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# DETERMINANTS OF PROFITABILITY OF NON-LIFE INSURANCE[1] COMPANIES IN POLAND DURING INTEGRATION WITH THE EUROPEAN FINANCIAL SYSTEM

**Sylwester Kozak**

*Department of European Policy, Public Finances and Marketing, Warsaw University of Life Sciences – SGGW, Poland*

## ABSTRACT

The integration process of the Polish financial system with the European markets significantly affected profitability of the non-life insurance sector in Poland. During this period, the level of invested capital and number of companies controlled by foreign investors has increased, as well as the share of premiums collected by these companies in the total premiums of the sector. The period of financial integration was characterized by a significant improvement of financial performance of the sector, as well as profitability of its insurance and investment activities. To check determinants of the profitability tests, were conducted on a panel of 25 non-life insurance companies for the period of 2002–2009. For estimation a regression model with elimination of the impact of heteroscedasticity and autocorrelation in the analyzed sample was used. The results indicate that the reduction in the share of motor insurance in the portfolio, with simultaneous increase of other types of insurance, has a positive impact on profitability and cost-efficiency of insurance companies. However, offering too broad spectrum of classes of insurance negatively impacts its profitability and cost efficiency. Companies improve profitability and cost efficiency with an increase of their gross premiums and decrease of total operating expenses. Additionally increases of the GDP growth and the market share of foreign owned companies positively impact profitability of non-life insurance companies during the integration period.

**Key words:** non-life insurance, profitability of companies, determinants of profitability, European integration

## INTRODUCTION

Integration of the Polish financial system with the European markets has contributed to the increased interest of foreign investors in investing in the Polish insurance sector, including non-life insurance. Changes in the ownership structure of the sector were accompanied by restructuring of the insurance portfolio, mainly with reduction of the share of motor insurance, and an increase of the share of financial insurance. In part such trend was due to the rising competition in the sector, coming not only from domestic, but also from companies headquartered in other member states of the single financial market, i.e. the European Economic Area (EEA)[2]. Another reason for portfolio

[1] As the non-life insurance it is understood classes of insurance indicated in *the Section II - Other personal insurance and property insurance* of the act of 22 May 2003 on insurance activity (DZ.U. No. 124, item 1151).
[2] Starting from January 1, 1994 in countries, members of the European Economic Area (EU member states and Iceland, Lichtenstein and Norway) effects the single passport regulation and freedom to conduct financial activity.

restructuring was the growing demand for protection against financial risk coming from commercial banks lending operations. During this time foreign investors have increased their capital commitment and improved market position of companies controlled by them. In result, the insurance market, which for many years was dominated by a single public entity, i.e. Powszechny Zaklad Ubezpieczen SA (PZU), became shifted toward a group of medium-sized companies with foreign capital, which covered majority of the market. Reduction of the market concentration helped to improve competition, which was manifested inter alia by the entrance on the market by new companies, both with domestic and foreign ownership. Integration of the insurance sector with the European markets was also realized by an influx of new capital investment. At that time, the share of foreign capital in the sector subscribed capital has increased, as well as the share of collected by foreign owned companies in the total premiums of the non-life insurance sector.

The idea of integration of Polish financial institutions, including insurance, with the European financial system is based on a freedom of the investment capital transfer within the EEA and a single passport rule. With foreign capital, new technologies and managerial systems were transferred, what gave domestic companies opportunity to improve profitability and cost efficiency. Literature analyzing integration processes in the insurance sector provides similar conclusions. It indicates that integration could contribute to higher profitability and efficiency of insurance companies, and also to the higher competition within the sector. Additionally, for new member states from the Central and Eastern Europe integration provides an opportunity for a further development of the sector[3].

Analysis of determinants of the insurance companies' profitability in new member states of the EU, according to the author's knowledge, has not been so far addressed in the economic literature. This paper is aimed to fill in this gap and to shed additional light on issues of financial integration of insurance sector in Poland and effects of such process for the sector performance. The analysis is focused to recognize main factors which influence profitability and additionally cost efficiency of non-life insurance companies in a period of the financial integration with the European markets. In the study the financial data of the Polish non-life insurance companies are utilized. The research covers the years 2002–2009, it means the period of preparation and real integration with the EU markets. Data come from the annual reports on the insurance market in Poland prepared by the Polish Financial Supervision Authority (PFSA) and the Polish Chamber of Insurance (PIU).

The rest of the article is structured as follows. The first part reviews the literature relating to financial integration in the insurance sector, the second presents the characteristics and financial performance of non-life insurance sector in Poland during the integration period. The third part presents the data and methodology of the research and discusses the results. The analysis is summarized in the conclusions.

## FINCIAL INTEGRATION AND INSURANCE SECTOR PERFORMANCE – LITERATURE REVIEW

The prospect of accession of a new member state financial system to the single European financial market usually results with the influx of new foreign capital accompanied with a transfer of new technologies and know-how. The process of transfer of capital is usually realized through: take-over or green-field strategy. The take-over strategy relates to adding capital to existing entities controlled at that moment by domestic or foreign capital. The green-field strategy relates to the process of opening new businesses[4]. There are very few studies on the insurance sector integration, although these existing ones emphasize rather positive results of the integration process. Cummins and Weiss [6] examined the issue of integration of the European insurance companies within the single European financial system in the first half of the 1990s. They noticed the integration significantly impacted performance and profitability of domestic and international insurance companies. They state that the regulation providing freedom of capital movement and the single passport rule resulted in higher efficiency of the insurance companies. They emphasize that such trend is very important for countries which during financial integration have opportunities in attracting new capital for their future development.

In turn, Bikker and Leuvensteijn [4] analyzing financial results of life insurance operating in the Netherlands in the years 1995–2003, point out that the process of financial integration within the EU has contributed to the increase of competition, which was reflected, inter alia, by the market entry of new small insurance businesses. Ennsfellner, Lewis and Anderson [7] have come to the similar conclusions based on the investigation of life and property insurance companies in Austria in the period of financial integration in the EU. They state that integration positively affected efficiency and competitiveness of Austrian companies and could have similar effects in case of new member states from the Central and Eastern Europe.

The first assessment of efficiency and competitiveness of the Polish insurance sector carried out by Pawlowska and Kozak [10] indicate that full financial integration of the Polish insurance sector at the time of Poland's entry to the euro zone should not introduce risk of weakening its financial performance since the level of competition in the

[3] Detailed literature review is present in the next section.
[4] Both of strategies took place in the insurance sector in Poland during the financial integration period

sector is comparable to the other EU countries. Kozak [9] analyzing the processes of consolidation in the sector of non-life insurance in the period 2002–2007 states that insurance companies have decreased their efficiency, what may be a result of the increase of operating costs recorded during this period.

## NON-LIFE INSURANCE SECTOR IN POLAND

During the period of 2002–2009 the Polish non-life insurance sector was significantly reshaped. The process was largely related to the expected and next real integration of Polish financial institutions with the European markets. In case of non-life insurance sector, as the largest integration impact could be considered influx of foreign capital and transfer of new technologies and know-how, which resulted, inter alia, restructure of the product distribution, higher diversification of insurance portfolio, reduction of operating costs. Operations of the non-life insurance sector increased, resulting in nearly doubling the value of collected premiums (Fig. 1). However, despite the growth of the insurance penetration rate[5], which measures the importance of the insurance industry in national economy, as of 2009, Poland is still the country with the one of the lowest coverage of the non-life risks in Europe. On the low level of development of the non-life insurance sector in Poland indicates also low level of density coefficient[6], which captures the scale of insurance coverage for one citizen and indicates the level of the sector development. In 2009, the statistical Pole dedicates for the purchase of insurance policies only 128 euros, comparing to 147 euros in Hungary and 298 euros in the Czech Republic. The comparison of these coefficients for the Western European countries indicates that Poland is still a country, which could benefit from the financial integration within the European Union.

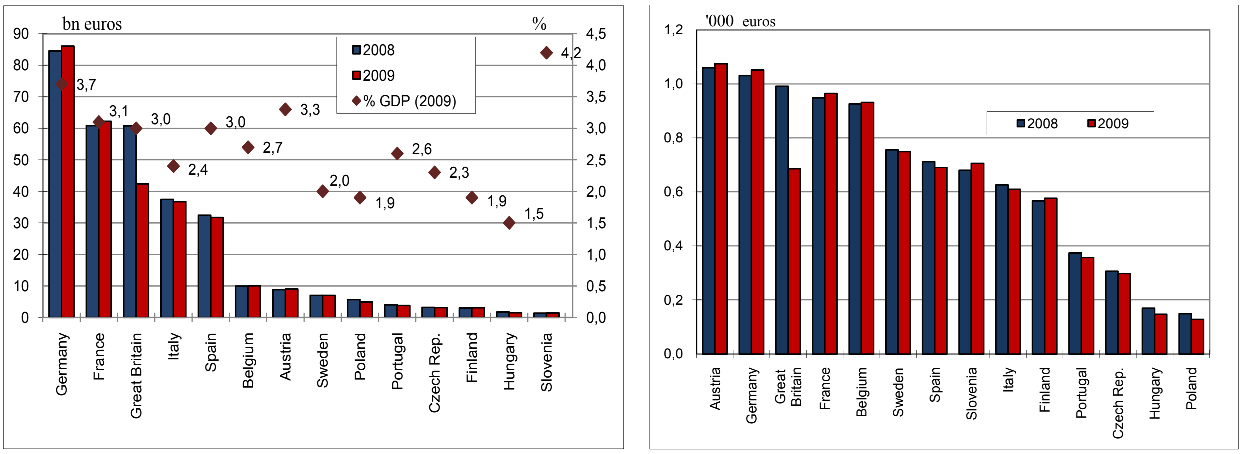


Fig. 1. Gross written premiums of the non-life insurance sector: in relation to GDP (left panel) and *per capita* (right panel)

Source: European Insurance and Reinsurance Federation – CEA, Swiss Re.

In terms of foreign capital, the period of the financial integration resulted in a significant increase of foreign investors' activities. This trend was particularly noticed after Poland's accession to the EU, when the share of foreign capital in total subscribed capital of the sector has increased to 82% in 2009, from 72% in 2004 (Fig. 2). Higher foreign investors' involvement revealed in the increased capitalization of existing companies and entries of green-field businesses on the market. Additionally, foreign owned companies were gradually increasing the share of the non-life insurance market up to 56% in 2009, ceasing a dominance of the state-owned PZU, which for many years covered more than half of the market.

Acquisitions, liquidations and entry of new plants have contributed to changes in the number of non-life insurance companies and the market concentration (Fig. 2). Majority of operating in this period firms had a form of joint stock companies (27 as of 2009). In 2009 they covered around 97% of the market, in terms of the gross written premiums. The rest were mutual insurance societies, and they have rather limited impact on the sector's performance. Changes in the number of establishments were reflected in the level of sector concentration. The rates of participation of the five and three largest companies in the sector have significantly declined between 2002 and 2009 (Fig. 2). Lower concentration resulted, inter alia, from extensive development of medium-sized businesses, mostly controlled by foreign investors. The market restructure was also associated with the weakening position of the largest Polish insurer PZU. Its market share fell to 38% in 2009 from 56% in 2002. It should be noted that despite such high market concentration, several new insurance companies entered into the market, both of domestic and foreign capital, as well as having a form of a joint stock company and mutual insurance society. It evidences low market entry barriers in the Polish insurance sector and market conditions, which enable the maintenance of an adequate level of competition.

[5] Insurance penetration ratio is measured as the relation of gross written premiums collected by insurance sector to the gross domestic product.

[6] Insurance density ratio is the gross written premiums related to one citizen.

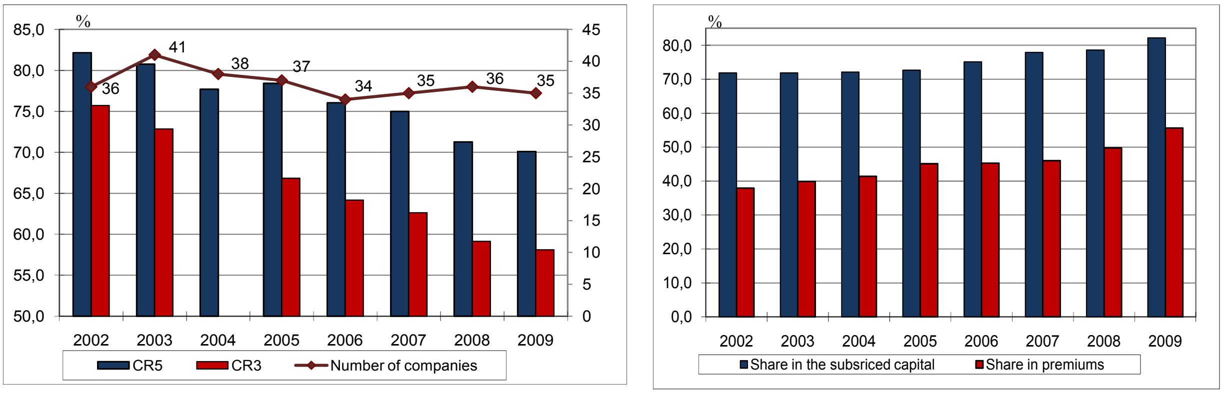


Fig. 2. Market structure (left panel) and ownership structure of the non-life insurance sector in Poland for the period of 2002–2009

Source: own calculations based on PIU data.

During the financial integration period, non-life insurance companies modified methods of the insurance products distribution. Still, the majority of policies are sold by private insurance agents. The share of this form of distribution remained relatively stable and slightly exceeding 40%. However the most characteristic feature of restructuring of distributional channels is a significant drop in the value of policies sold through own facilities of insurance companies. Insurance companies outsourced sales operations to insurance brokers and banks. The share of sales through the bank network rose to 6% in 2009 from 0.04% in 2002 and was related, among others, to the development of European financial conglomerates operating in Poland and the spread of bancassurance, i.e. simultaneous sale of banking and insurance at the common facilities. In recent years, due to the increasing access to the Internet, direct sales through this distributional channel have increased, however the scale of it is very minimal in the sector. (More information on the insurance sector transformation in the CEE countries see: [1,2,3,11,12]).

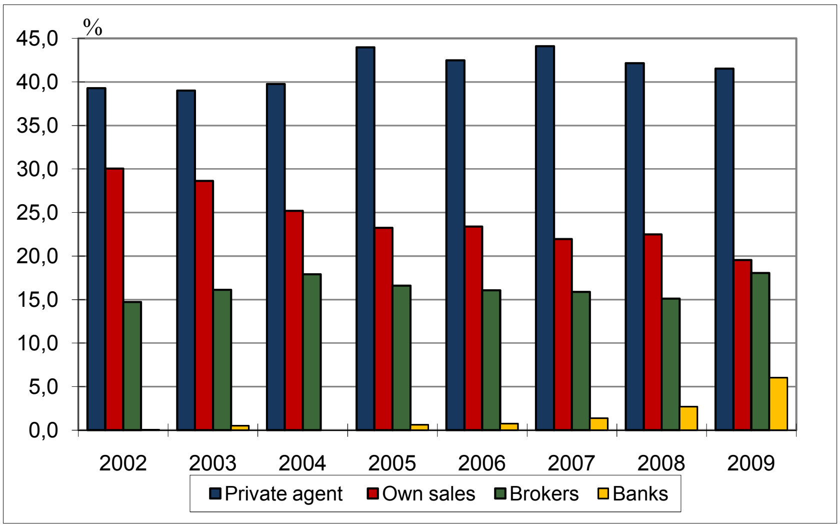


Fig. 3. Channels of non-life insurance distribution in Poland for the period of 2002–2009

Source: own calculations based on PIU data.

Another feature of the non-life insurance sector functioning in Poland, which could have an impact on the companies` profitability, is the process of restructuring of the insurance portfolio. Although the class of motor insurance is still dominant in companies` portfolio, however its position is noticeably weakening. At the same time, the share of products of financial risk protection has increased and their meaning for the companies' performance has become significant. This could be related with higher bank lending activities, especially financing the real estate market and international trade operations. In these cases banks commonly accept insurance products as a form of loan collateral.

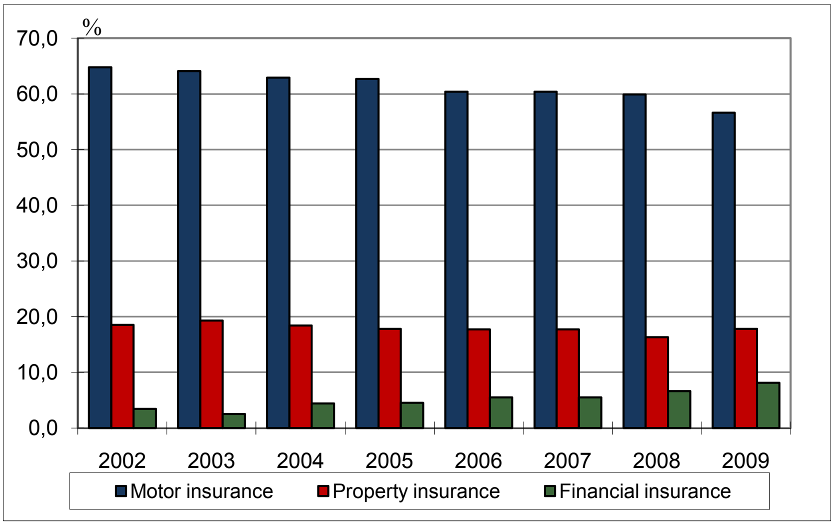


Fig. 4. Product structure of the non-life insurance sector in Poland for the period of 2002–2009

Source: own calculations based on PIU data.

Condition of the domestic economy is another factor which could influence the way of operation and ability to generate profits of non-life insurance companies during their integration with the European markets. Preparations for the EU accession were carried out in the macroeconomic situation characterized by a low dynamics of GDP growth of 1.3% in 2002, while in the years 2004–2008, i.e. just after Poland's accession into the EU, domestic economy grew at a rapid pace, with the average annual GDP growth of around 5.4%. Again, in 2009, the global financial crisis resulted in the economic slow down with the 1.8% annual GDP growth. Changes in the macroeconomic conditions could directly impact performance of the non-life insurance sector as the values of the profits from insurance operations (technical result) were negative, both in 2002 and in 2009, while positive, and at high values, in the years 2006–2007.

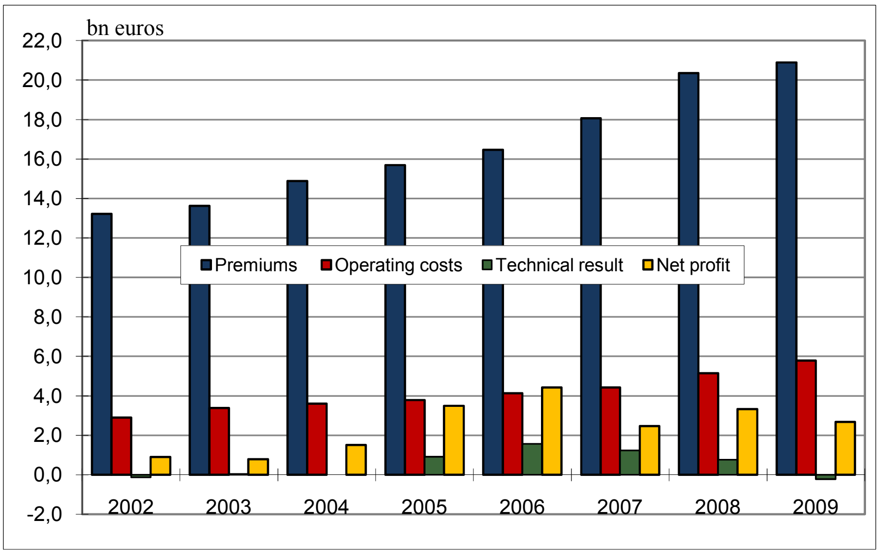


Fig. 5. Financial performance of the non-life insurance sector in Poland for the period of 2002–2009

Source: own calculations based on PIU data.

## DATA AND METODOLOGY

To examine determinants of changes in the profitability of the non-life insurance sector financial data of insurance companies published by the Polish Financial Supervision Authority and the Polish Chamber of Insurance was used. Data on the macroeconomic conditions of the Polish economy was taken from the database of the Central Statistical Office (GUS). The study was based on the panel of 25 non-life insurance companies operating in Poland in the years 2002–2009. For the estimation the regression method with elimination of heteroscedasticity and autocorrelation was applied[7], and for computation the STATA software.

[7] For more on cross-sectional data analyses see: [Hsiao 1986].

The regression model for panel data has a form:

$$Y_{it} = F\ \{X_{it}, Z_t\} + \varepsilon_{it}$$

where $Y_{it}$ represents profitability or efficiency of a company i in a year t, $X_{it}$ represents a vector of variables characterizing a company i in a year t, and $Z_t$ denotes a vector of variables characterizing the non-life insurance sector and macroeconomic conditions in a year t. $\varepsilon_{it}$ states for the random component. Definitions of variables are given in Table 1.

Table 1. Definitions of dependent and independent variables of regression equation

| | Variable | Definition |
|---|---|---|
| PROFTCH | Profitability ratio of technical activity | (technical result / gross written premiums ) * 100% |
| PROFINV | Profitability ratio of investment activity | (investment income / value of balance-sheet investments) * 100% |
| PROFSALES | Sales profitability ratio | (net financial result / gross written premiums) * 100% |
| EFFCOST | Net-operating expenses ratio | (net-operating expenses / gross written premiums) * 100% |
| GWP | Gross written premiums | natural logarithm of GWP |
| INVEST | Value of balance-sheet investments | natural logarithm of investments |
| OPERCOST | Net-operating expenses | natural logarithm of (acquisition costs + administrative expenses) |
| MOTOR | | (GWP in motor insurance / total GWP of the company) * 100% |
| FOREIGN | Market share of foreign controlled companies | (GWP of foreign controlled companies / GWP of the non-life insurance sector) * 100% |
| DIVERSITY | Number of insurance classes carried on the company | |
| SECTOR_GWP | Total GPW of the non-life insurance sector | |
| FIRM_SALES | Share of sales through the own company's network | (sales trough the companies` networks / sector sales ) * 100% |
| GDPGRTHL | Growth of gross domestic product lagged for one year | GDP growth for the year (t-1) |

Source: own calculations.

Changeability of the variables is presented in the Table 2. Analysis of the data indicates that the average profitability of non-life insurance companies was rather low. However, it mainly refers to the profitability ratio of technical activity, which in most cases had negative values, what is associated with the negative technical results generated by the insurance companies during economic slow down at the period of preparation for the financial integration and the period of global financial crisis.

Table 2. Descriptive statistics of the regression equation variables

| Variable | Mean | Median | Min | Max | Std. Dev |
|---|---|---|---|---|---|
| PROFTCH | -0.41615 | -0.00921 | -33.70435 | 0.46019 | 3.01942 |
| PROFINV | 0.05825 | 0.05406 | 0.01384 | 0.16768 | 0.02438 |
| PROFSALES | -0.22414 | 0.03005 | -39.10870 | 7.04237 | 2.98047 |
| EFFCOST | 0.67848 | 0.29401 | 0.10225 | 23.88136 | 2.44239 |
| GWP | 11.87486 | 12.01182 | 4.77069 | 15.92181 | 1.92191 |
| INVEST | 12.23486 | 12.06635 | 8.45532 | 17.22958 | 1.72952 |
| OPERCOST | 10.80495 | 10.68484 | 6.64769 | 14.64595 | 1.65594 |
| MOTOR | 38.77504 | 44.37618 | 0.00052 | 96.41882 | 32.44741 |
| DIVERSITY | 11.55 | 12 | 1 | 18 | 4.87198 |
| SECTOR_GWP | 1.66e+07 | 1.61e+07 | 1.32e+07 | 2.09e+07 | 2718349 |
| FOREIGN | 45.28023 | 44.39613 | 38.30388 | 55.63402 | 5.44883 |
| FIRM_SALES | 24.305 | 23.309 | 19.54849 | 30.02818 | 3.28231 |
| GDPGRTHL | 104.125 | 104.3875 | 101 | 106.825 | 1.97730 |

Source: own calculations.

For robustness of results the regression estimations were conducted for four measures of profitability and efficiency. In the first case, as a dependent variable *the profitability ratio of technical activity* was applied. The ratio assesses effectiveness of the core insurance activities of the insurance company. It measures a result from the core insurance operations of the company in the relation to the collected gross premiums. The second measure is *the profitability ratio of investment activity,* which assesses effectiveness of the investment activities of the company's investment team as it compares the effects of investments to the value of the investment portfolio. *The sales profitability ratio* checks the total net profitability of the company in the relation to gross premiums collected by the company. For assessment of cost efficiency of the insurance company's operations *the net-operating expenses ratio* was applied. The measure indicates how much administrative and acquisition costs the company spends to collect one unit currency (i.e. 1€) of gross premiums.

Performance of an individual company is characterized by the following variables: the share of motor insurance in company's portfolio, and the number of insurance classes offered by the company. The non-life insurance sector is represented by the following variables: the total gross written premiums, the market share of foreign owned companies (counted in gross premiums), and the share of sales through the own companies` network in the total sector's sales. Conditions of the domestic economy are expressed by the GDP growth lagged for one year due to the rule that changes taking place in the economy affect the financial sector in a minimum one year delay.

Table 3. Regression coefficients

| | PROFTCH | PROFINV | PROFSALES | EFFCOST |
|---|---|---|---|---|
| GWP | 3.39839***<br>(7.73) | -0.00145<br>(-0.95) | 1.94114***<br>(2.87) | -3.14408***<br>(-9.83) |
| INVEST | -1.30211***<br>(-4.95) | 0.00911***<br>(5.15) | -0.20072<br>(-0.52) | 1.48966***<br>(5.61) |
| OPERCOST | -1.25618***<br>(-3.10) | -0.00306*<br>(-1.65) | -1.28108***<br>(-2.55) | 0.94924***<br>(4.29) |
| MOTOR | -0.03356***<br>(-3.23) | -0.00011**<br>(-2.08) | -0.02740**<br>(-1.92) | 0.01974***<br>(6.13) |
| DIVERSITY | -0.18399***<br>-3.29) | 0.00064<br>(1.53) | -0.04585<br>-0.62) | 0.19772***<br>5.17) |
| SECTOR_GWP | -6.57e-07*<br>(-1.77) | -3.86e-09<br>(-0.36) | -1.32e-06***<br>(-4.27) | -1.19e-07<br>(-0.50) |
| FOREIGN | 0.23963<br>(1.34) | 0.00352<br>(0.68) | 0.53081***<br>(3.61) | 0.05903<br>(0.51) |
| FIRM_SALES | 0.04234<br>(0.38) | 0.00458<br>(1.41) | 0.12745<br>(1.34) | -0.01119<br>(-0.15) |
| GDPGRTHL | 0.41850**<br>(2.10) | 0.00139<br>(0.24) | 0.73373***<br>(4.44) | -0.01549<br>(-0.12) |
| CONST | -52.36155**<br>(-2.11) | -0.35648<br>(-0.49) | -86.8873***<br>(-4.21) | 7.67648<br>(0.48) |
| $CHI^2$ STATISTICS | 87.72 | 51.30 | 48.28 | 137.80 |
| $R^2$ | 0.5969 | 0.2076 | 0.2527 | 0.7738 |
| N | 200 | 200 | 200 | 200 |

Notes: ***, **, * - level of significance, respectively, 1%, 5%, 10%; *z* statistics in brackets.
Source: own calculations using statistical program STATA.

The results of estimation (Tab. 3) indicate that:

- The value of gross premiums collected by the company, in other words the scale of its operation, significantly positively influences profitability and efficiency of the company. It could mean that the growth of medium-sized companies, mostly controlled by foreign investors, improves profitability of core insurance activities, as well as the total net profitability of the company. Additionally, the growth in gross premiums improves cost efficiency, what suggests that larger companies spend less for colleting 1 euro of premiums. Such relationships indicate that during the integration period, in operation of the non-life insurance sector in Poland effects of scale could be recognized.

- The increasing value of company's investments negatively contributes to the profitability of the core insurance activities and its cost efficiency. However, it positively impacts profitability of investment activities, what can be explained, that with a higher values of investments a company could achieve higher specialization and more advantageous conditions while purchasing financial investment instruments.
- Reduction of the level of a company's operating costs improves profitability of the company and increases its cost efficiency. As acquisition costs and administrative expenses constitute majority of company's expenses, reduction of any of these types of expenses has a significant impact on the increase of values of its technical result and net financial profit.
- The share of motor insurance in the company's insurance portfolio negatively impacts its profitability and efficiency, it means in a similar way as the level of operating costs. The analogy may come from the fact that motor insurance requires higher marketing expenses and creates higher values of compensations and gross claims paid by the company. Reduction of company's involvement in such insurance class results in lower operating expenses and has positive impact on the company's technical result and net financial profit and overall profitability.
- Too extensive range of offered classes of insurances negatively contributes to the company profitability and cost efficiency. It can be explained in such way, that involvement of the company in too broad spectrum of insurance causes the company the loss of specialization and forces it to spend high cost to fulfill all conditions required in offering even rarely sold types of insurances. In this way the company could not achieve any scale effect, and has to spend additional costs for marketing, employees training and other expenses associated with a sale of less profitable types of insurance. It can be concluded, that the observed trend to reduce motor and increase financial type insurance is advantageous for most of companies, however too broad diversification becomes disadvantageous.
- The increase of foreign ownership positively contributes to the companies` profitability, what can be explained with the growing position of foreign owned companies on the market, even at faster pace than the growth of the value of a newly invested foreign capital.
- Positive impact of macroeconomic conditions on the profitability of non-life insurance companies indicates that the good shape of the domestic economy is a source of the growth of operations of the real sector and other customers of insurance companies and creates higher demand for new insurance (i.e. property insurance and protection against financial risk). At the same time dynamically growing economy is associated with lower values of gross paid claims. All these factors contribute to the higher technical result and net financial profit of insurance companies.

## CONCLUSIONS

1. Integration of the Polish financial system with the European markets provides good opportunities for development of non-life insurance companies and improvement of their profitability and efficiency.
2. Integration caused an increase in the value of foreign capital to the non-life sector which took form of adding new capital to existing companies or starting new business. The transfer of capital was associated with a transfer of new technologies and know-how.
3. Higher involvement of foreign investors was accompanied with expansion of foreign owned companies on the non-life insurance market. The process is mirrored in the appearance of a group of medium-sized foreign owned companies, which successfully compete with the dominant state-owned company PZU and finally took majority of the market in Poland.
4. The growth of medium-sized foreign owned companies contributed to lowering concentration of the market and improving the competition conditions. Market entries of domestic and foreign owned green-field companies could be a positive sign of the competition on the non-life insurance market.
5. Growth of the scale of company's operation improves its overall profitability and efficiency. Additionally it can be associated with the positive impact of the specialization in the company's operation and avoiding too broad range of offered classes of insurance. All these may suggested that sector's development, which took place during the integration period, provides opportunity for achieving a scale effect.
6. During the period of Poland` integration with the EU higher pace of economic growth results in a stronger demand for insurance products, which increases profitability of insurers` operations.

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Sylwester Kozak
Department of European Policy,
Public Finances and Marketing,
Warsaw University of Life Sciences – SGGW
161 Nowoursynowska Str., 02-787 Warsaw, Poland
email: sylwester_kozak@sggw.pl



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