

DEVELOPMENT OF INVESTMENT ACTIVITIES OF COMMERCIAL INSURANCE COMPANIES IN SLOVAK, CZECH AND AUSTRIAN INSURANCE MARKETS IN 2004–2009

Marek Meheš¹ – Zuzana Bričová

marek.mehes@euke.sk

Abstract: The contribution deals with investments of commercial insurance companies operating in Slovak, Czech and Austrian insurance market in the period of 2004–2009. First of all, development of technical reserves volume as an important prerequisite of investing of commercial insurance companies will be characterized. After that, we evaluate financial placements and investment activities – ratio of total investments and technical reserves. We also present statistical tests by means of which we examine the existence of the relation between the volume of technical reserves and the volume of investments of commercial insurance companies.

Keywords: insurance, technical reserves, financial placements, investment activity ratio.

JEL Classification: G22

Introduction

The insurance market is an integral part of the global financial market with extensive links of investment activity of commercial insurance companies. Technical reserves create the substance for the financial placements, which is authorized by law, but also strictly regulated and controlled, and its forms and limits are stated in national decrees about creation, placement and use of technical reserves funds.

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The aim of the contribution is to evaluate the development of the financial placements of commercial insurance companies since 2004 in the Slovak, Czech and Austrian insurance market, to carry out a temporal and territorial comparison, and discover similarities or differences of investment portfolios of insurance markets as a whole.

The insurance business in modern economies is understood as a specific industry concentrating on creation of technical reserves, their administration, division and appreciation both in domestic and foreign financial markets. The insurance business as a holistic system is under the influence of constant changes in price and inflation politics, legislative changes, and at present also under the influence of the external environment – the global and economic world crisis. In spite of the extraordinary importance of technical reserves of insurance companies for their complex insurance activity as well as for their investment activity, which influences both the insurance and capital market as well as the national wealth, they are not unambiguously defined in specific literature. The definitions of authors Daňhel, Ducháčková, 2010, Majtánová, 2010, Kafková, 2008, Szkarlat, 2007, Holyoake, Weipers, 1999, have a common denominator, which is aptly described by Rejda, 2007 – the policy reserve can be defined as the difference between the present value of future benefits and the present value of future net premiums.

Technical reserves are divided into two groups taking into account the specific aspects of insurance – into technical reserves in life and non-life insurance, which are further divided into single types. In our contribution we will abstract from single types of technical reserves, because we are concentrating on investment activity as a process of appreciating temporarily free funds allocated in technical reserves, especially in life insurance.

The importance of technical reserves in life insurance is also emphasized by Harvey and Jowsey, 2007 as follows: but with life insurance, endowments and annuities, premiums are usually held for a long time before payments are made. Hence insurance companies have large sums of money to invest in long-term securities. These investments are spread over government and other public stocks, the shares and debentures of companies, property and mortgages. It is obvious that the investment activity of commercial insurance companies is an important factor, which can on the one hand positively influence the premium through additional yield, but on the other hand, in periods of crisis it can negatively influence the value of assets which are allocated in less safe forms such as mortgage bonds, shares and company bonds, but in case of bankruptcy of the state in government bonds, too.

The investment strategy of commercial insurance companies is not determined only by the type of technical reserves (in life insurance the amount of funds is much bigger and this can be invested in long-term securities), but also by forms, limits and principles of investing the funds of technical reserves. The investment managers decide about the investment portfolio, which is created mostly from funds of the insured, and so they are obliged to keep to the general principles of investing in the stochastic process of investment – principles of safety, diversification, profitability and liquidity. Their strict application creates prerequisites for minimizing potential losses, which could arise in the period of a global economic and financial crisis.

The structure of the contribution is as follows. In Chapter 1 a brief characteristics of the Slovak insurance market is given as well as of the development of the amount of technical reserves in life and non-life insurance, of the financial placements, and specifically the investment activity ratio (proportion of total investments and technical reserves) for the evaluated period. In Chapters 2 and 3 the development of selected entities in the Czech and Austrian insurance market is described in the same structure. In Chapter 4 information is presented about the correlation between selected variables, the existence of which was examined through the statistical software of SAS. In the conclusion of the article, the development of monitored indicators in the specific countries is compared and some findings about the investment activity in national markets are generalized.

Characteristics of the investment activities of commercial insurance companies in the Slovak insurance market

In the Slovak insurance market at present there are 20 commercial insurance companies, which are members of the Slovak Association of Insurance Companies (SLASPO) (which is a full member of the European Insurance and Reinsurance Federation). In 2009 these insurance companies achieved premium written in the amount of € 1.98bn, which presents only 0.0019% of premium written for all countries of the European Insurance and Reinsurance Federation – CEA.

Insurance companies operating in this geographic space, similarly to insurance companies in other countries, in addition to their technical function (compensation for damage arisen as a result of risk realization) and preventive function (measures imposed to prevent damage) they also fulfil an entrepreneurial function. This function is carried out through investing funds from technical

reserves, which are temporarily free funds resulting from the time discrepancy between income of premiums and expenses connected with settlement of claims.

The creation of technical reserves (TR) is thus a necessary prerequisite of commercial insurance companies investments. Therefore, we first present the development of the volume of technical reserves for each country and thereafter we evaluate the volume and the structure of the investment portfolio of commercial insurance companies.

Table 1 Development of the volume of technical reserves in the Slovak Republic

Indicator in bn. €	2004	2005	2006	2007	2008	2009	I_{09/04}
TR (life insurance)	1.46	1.75	2.18	2.52	3.04	3.46	2.37
TR (non-life insurance)	0.59	0.68	0.92	0.86	0.98	1.02	1.73
TR Total	2.05	2.43	3.10	3.37	4.02	4.48	2.19

Source: NBS – Analysis of Slovak financial sector 2005–2009, authors' own calculations.

Until 2009 insurance companies in the Slovak insurance market created technical reserves in the total amount of € 4.48bn; when compared with the year 2004 their volume grew 2.37 times. The biggest part of total technical reserves is represented by technical reserves in life insurance (which is corresponding with the very nature of life insurance). In this kind of insurance, the need to create technical reserves is given by the fact that the insurer has committed in the insurance policy that they will pay a certain amount of money in the future. In non-life insurance it is not sure whether the insured event will occur. It is therefore not necessary to create technical reserves in such a volume as it is in the case of life insurance.

It is obvious from table 1 that when investing funds of technical reserves commercial insurance companies will first of all use those which were created from accepted life insurance premiums, because in this kind of insurance it is not exceptional when several decades pass between making an insurance policy and the following regular premium payments and settlement of claims.

The investment operations of the Slovak insurance companies is carried out in the intentions of the development of the financial market and acceptance of the methods and limits for single placements regulated by NR SR Act. 8 / 2008 Coll.

on insurance (which regulates the forms of placements) and the NBS (National Bank of Slovakia) provision No. 7/2008 which sets the limits for placements of technical reserves funds. In the next table the structure of investment portfolio of insurance companies in the Slovak market is presented for the period 2004–2009.

Table 2 Investment structure of insurance companies in the Slovak Republic

In bn. €	2004	2005	2006	2007	2008	2009	I _{09/04}
Investments total	1.794	2.210	2.609	2.909	3.758	4.229	2.36
Bonds issued by SR, member states or their central banks	0.899	1.030	1.217	1.196	1.421	1.994	-
Bonds issued by EIB, EBRD or IBRD	-	0.098	0.079	0.148			-
Bonds accepted in the quoted security market	0.213	0.090	0.103	0.242			-
Bonds accepted by banks	0.040	0.303	0.336	0.459	0.678	0.502	-
Term deposits in banks	0.281	0.321	0.372	0.257	0.251	0.132	-
Mortgage bonds	0.198	0.222	0.361	0.411	0.507	0.505	-
Real estate	0.069	0.081	0.096	0.099	-	-	-
Reinsurance	-	-	-	-	0.250	0.279	-
Others	0.094	0.065	0.045	0.097	0.651	0.817	-

Source: NBS – Analysis of Slovak financial sector 2008, 2009, Annual reports of SLASPO 2004 – 2008, authors' own calculations.

As it is obvious from table 2, the volume of Slovak insurance companies investments manifested an increasing trend during the whole monitored period, and in 2009 achieved the value of € 4.229bn. Compared with the starting year, the investments increased 2.34 times. The data about the structure of the investment portfolio for the last two years are not as detailed as for the previous years because the Slovak Association of Insurance Companies does not mention the structure of the investments in its annual reports for years 2008 and 2009. Therefore, we follow the structure of investments for the years 2008 and 2009 on the basis of the data from the National Bank of Slovakia, which performs the role of financial market supervision.

Most funds of technical reserves were allocated into bonds, in 2009 their share accounted for nearly 60% of total investments. The second biggest investment group is made up of registered mortgage bonds. The third group of assets with the biggest volume of allocated funds consists of fixed-date deposit accounts in banks. During the period of financial and economic crisis (2008 and 2009), in 2009 we can see a significant rise of the share of bonds of governments and central banks of the Slovak Republic as well as EU member states, of EIB, EBRD or IBRD bonds (from 37.77% to 47.04%), of bonds issued by banks (from 18.09% to 11.82%) and of fixed-date deposit accounts in banks (from 6.65% to 3.07%). From these data we can deduce that the insurance companies operating in the Slovak market are conservative investors because of the prevalence of government bonds and bank bonds in their investment portfolio.

Table 3 Investment activity of insurance companies in the Slovak Republic

Indicator	2004	2005	2006	2007	2008	2009	I_{09/04}
I (in bn. €)	1.80	2.18	2.68	2.91	3.76	4.22	2.34
TR (in bn. €)	1.92	2.24	2.82	2.90	3.48	3.79	1.97
I/TR*100 (in %)	93.75	97.32	95.04	100.35	108.05	111.35	x
I/GDP (in %)	3.98	4.42	4.87	4.72	5.61	6.67	x

Source: NBS – Analysis of Slovak financial sector 2008, 2009, Annual reports of SLASPO 2004 – 2008, authors' own calculations.

The investment activity is a significant indicator of the investment's quality. It is expressed as the share of investment volume and the total technical reserves reduced by technical reserves for covering liabilities from financial placement on behalf of the insured. The rating agency Standard & Poor's recommends minimal value of 100% because investments should achieve at least the level of technical reserves. As it is obvious from table 3, during the monitored period the insurance companies operating in the Slovak insurance market achieve the recommended value only from the year 2007 onwards when this indicator shows a rising trend. The insufficient level of investment activity in the period 2004–2006 was caused by the fact that several insurance companies did not adhere to the forms, limits and principles stipulated by the law when valuing technical provisions funds on the financial market. The values of investment activity indicator were also negatively influenced by the necessary restructuring of the investment portfolio, which was carried out in the process of mergers of several insurance companies.

Characteristics of the investment activities of commercial insurance companies operating in the Czech insurance market

In the Czech insurance market 52 commercial insurance companies are operating at present; they are members of the Czech Association of Insurance Companies (ČAP) (which is a full member of the European Insurance and Reinsurance Federation). In 2009 they recorded premium written in the amount of € 5.45bn, which presented 0.0049% of premium written in the countries associated in the European Insurance and Reinsurance Federation. As it is in the Slovak insurance market, the conditions for conducting investment activities are regulated by law in the Czech Republic as well. In this market, it is first of all Act No. 277/2009 on insurance that specifies the duties of insurance companies in connection with creation and use of technical reserves as well as forms and limits for financial placement of technical reserves funds.

Table 4 Development of the volume of technical reserves in the Czech Republic

Indicator in bn. €	2004	2005	2006	2007	2008	2009	I_{09/04}
TR (life insurance)	4.571	5.619	6.652	7.416	7.606	8.406	1.84
TR (non-life insurance)	1.947	2.017	2.264	2.562	2.732	2.805	1.44
TR Total	6.518	7.636	9.203	9.977	10.338	11.211	1.72

Source: Annual reports of ČAP 2004–2009, authors' own calculations.

Until December 31, 2009 the insurance companies operating in this geographical area created technical reserves in the volume of €11.21bn. 75% present technical reserves in life insurance and 25% are reserves created in non-life insurance.

The structure of investments of member insurance companies of the Czech Association of Insurance Companies is presented in table 5. In its annual report the Association presents investments in the same structure during a longer time span, which enables a more precise monitoring and evaluation of the development of single items of the investment portfolio.

Table 5 Investment structure of insurance companies in the Czech Republic

Investments in bn. €	2004	2005	2006	2007	2008	2009
Real estate	0.346	0.321	0.319	0.185	0.196	0.180
Participating interests	0.810	0.896	0.411	0.438	0.517	0.509
Shares and other variable-yield securities	0.876	1.141	1.105	1.020	0.842	0.639
Debt securities	4.982	5.671	6.176	6.831	7.544	8.581
Deposits with financial institutions	0.892	0.956	0.915	0.974	1.044	0.972
Other financial placements	0.196	0.183	0.118	0.324	0.174	0.576
Total	8.102	9.168	9.044	9.772	10.317	11.457

Source: Annual report of ČAP 2009, authors' own calculations.

The insurance companies operating in the Czech insurance market invest their technical reserves funds mostly into bonds. In 2009 investments in these securities accounted for 75% of total investments. Deposits in financial institutions (8.5%) are the second mostly used form of financial placement, and the third place in the volume of allocated resources belongs to shares and other variable-yield securities (5.6%).

Table 6 Investment activity of insurance companies in the Czech Republic

Indicator	2004	2005	2006	2007	2008	2009	I_{09/04}
I (in bn. €)	8.10	9.17	9.04	9.77	10.32	11.46	1.41
TR (in bn. €)	6.27	7.22	8.53	8.96	9.25	9.60	1.53
I/TR*100 (in %)	129.18	127.00	105.98	109.04	111.57	119.37	x
I/GDP (in %)	8.87	8.97	8.49	8.06	8.21	8.80	x

Source: Annual report of ČAP 2009, authors' own calculations.

Like in the case of the Slovak insurance market, we monitor the development of the indicator of investment activity in the Czech market as well. As it is obvious from the table, the value of this indicator is above the recommended value during the whole period, and in the years 2004 and 2005 it is even significantly exceeded. On the basis of data presented in table 6 we can also state that the insurance companies operating in the Czech insurance market are not negligible

investors in the framework of the Czech economy because the amount of accumulated investments on GDP reached the value above 8% during the entire period monitored.

Characteristics of investment activities of commercial insurance companies operating in the Austrian insurance market

In the Austrian insurance market there are 55 insurance companies at present. They are associated in the Austrian Association of Insurance Companies (Versicherungsverband Österreich – VVO), which is a full member of the European Insurance and Reinsurance Federation. Until December 31, 2009 the insurance companies operating in this market created premium written in the amount of € 16.42bn, which accounts for 1.53% of premium written of the CEA countries.

The volume of technical reserves of insurance companies operating in the Austrian market manifested an increasing trend during the whole monitored period, and in the year 2009 it achieved the value of € 81.22bn. As it is obvious from table 7, the Austrian Association of Insurance Companies develops technical reserves in three groups, i.e. in life insurance, health insurance and property/casualty insurance. Like in the Slovak and Czech insurance markets, in the Austrian insurance market the reserves created in life insurance have the biggest share on the total technical reserves (76.8% in 2009).

Table 7 Development of the volume of technical reserves in Austria

Indicator in bn. €	2004	2005	2006	2007	2008	2009	I_{09/04}
TR (life insurance)	45.66	51.05	55.48	58.63	59.30	62.40	1.37
TR (health insurance)	2.98	3.19	3.42	3.66	3.87	4.14	1.39
TR (non-life insurance)	11.85	12.71	13.21	13.83	14.27	14.68	1.23
TR Total	60.49	66.95	72.11	76.12	77.44	81.22	1.34

Source: Annual reports of VVO 2004–2009.

The financial placements of the insurance companies operating in the Austrian insurance market are similarly to the Slovak insurance market regulated by legislation. Single forms and limits of placements of technical reserves funds in the Austrian insurance market are regulated first of all by “Verordnung 149/2009

der Finanzmarktaufsichtbehörde über Kapitalanlagen zur Bedeckung der versicherungstechnischen Rückstellungen durch Unternehmen der Vertragsversicherung“. A portfolio overview of investments of the member insurance companies of the Austrian Association of Insurance Companies is presented in tables 8 and 9 because the annual report VVO for the year 2008 says that in that year there were changes in reporting assets of investment portfolio of commercial insurance companies, as a result of which it is not possible to compare the data for years 2008 and 2009 with the data for the previous monitored years.

Table 8 Investment portfolio of insurance companies of VVO 2004–2007

Investments in bn. €	2004	2005	2006	2007	I_{07/04}
Debt securities	24.792	27.567	30.640	31.086	1.25
Shares	4.882	5.158	6.120	8.859	1.82
Investment funds	14.349	17.298	18.265	18.336	1.28
- <i>share funds</i>	2.631	3.144	3.474	3.333	1.27
- <i>pensions funds</i>	7.429	9.138	9.468	9.402	1.27
- <i>composite funds</i>	3.996	4.703	4.921	5.157	1.29
- <i>real estate funds</i>	0.293	0.313	0.402	0.444	1.52
Loans to the insured	6.743	5.970	4.725	4.090	0.61
Real estate	4.424	4.338	4.191	4.408	1.00
Deposits in banks	2.464	2.492	2.233	2.174	0.88
Future contracts	0.888	1.587	2.98	1.057	1.19
Hedge funds	-	-	-	1.183	x
Total	58.540	64.411	68.271	71.175	1.22

Source: Annual reports of VVO 2004–2007.

Table 9 Investment portfolio of insurance companies of VVO 2008–2009

Investments in bn. €	2008	2009	I_{09/08}
Debt securities	35.209	36.397	1.03
Shares	12.531	12.414	0.99
Investment funds	12.277	12.811	1.04
Loans to the insured	4.376	4.604	1.05
Real estate	5.138	5.246	1.02
Hedge funds	1.036	0.709	0.68
Deposits in banks	3.555	2.831	0.79
Cash money	0.003	0.003	1.00
Reinsurance	1.272	1.217	0.95
Other financial placements	2.079	2.802	1.35
Total	77.486	79.037	1.02

Source: Annual report of VVO 2009.

In spite of the changes in the structure of the investment portfolio, on the basis of the data in tables 8 and 9 we can state that insurance companies operating in the Austrian insurance market during the whole monitored period invested technical reserves funds mostly in bonds, capital funds and shares. Total investments of insurance companies in this market in 2009 achieved the value of € 79.037bn, which compared with the year 2008 is an increase by more than 2%. In 2009 funds allocated in bonds accounted for 46.05%, capital funds 16.21% and shares 15.71%.

Table 10 Development of investment activity in the Austrian insurance market

Indicator	2004	2005	2006	2007	2008	2009	I_{09/04}
I (in bn. €)	58.54	64.41	68.27	71.18	77.49	79.04	1.35
TR (in bn. €)	56.45	61.06	64.62	67.09	68.08	68.95	1.22
I/TR*100 (in %)	103.17	105.45	105.65	106.09	113.82	114.63	x
I/GDP (in %)	25.02	26.44	26.65	26.29	27.49	28.55	x

Source: Annual reports of VVO 2004–2009, authors' own calculations.

In the whole monitored period, the investment activity of insurance companies operating in the Austrian insurance market achieves values above the recommended level. In 2009 this indicator achieved the value of 114.63%, and it was growing during the whole monitored period. The share of accumulated investments of insurance companies in the Austrian market on GDP increased from 25.02% in 2004 to 28.55% in the year 2009. The established information corresponds with the statement of the representatives of the Austrian Association of Insurance Companies who in their annual reports state that insurance companies operating in this insurance market are one of the biggest investors in financial and capital markets.

Testing the existence of the relation between technical reserves and investments of commercial insurance companies

In the previous text we stated that the creation of technical reserves is an important prerequisite of investments of commercial insurance companies. We have decided to support this statement also through statistical research of the relation between the total volume of created technical reserves and the volume of investments of commercial insurance companies. With the aim to test the above mentioned relation we set a zero and an alternative hypothesis: $H_0: \rho = 0$ and $H_1: \rho \neq 0$, where ρ presents the value of Pearson's correlation coefficient. We have tested the zero statistical hypothesis by means of a t-test, while if we can refuse it on the level of significance $\alpha = 0.05$, we consider the given indicators dependent. Using the statistical software SAS, we have applied the test for conditions of all three monitored markets.

Table 11 Pearson Correlation Coefficient – SR

Pearson Correlation Coefficients, N = 13 Prob > r under H0: Rho=0		
	SR_TR	SR_I
SR_TR	1.00000	0.99517
		<.0001
SR_I	0.99517	1.00000
	<.0001	

Source: Statistical software SAS.

In the case of the Slovak insurance market we used the available data about the volume of technical reserves and investments for the period 1997–2009. The results of the test for the Slovak market are presented in table 11 and it shows that P-value (<0.0001) is significantly lower than the chosen level of significance (0.05). Therefore, we can say that it is possible to consider the calculated correlation coefficient statistically significant and that in these conditions there is a relation between the variables.

In the case of the Czech insurance market we managed to gain similarly to the Slovak insurance market data about the volume of technical reserves and investments for the period 1997–2009. The result of the test for the Czech insurance market is shown in table 12.

Table 12 Pearson Correlation Coefficient – CZ

Pearson Correlation Coefficients, N = 13 Prob > r under H0: Rho=0		
	CZ_TR	CZ_I
CZ_TR	1.00000	0.98334
		<.0001
CZ_I	0.98334	1.00000
	<.0001	

Source: Statistical software SAS.

As it is evident from table 12, P-value (<0.0001) is smaller than the chosen level of significance (0.05). Therefore, we can say that it is possible to consider the calculated correlation coefficient statistically significant and that in the given conditions there is a relation between the variables.

Table 13 Pearson Correlation Coefficient – AT

Pearson Correlation Coefficients, N = 16		
Prob > r under H0: Rho=0		
	AT_TR	AT_I
AT_TR	1.00000	0.99121
		<.0001
AT_I	0.99121	1.00000
	<.0001	

Source: Statistical software SAS.

In the case of the Austrian insurance market we used the available data about the volume of technical reserves and investments for the period 1994–2009. The results of the test for the Austrian insurance market are shown in Table 13, from which it is obvious that P-value (<0.0001) is significantly smaller than the chosen level of significance (0.05). Therefore, we can state that it is possible to consider the calculated correlation coefficient statistically significant and that in given conditions there is a relation between the variables.

On the basis of the test results for all the three insurance markets we can conclude that in given conditions the existence of a statistically significant relation between the volume of technical reserves and the volume of investments of commercial insurance companies has been verified. With regard to these findings we refuse the zero hypothesis towards the set alternative hypothesis.

Conclusion

Investment activities are an important part of commercial insurance company activities. Insurance companies operating in the Slovak, Czech and Austrian insurance markets invest their temporarily free funds of created technical reserves in compliance with the current legislation on the territory of the given country. The analysis of the structures of the investment portfolios of insurance companies in particular countries shows not only mutual differences, but also differences in comparison with all CEA countries. The biggest part of investments of CEA countries is created by bonds, which on average account for 40%. In the volume of invested funds shares (26%) and loans (17%) follow. In all the three insurance markets, similarly to all CEA countries, the biggest part of allocated funds of technical reserves is created by bonds. However, there are differences in the share

of this group of assets on total investments. In the Slovak insurance market in 2009 bonds created nearly 60%, in the Czech market nearly 75% and in the Austrian market nearly 40% of all investments. Except bonds, insurance companies operating in these three markets, most often allocate their funds of technical reserves in mortgage bonds and term deposit accounts (Slovak Republic), into deposits in financial institutions and shares (Czech Republic) and into capital funds and shares (Austria). Throughout the whole period in all the countries, the investment activity ratio, with the exception of the Slovak Republic in the years 2004–2006, reaches values above the recommended level. The significance of the insurance companies of a given country investments can be quantified by means of the share of total accumulated investments of commercial insurance companies and GDP of the given country. In 2009 this indicator accounted for 6.67% in the Slovak Republic, 8.80% in the Czech Republic and 28.55% in Austria. From our findings we can conclude that there are significant differences especially between Austria and the other two countries, but Austria itself does not achieve the average values of this indicator for all CEA countries, which in the year 2009 accounted for 52.54%.

On the basis of statistical tests, by means of which we examined the existence of the relation between the volume of technical reserves and the volume of investments of commercial insurance companies, we can state that in the given conditions there is a statistically significant relation between the monitored variables. Because the existence of this relation was confirmed based on testing the data for all the three monitored insurance markets, we refused the zero-hypothesis towards the set alternative hypothesis.

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