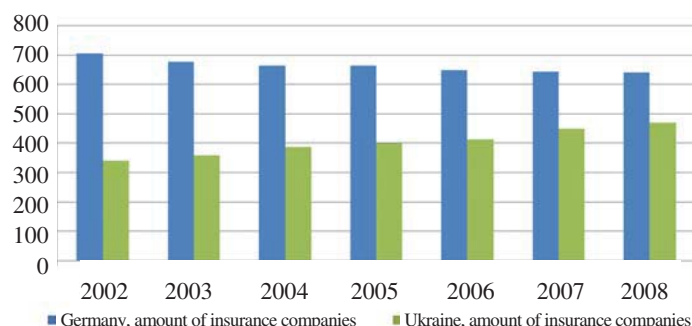

Fig. 4. Amount of insurance companies in Germany and Ukraine

Close correlation is not shown among the current total premiums in GDP in Germany and Ukraine (the empirical correlation is 0,553). In addition, it should be noted that after total premiums, total premiums per capita, "life" premiums and "non- life"

premiums there are sufficient direct correlation (the coefficients of correlation are 0,870, 0,878, 0,946 and 0,899) and negative correlation (-0,934) between the insurance companies amount in Ukraine and Germany.

Table 1. Empirical correlation of insurance markets in Germany and Ukraine, 2003-2008

Period	2008/2008	2008/2007	2008/2006	2008/2005	2008/2004	2008/2003
Total premiums (million euro)						
Ukraine/Germany	0,870	0,794	0,612	0,306	0,972	0,999
Total premiums in GDP (%)						
Ukraine/Germany	0,553	0,145	-0,647	-0,812	-0,721	0,610
Total premiums per capita (euro)						
Ukraine/Germany	0,878	0,807	0,646	0,380	0,975	0,999
Insurance companies amount (quantity)						
Ukraine/Germany	-0,934	-0,949	-0,857	-0,872	-0,999	-1,000
"Life" premiums (million euro)						
Ukraine/Germany	0,946	0,964	0,996	0,966	0,984	0,975
"Non-life" premiums (million euro)						
Ukraine/Germany	0,899	0,773	0,527	0,155	0,978	0,999

Note: * indicates the most correlation coefficient.

In addition, given the time lag, not only variations (one year is taken) are kept, but also, the crowd conditions of correlation based on the German and Ukrainian insurance markets basic descriptions are risen (see Table 2):

♦ Total insurance premiums in the Ukraine/Germany correlation (empirical correlation value equals 0,999 with the lag in 5 periods). According to this index, there is a certain functional dependence (formula 1) that characterizes Ukrainian insurance market total premiums. Hence, in 2008 Ukrainian total insurance premiums will come up to the German insurance total premiums in t-5 period:

$$TP^U(t) = -8730,5 + 0,080TP^G(t\text{ - }5), \qquad (1)$$

where $TP^U(t)$ is total insurance premiums in period t, (million euros) in Ukraine; $TP^G(t\text{-}5)$ is total insurance premiums in period t-5 (million euros) in Germany.

♦ Empirical correlation relation equals 0,999 with the lag in 5 periods according to total insurance premiums per capita in the Ukraine/Germany correlation. On the functional dependence basis, it is possible to assert (formula 2) that in 2008 Ukrainian total premiums per capita will be in line with the level of Germany total premiums per capita in t-5 period:

$$PC^U(t) = -208,0 + 0,154PC^G(t\text{ - }5), \qquad (2)$$

where $PC^U(t)$ is total premiums per capita (euro) in t period, in Ukraine; $PC^G(t\text{-}5)$ is total premiums per capita (euro) in t-5 period, in Germany.

♦ "Life" insurance premiums in the Ukraine/Germany correlation (empirical correlation amounts to 0,996 with lag in the 2nd period). According to this index, there is a certain functional dependence (formula 3), that characterizes Ukrainian insurance market depending on German insurance market "life" premiums. So, in 2008 Ukrainian "life" premiums will come up to German "life" premiums in t-2 period:

$$LP^U(t) = -54688,7 + 0,900LP^G(t\text{ - }2), \qquad (3)$$

where $LP^U(t)$ is "life" premiums (million euros) in t period in Ukraine; $LP^G(t\text{-}2)$ is "life" premiums (million euros) in t-2 period in Germany.

According to the following German and Ukrainian insurance markets descriptions, the variation of time lag results in close correlation establishment (see Table 2):

♦ Ukrainian total premiums in GDP will come up to German total premiums in GDP in t-3 period which is confirmed by empirical correlation value equal to -0,812 with lag in 3 periods:

$$PGDP^U(t) = 33,3 - 4,433 \cdot PGDP^G(t\text{ - }3), \qquad (4)$$

where $PGDP^U(t)$ is total premiums in GDP (%) in t period in Ukraine; $PGDP^G(t\text{-}3)$ is total premiums in GDP (%) in t-3 period in Germany.

♦ Insurance companies amount in the Ukraine/Germany correlation (the empirical correlation value makes -0,999 with lag in 4 periods). According to this index, there is a certain

functional dependence (formula 5) that characterizes Ukrainian insurance market depending on German insurance market companies' amount. So, in 2008 Ukrainian insurance companies amount will come up to German insurance companies amount in t-4 period:

$$C^U(t) = 1403,0 - 1,411 C^G(t\text{-}4), \qquad (5)$$

where $C^U(t)$ is insurance companies amount (quantity) in t period in Ukraine; $C^G(t\text{-}4)$ is insurance companies amount (quantity) in $t\text{-}4$ period in Germany.

♦ "Non-life" insurance premiums. According to this index, there is certain functional dependence

(formula 6), that characterizes Ukrainian insurance market depending on the "non-life" premiums of German insurance market. So, in 2008 "non-life" premiums in Ukraine will reach the level of "non-life" premiums of German market in t-5 period (the value of empirical correlation relation value makes 0,999 with lag in 5 periods):

$$NP^U(t) = \text{-}6510,6 + 0,118 NP^G(t\text{-}5), \qquad (6)$$

where $NP^U(t)$ is "non-life" premiums (million euros) in t period in Ukraine; $NP^G(t\text{-}5)$ is "non-life" premiums (million euros) in $t\text{-}5$ period in Germany.

Table 2. Variations of time lag according to the basic insurance performance indicators of Germany and Ukraine

Countries	TP	PGDP	PC	C	LP	NP
Germany	TP(t)	PGDP(t)	PC(t)	C(t)	LP(t)	NP(t)
Ukraine	TP(t+5)	-PGDP(t+3)	PC(t+5)	-C(t+4)	LP(t+2)	NP(t+5)

Within the framework of the analysis of German and Ukrainian insurance markets' mutual progress trends, it is also expedient to consider German and Ukrainian basic insurance performance indicators correlation and determine, in the context of Ukraine, the close politico-economic communications between the two countries as well as the inheritance by Ukraine of the eurointegration process passed by Germany. Ukrainian total insurance premiums value in 2008 corresponds to this index value in Germany in 2003, which is testified by correlation coefficient equal to 0,999. As to the total premiums in GDP, close indirect correlation between Germany and Ukraine is set at time lag displacement of three periods, that is total premiums in GDP in Ukraine in 2008 correspond to the value of premiums in GDP in Germany in 2005. According to the total premiums per capita index, empirical correlation

relation at time lag variation of 5 periods is set at the level of 0,999 that confirms sufficiently close correlation between the countries analyzed. The size of "life" premiums in Ukraine in 2008 is in line with the level of 2006 in Germany, and "non-life" premiums in Ukraine in 2008 correspond to the "non-life" premiums in Germany in 2003, i.e. empirical correlation relation for "life" premiums makes 0,996, and for the "non-life" premiums – 0,999.

Conclusion

Based on the statistical research of German insurance market development trends and using the correlative-regressive analysis, taking time lag variation into account, we determined the relationship between the basic Ukrainian insurance activity indicators. The approach offered enables to predict basic aspects of further activity directions of domestic insurance market participants.

References

1. Гутко, Л.М. Досвід провідних країн світу у галузі страхування [Текст] / Л.М. Гутко // Економіка. Фінанси. Право. – 2005. – №11. – С. 22-25.
2. Інформація про стан і розвиток страхового ринку України за 2003 рік [Електронний ресурс]. – Режим доступу: http://www.dfp.gov.ua/files/Fin_markets_2003.pdf
3. Інформація про стан і розвиток страхового ринку України за 12 місяців 2005 року [Електронний ресурс]. – Режим доступу: http://www.dfp.gov.ua/files/12m2005.pdf
4. Підсумки діяльності страхових компаній за 2008 рік [Електронний ресурс]. – Режим доступу: http://www.dfp.gov.ua/fileadmin/downloads/pidsumky_SK.pdf
5. CEA Statistics № 36 European Insurance in Figures October 2008. – Режим доступу: http://www.cea.eu.
6. CEA Statistics № 37 European Insurance in Figures October 2008. – Режим доступу: http://www.cea.eu.
7. Soyoung K. Do monetary policy shocks matter in G-7 countries? Using common identifying assumptions about monetary policy across countries [Text] / K. Soyoung // Journal of international economics . – 1999. – №2. – 387 – 412 p.