ECONOMIC ANNALS, Volume LVI, No. 191 / October – December 2011
UDC: 3.33 ISSN: 0013-3264

DOI:10.2298/EKA1191143K

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THE IMPACT OF THE GLOBAL FINANCIAL CRISIS ON THE STRUCTURE OF INVESTMENT PORTFOLIOS OF INSURANCE COMPANIES

ABSTRACT: *This article deals with the impact of the global financial crisis on the scale and structure of investment portfolios of insurance companies, with respect to their difference compared to other types of financial institution, which derives from the specific nature of insurance activities. The analysis includes insurance companies' exhibited and expected patterns of behaviour as investors in the period before, during, and after the crisis, considering both the markets of economically developed countries and the domestic financial market of Serbia. The direction of insurers' investments in the post-crisis period should be very carefully examined in terms of their future implications for the insurance companies' long-term financial health, and defined in a broader context of managing all risks to which they are exposed, taking into account the interdependence of these risks. Pertinent recommendations in this regard have arisen from research of relevant past experience and current trends, and also from an analysis and comparison of views on this subject presented by a number of authors.*

KEY WORDS: *global financial crisis, life insurance, non-life insurance, investment portfolio, investment risk*

JEL CLASSIFICATION: G01, G22

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1. INTRODUCTION

The recent trend of globalisation and deregulation has weakened the role of classical banking institutions and strengthened the role of insurance companies as financial intermediaries. In addition, the ever-increasing presence of catastrophic risks such as natural disasters and terrorist attacks has led to the agglomeration and concentration of insurance industry capital. Insurance companies channel the funds raised by selling their own indirect financial instruments – insurance policies – to the purchase of financial instruments belonging to deficit agents.

Insurance companies function like financial intermediaries. Being institutional investors they do not have any influence on the amount of money in circulation, they are not subject to monetary regulation, they do not provide the payment function, and their operation is based on mutual trust. With their investment strategy these companies contribute to the development of all financial market segments. Their prudent and conservative investment strategy has a role in stabilising both a country's economy and the social community as a whole.

The value and the structure of assets of insurance companies, as the leading institutional investors in the world, have suffered the corresponding detrimental effect of the global financial crisis. In the period of recovery from the crisis insurance companies are trying to redefine their investment policies. The large numbers of challenges insurers are currently faced with in the field of investment, as well as the possibilities of overcoming them, are becoming one of the most topical issues among theoreticians and practitioners in the field of insurance.

Following an exposition of the significance of the financial-accumulative function of insurance companies, this paper will deal with the key factors determining maturity and the structure of their investments, taking into account the idiosyncrasies of the insurance industry. This is followed by an overview of exhibited tendencies and the current state of affairs as regards the fulfilment of the role of insurers as institutional investors, accompanied by a review of the manifested effects of the global financial crisis on their investment portfolios. Also considered will be investment activities of the insurance companies operating in Serbia, with emphasis on the idiosyncratic problems arising in this field in the local market. The third part of the paper contains an analysis of the challenges, prospects, and lessons learned during the crisis by the insurers regarding their investment activities. A special contribution to studying the issue under consideration is seen in identifying the potentially positive and negative effects of expected and comparatively well-known patterns of the investment behaviour of insurance companies in the post-crisis period.

2. DETERMINANTS OF INSURANCE COMPANY INVESTMENT PORTFOLIO STRUCTURE

The primary function of insurance is to provide economic protection of entities from the risks they are exposed to. In an attempt to fulfil this function in the best possible manner, insurance companies carry out maturity transformation of small funds collected from the premiums paid by insured entities into large funds (reserves). Thanks to the financing mechanism based on reserves, the funds insurance companies set aside to meet future liabilities are free funds that can be invested until the maturity of the corresponding liabilities. By investing the available funds, insurance companies are trying to obtain an adequate return in the form of interest and capital gain at as little risk as possible. When doing so, an insurer must not place at risk the timely payment of liabilities to policyholders. For this reason the funds from the reserves need to be invested in line with statistical expectations of loss in the future.

It is possible to single out three lines of investment of insurance companies' free funds: investment in real estate or a direct approval of mortgage loans, investment in securities, and depositing funds in banks and other financial institutions (Kočović et al, 2010, p. 328). Generally, the ratio of the said investment forms to an insurer's assets is conditioned by a large number of factors, such as the purpose of a particular insurance, type of insurance the company deals in, regulations, and also by special circumstances such as the degree of development of the financial market and the onset of financial crisis. Optimisation of insurance company portfolios implies abiding by the principles of the modern portfolio theory and asset and liability management, taking into account a comparatively large number of limitations compared with other types of investor.

Insurance company investment policy principles of liquidity, safety, and profitability are not in any way different from those applying to companies in other industries. Nevertheless, the purpose of insurance business assigns relative importance to these principles; i.e., it establishes priorities among them. Due to its basic function of providing protection from risk, each insurance company has primarily to take into account the safety of its allocations when making investment decisions. Consequently, the primary direction of insurance reserves should be conditionally risky assets, such as government bonds, long-term bonds of public companies, and bank deposits. In addition, the safety principle is also achieved through investment diversification, as well as through maintaining the share capital and solvency margin at the prescribed level when investing funds, in order to prevent a possible erosion of the company capital.

The types of assets in which insurance companies invest their funds, as well as the maturity of their placements, are also determined by the characteristics of the liabilities and sources of funding, such as their predictability and maturity. In this respect there is a significant difference between companies dealing in life insurance and those dealing in non-life insurance.

The amount of premium, as the most important source of funding, is known at the time of concluding the contract in both life and non-life insurance. However, the possibility of predicting the bases on which premiums are calculated, i.e., the future liabilities towards policyholders in respect to their amount and time of payment, is much higher in life insurance. The insured amounts in this type of insurance are set in advance and fixed, while the amount of indemnity in non-life insurance depends on several factors. Likewise, the time of indemnification is stipulated in the life insurance contract, whereas in the case of non-life insurance there is no certainty as to when or if damage will occur. Finally, the differences between the maturity of the funding sources and liabilities arise from the fact that non-life insurance contracts are normally concluded for a period of one year, whereas life insurance contracts cover periods of several years. The said characteristics of the funding sources and liabilities of insurance companies allow for a much broader spectrum of investment possibilities and a longer investment horizon for life insurance companies. The link between liabilities and investments is more prominent, as good quality long-term funds at the disposal of this type of insurance company may be invested in the capital market, primarily in government bonds and stocks.

The structure of insurance company investment portfolios is also determined by regulations, which are primarily related to investments of funds from technical reserves, especially the mathematical (premium) reserve, which is inherent in life insurance. The goal of the legislator is the preservation of the real value of these funds in the contemporary circumstances of an unstable investment setting and swift changes in the value of money, as well as the maintenance of an insurer's ability to fulfil their obligations towards policyholders at any given time. The regulations strictly specify the forms of property in which insurers may invest and limit their share in the total amount of technical reserves.

The depth and breadth of the financial market determine the extent to which insurance companies will be able to realise their institutional investor function. The ability of insurers to meet directly and indirectly through their investment activities the expectations of shareholders, supervisory bodies, and other stakeholders is actually limited if the supply of financial instruments is low. In the conditions of an undeveloped capital market, insurance companies mostly appear in the money market, which affects their profitability with respect to investment transactions, especially in the field of life insurance, whose liabilities require good quality long-term investments.

Finally, the strongest determinant of insurers' investment patterns in most countries in the current circumstances is the global financial crisis. The repercussions of the financial crisis, which in 2008 escalated into an economic crisis, have been manifold for insurance companies with respect to both liabilities and assets on their balance sheets. As regards the assets of insurers, the crisis manifested itself through a number of channels. The total breakdown of the financial market, measured primarily by the drop in stock prices in the capital market, affected the value of insurers' investments, and thereby the promised payments to policyholders. The asset risks increased not only because of thedirect impact of sub-prime mortgage loans, but also because of the fact that banks to which insurers were linked through their deposits and investments in securities were also affected by the crisis. Companies dealing in financial engineering, which involves speculative risk, such as American International Group - AIG, saw especially large losses. At the global level, according to the January 2010 data, from the second half of 2008 insurance companies suffered asset losses amounting to US$ 261 billion. (OECD, 2010, p. 7)

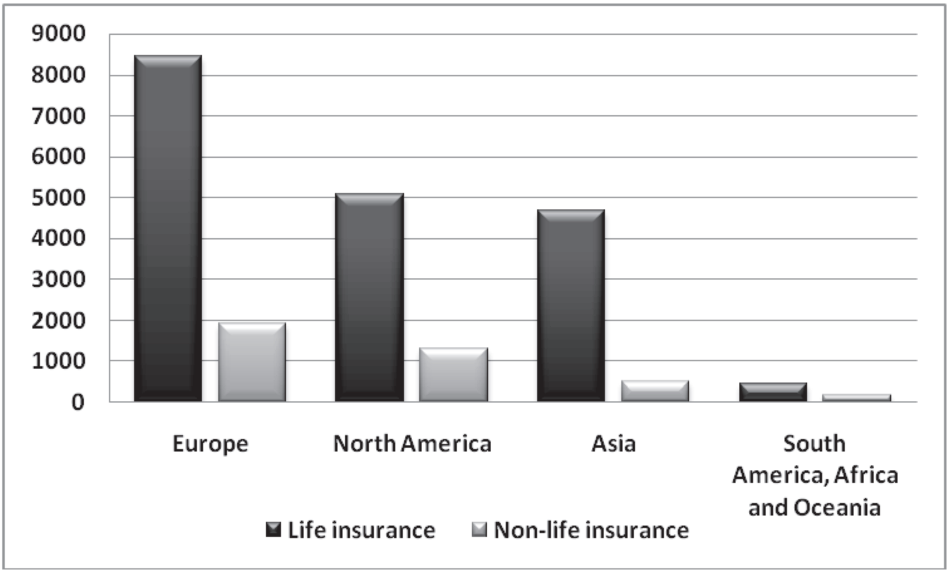
The substantial drop in demand for insurance and the loss of policyholders' trust in insurers in the circumstances of the economic crisis, accompanied by catastrophic losses, caused many companies to undertake a substantial restructuring of their securities portfolios in order to reduce investment losses. The same behaviour of insurers as investors was also seen after the 2001-2003 crisis, since when the major portion of their portfolios has consisted of investments in government and corporate bonds. (Kočović, 2009, p. 231) However, one of the main differences between the current crisis and that at the beginning of this century lies in the adverse reaction in bond markets and a massive increase in credit risk for products and institutions previously considered safe. (Eling and Schmeiser, 2010, p. 12)

3. INSURANCE COMPANIES AS INVESTORS IN CURRENT CIRCUMSTANCES

According to 2009 data, the total assets of insurance companies at the global level were worth US$ 22.6 trillion, with Europe holding 46%, North America 28%, Asia 23%, and the rest of the world 3%. The share of life insurance companies in total insurance investments was 82.7%, while the remaining 17.3% was the share of companies providing other types of insurance. (Swiss Re, 2010a, p.4)

Viewed per country, insurers in the United States, Japan, Great Britain, France, and Germany accounted for 69% of the total insurance investment value. These are also the five countries with the largest individual share in the total income from insurance premiums, with an aggregate share of around 60%. (Swiss Re, 2010b, p. 31)

Graph 1. Geographical distribution of insurance company investment in 2009



Source: Swiss Re, "Insurance investment in a challenging global environment"", Sigma, No. 5/2010, Zurich, 2010, http://media.swissre.com/documents/sigma5_2010_en.pdf, p. 3.

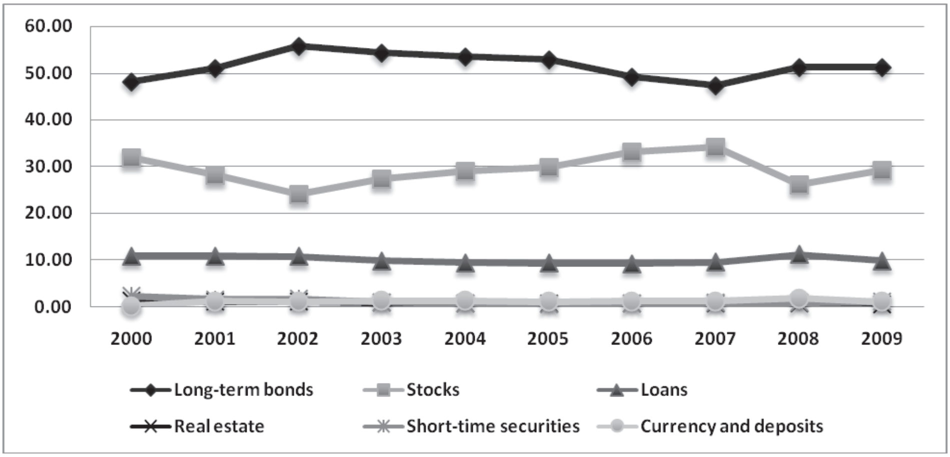
The global financial crisis indirectly affects the insurance sector via its impact on policyholders, banks, capital markets, and supervisory bodies. The direct impact of the crisis is manifested in investment losses, due to a drop in the market value of insurance company investments and also because of the failure of issuers of debt instruments (borrowers) to pay the principal and/or interest.

The comparatively high exposure of insurance company assets to the impact of the financial crisis comes from their significant role in the money and capital markets of developed countries. Of the total value of institutional investors' assets in European markets, insurance companies account for 42% and pension funds for 30%. The share of insurance companies in the assets of institutional investors in countries such as Italy, Germany, France, or Portugal, exceeds 50%. (EFAMA, 2009, pp. 26-28) Given the dominant share of financial investments in their total allocations, it is important to consider the manner in which the crisis impacted the securities portfolios of insurers.

On the basis of the securities portfolios of life insurance companies in developed countries, it may be said that they generally invest most of their funds in bonds, as securities characterised by lower returns but also lower risks than ownership instruments. In order to maximise the safety of their investments and obtain a certain amount of tax relief, these companies are especially interested in investing in government bonds. On the other hand, life insurance companies hold comparatively few investments in stocks because of high risks, obstacles to transferring ownership rights, insufficient trading experience, and insufficient market transparency. Inversely, non-life companies hold a comparatively larger portion of their funds in cash, cash equivalents, and short-term securities (primarily commercial papers and treasury bills). Non-life companies also invest comparatively more in stocks and less in long-term bonds than life companies. At the level of OECD countries, the average share of investments by life and non-life insurance companies in long-term bonds is 69% and 61%, respectively. On the other hand, non-life companies invest comparatively more in stocks (15% of the total allocations on average) than life companies (8%). [OECD, 2010, p. 11] The said regularity is manifested in both space and time, which is plainly illustrated by the structure and time frame of investments by insurance companies in the leading global investor countries.

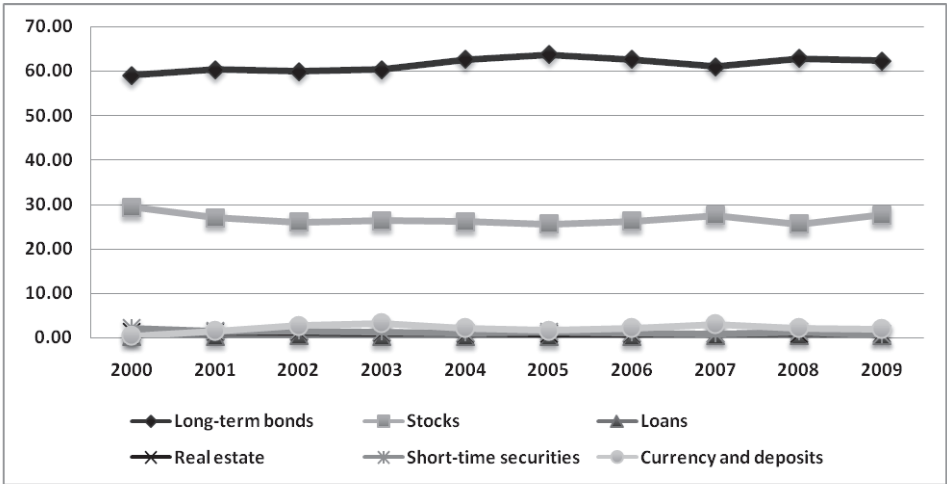
The average share of long-term debt securities in the total assets of life insurance companies in the United States in 2000-2009 was around 52%, while stocks accounted for around 29%. However, the shares of different asset types were not totally stable in the observed period. The graph indicates two time segments that saw a substantial change in the structure of the company investment portfolio. The first segment, which was marked by a concurrent rise in the share of bonds and drop in the share of stocks, is related to the period after the 2000-2001 crisis. In the post-crisis period the portfolios of life insurers were marked by a steady growth in the share of equity, to the detriment of long-term bonds. The other noticeable segment, which relates to the year 2008, is characterised by a similar but more pronounced crisis scenario in terms of the proportion of equity and long-term bonds. This tendency was obvious over a shorter period but was of a higher intensity than in the previous crisis, and it is not possible to predict further trends of change with absolute certainty.

Graph 2. Structure of assets of life insurance companies in the U.S. in 2000-2009 (%)



Source: Compiled from data posted on http://stats.oecd.org

Graph 3. Structure of assets of non-life insurance companies in the U.S. in 2000-2009 (%)



Source: Compiled from data posted on http://stats.oecd.org

Long-term bonds have a comparatively more stable share in the portfolios of non-life insurance companies in the United States compared to life insurance companies, even though the share also rose during 2008. The share of stocks was also at a stable level from 2002 until the outbreak of the current financial crisis, which caused it to drop from 27% in 2007 to 25% in 2008, only to return to the pre-plunge level the very next year, while loans were of negligible significance compared to life insurance.

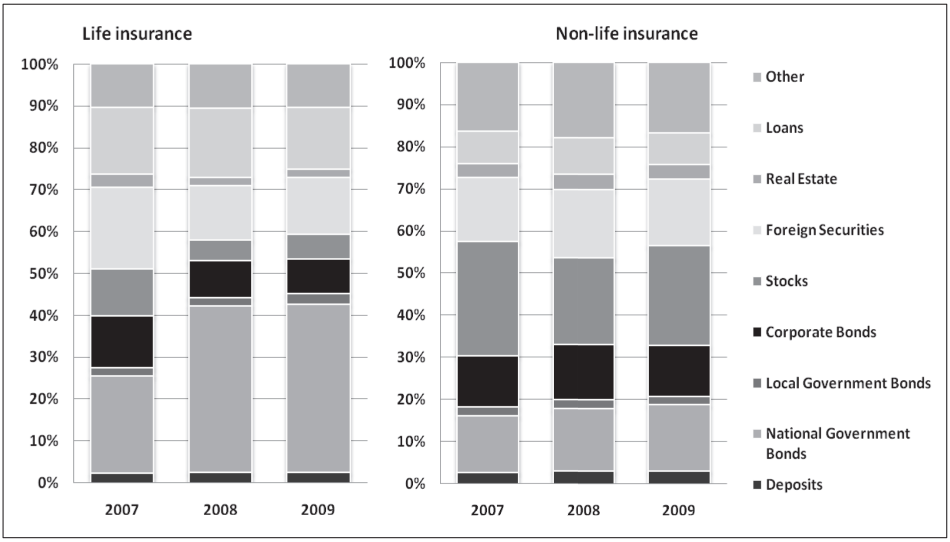
Insurance companies in Japan have shown analogous patterns of investment behaviour since the onset of the crisis in 2008. The funds of life companies have been invested in bonds, cash, and deposits, whereas the share of other asset types has been reduced. This tendency was strongest in 2009, when the share of government bonds in company assets rose by 40.19%. Incidentally, Japanese life insurance companies are characterised by a comparatively large and stable share of loans of around 15%, with financial loans accounting for a much larger share than loans granted to policyholders.

Traditionally, non-life companies in Japan invest comparatively more in stocks than government bonds. Nevertheless, the share of stocks shows substantial fluctuations, unlike the share of government bonds, which preserved its stability both at the outbreak of the crisis and at its end.

The total market value of European insurance company investment portfolios dropped to EUR 6,500 billion in 2008 from EUR 7,200 billion in 2007. (CEA, 2010, p. 25) The trends of the proportion of ownership and debt instruments in European insurance companies'investment portfolios are symmetrical with respect to the time of the outbreaks of the crises in the 2000s. After 2000 the share of stocks dropped from 41.1% to 31.7% in 2002, followed by stable growth until the onset of the current crisis in 2008, when it again dropped to 31.2%.

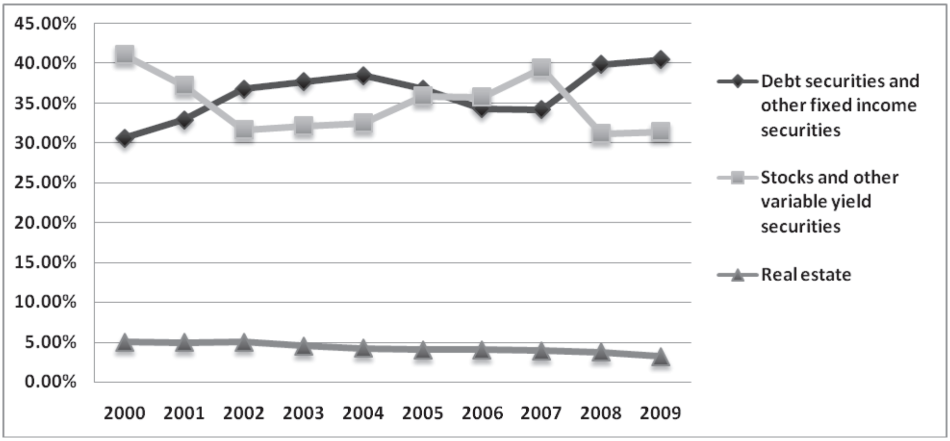
The share of fixed income securities in the portfolios of European insurers was also accompanied by alternating deterioration and improvement of market conditions in the observed period. The year 2009 saw a record-high share of these securities of 40.5% in the total portfolio. The share of land and buildings has demonstrated a slight decrease during the reference period.

Graph 4. Distribution of assets of life and non-life insurance companies in Japan (2007-2009)



Source: Compiled from data posted on http://www.sonpo.or.jp/en and http://www.seiho.or.jp/en

Graph 5. Share of selected instruments in the investment portfolios of European insurers (2000-2009)



Source: Compiled from data from European insurance and reinsurance federation - CEA, ″European Insurance in Figures, Data 1999-2008″, *CEA Statistics*, No. 40, Brussels, 2010, http://www.cea.eu/index.php?mact=DocumentsLibrary,cntnt01,details,0&cntnt01documentid=871&cntnt01returnid=185

The direct effect of the financial crisis through depreciation of asset values was comparatively less pronounced in the case of European insurers than in their American counterparts. Their loss from financial derivatives and mortgage-backed securities was not substantial. Some companies suffered losses equal to their cash deposits with banks, while insurance companies in France and Great Britain suffered most due to dropping stock prices. (see more in Smith, 2009.)

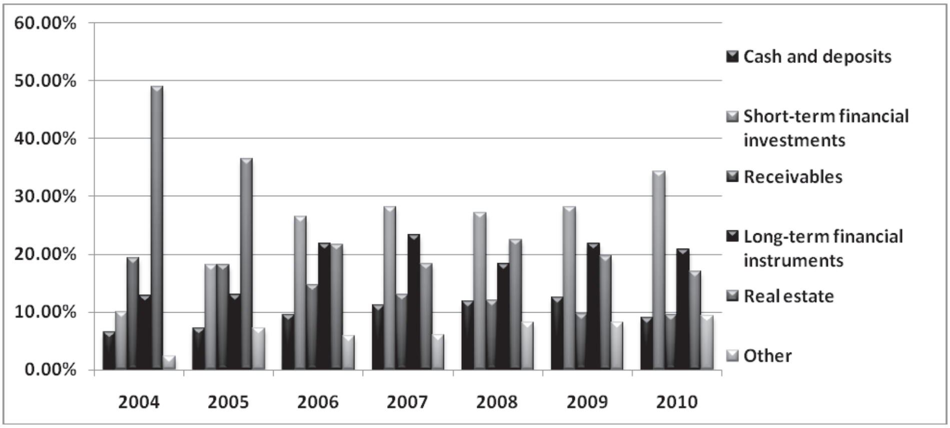
3.1. Insurance companies in the role of institutional investors in Serbia

An underdeveloped financial market, a poor supply of financial instruments, and a low level of investment activity due to insufficient free funds dictate a fundamentally different structure of investment portfolio and a less important role for insurance companies as institutional investors in Serbia, compared with economically developed countries. Given the scarcity of long-term government bonds and local government bonds and the virtual non-existence of corporate bonds, insurance companies have limited options regarding valorisation of available funds and diversification of risks. Besides, in the conditions of pronounced information asymmetry, insurance companies as investors in the Serbian financial market cannot realistically assess the risk of and expected returns on their investments. For this very reason they cannot play the important role of efficient investors of funds and stabilisers of the capital market. Naturally, the fact that the development of life insurance per se, as a form of saving, is at a low level should not be neglected either. The 16.5% share of life insurance in the total insurance premium in 2010 represents a shift compared with the preceding period, but is still low. Consequently, the small financial capacity of insurance companies further aggravates this unfavourable situation.

The manner in which insurers may invest their free funds is limited and constrained by regulations. Local insurance companies can invest their funds only if they can ensure permanent liquidity and safety of the investment in order not to place the real value of the funds at risk. The Insurance Act of the Republic of Serbia, passed in 2004, introduced a much more restrictive regulation of the investment activities of insurance companies than was previously the case, in order to ensure safety of allocations, restore trust in insurance, and strengthen its mobilising function on sound foundations.

According to data on the last quarter of 2010, insurance companies in Serbia used the bulk of their funds (34.3%) for short-term financial allocations (primarily bills of the Treasury of the Ministry of Finance of the Republic of Serbia). (National Bank of Serbia, 2011a, p. 11) A concern-raising tendency that was observed in this period was the rising share of short-term allocations in the total investment portfolios of insurers. The share of long-term financial allocations was 20.8% and, according to current experience, they were primarily made in the stocks of banks and reliable firms and stakes in associated legal entities. In the context of analysing the impact of the financial crisis on Serbian insurance companies' investment returns, the predominance of stocks among the long-term allocations of insurers is unfavourable, because of the poorly developed market's susceptibility to major drops in indices, triggered by the slightest adverse impulse.

Graph 6. Structure of allocations of insurance companies in Serbia in 2004-2010



Source: Compiled from annual reports of the National Bank of Serbia, http://www.nbs.rs.

The onset of the crisis drastically reduced the readiness of insurers to immobilise their funds for periods longer than one year, which resulted in the drop of the share of long-term financial allocations, even though slight improvement was seen in 2009. There was a conspicuous reduction in the share of real assets from 46% at the beginning of the observed period to 17% in 2010, still a rather high level for this type of financial institution. Although the share of short-term investments is still very high, it is particularly worth noticing that during the first quarter of 2011 it was exceeded for the first time by the share of long-term investments. (National Bank of Serbia, 2011b, p.5)

The share of the insurance sector in the entire financial sector both by capital (6%) and by balance sheet total (4.2%) is much lower than the EU average. (National Bank of Serbia, 2011a, p.6) There has been mild progress in the past years with respect to the proportion between long-term and short-term financial allocations in the structure of the insurers' assets, but any further improvement in this respect is conditioned by the proportion between life and non-life insurance in the structure of the insurers' assets in the total portfolio of insurance at the level of the entire insurance market, and by the development of the financial market. By the scale and structure of the investment portfolio, insurance companies operating in Serbia are still lagging behind those in developed countries. The legal framework per se is not enough for them to become institutional investors in the true sense of the term. This is exactly why some experts, prompted by the practice obtaining in developed countries where quantitative limitations are being gradually replaced by stricter control of the solvency of insurance companies by a competent supervisory body, advocate the view that the current regulations are too strict. (Davis, 2001, p. 23) There is good reason to expect that, concurrently with the simultaneous development of the financial market and life insurance, insurance companies will take their place among financial intermediaries. These companies will be faced with the new challenge of developing and applying sophisticated strategies and techniques for shaping their investment portfolio and adapting their investment patterns to global standards.

4. CHALLENGES AND PROSPECTS FOR INSURERS' INVESTMENT ACTIVITIES IN THE POST-CRISIS PERIOD

The unfavourable trends in financial markets pose a threat to both life and non-life insurance companies. Generally, life companies (with the exception of the so-called unit-linked products, which imply a transfer of some of the investment risk to policyholders) in the field of financial risk are exposed to a falling interest rate environment (due to reduced returns on investment and the discount rate on liabilities), high market volatility (due to increased costs of guarantees), and the fall of the capital market, driven by increased credit spreads rather than changes in the risk-free interest rate. (Impavido and Tower, 2009, p. 21) In the case of non-life companies, the negative effects of the turbulence in the financial markets are primarily reflected on insurers with low or variable profitability in the area of risk-taking operations, i.e., insurance. However, by holding fixed instruments until their maturity, life companies minimise the effects of depreciation of asset values. Non-life companies do not have this option, as they have to adjust the maturity of their allocations to their short-term liabilities and funding sources.

Having learned a lesson from the crisis, regulators, supervisory bodies, and rating agencies in the field of insurance have tightened their requirements regarding the capital of insurance companies, as well as the limits related to their investment options. Concurrent tendencies towards valuating assets in line with market values and discounting technical reserves by applying the risk-free interest rate have led insurers to increasingly invest their available funds in low-risk, but also low-yield, instruments, primarily government bonds. A further increase in these pressures leads to an extended period of low profitability of insurers' investment operations, even after the effects of the crisis have been fully overcome, which in the long run affects not only the interests of insurers but also of policyholders who have entrusted them with their funds. Logically, a reduction in the combined ratio, as a measure of profitability in the field of insurance operations, will be compensated by increasing insurance premiums and reducing the return offered to policyholders. This directly jeopardises the fulfilment of the financial-accumulating function, and indirectly the social function of efficient allocation of insurers' capital. Besides, it should be borne in mind that in many countries the government bond markets are not deep and liquid enough to meet the investment needs of insurance companies. In the countries that have been particularly strongly hit by the crisis, such as Greece or Ireland, a drop in the rating and value of bonds issued by the government caused substantial investment losses for the insurance companies that invested their funds in them, with further losses expected in the future.

The rates of return in the markets of low-risk countries such as Germany, the United States, and Japan are at exceptionally low levels, and for this reason developing countries are becoming increasingly attractive for investment. The financial markets in these countries are characterised by dynamic growth and instruments with high returns, but also with high investor risk. A correlation between returns on stocks in the markets in developing countries and those in economically developed countries is comparatively lower than the correlation between the returns on stocks in the markets of developed countries, from which the most powerful global investors come.

The growing uncertainty and increasingly strict regulatory requirements have led to a substantial reduction in the share of stocks in the total allocations of insurance companies in the 2000s. Even though the same trends can be expected to continue in the coming period, the role of ownership instruments in the investment portfolios of insurers must not be underestimated. Because of the need to adjust types of assets to fluctuations in the values of insurers' liabilities and to utilise the effects of risk diversification, ownership of stocks may contribute to a reduction in the total risk to which an insurer as investor is exposed.

The outbreak of the crisis was preceded by insurers' increasing utilisation of sophisticated financial instruments such as swaps and options. The substantial losses banks suffered from their operations with financial derivatives, accompanied by their increased capital demand and the departure of some players from the market, left insurers in a position in which they were unable to obtain new capital in the market or transfer their liabilities to other players, which drastically affected their investment results. Prompted by the experience of some companies, regulatory bodies are now trying to curb the insurers' ability to invest in financial derivatives. However, if they are not used for speculative purposes, derivatives can contribute to reducing the exposure to financial risk. It is therefore necessary to make adequate efforts to understand, monitor, and analyse their use, in order to capitalise on the opportunities and avoid the threats that they imply.

The substantial fiscal support by a large number of countries aimed at mitigating the effects of the financial crisis, accompanied by expansive monetary policies, is a potential inflation generator at the global level. A long period of low inflation in economically developed countries resulted in insufficient data that insurance companies could have used to prepare for a potential inflationary shock in the future, which further jeopardised their position. The relative rates of return on different types of assets in which institutional investors invest change in accordance with the expected inflation rate. One of the ways to mitigate the impact of inflationary risk for insurers may be to allocate a comparatively larger portion of their funds in real assets. Even though allocations in real assets reduce exposure to inflationary impacts and ensure returns comparable to those on ownership instruments, they are characterised by low liquidity and high volatility, which reduces their attractiveness to insurers. Short-term government bonds and inflation-indexed bonds are feasible investment alternatives in the conditions of high inflation expectations. The returns on both instruments follow the growth of inflation, but they are low for investors. Besides, the inflation-indexed bonds ensure neutralisation of inflationary risk if they are held until maturity, but they are not available in all markets. In the long run, insurance companies can also use stocks as protection against inflationary risks, whereas high inflation causes stock prices to drop in the short run.

The lessons drawn from the recent global financial crisis with respect to shaping investment policies in the framework of the wider area of the management of risks threatening the capital adequacy of insurers are many. The enormous span of unfavourable market trends is indicative of the necessity for insurers to identify and model extreme investment risks in order to minimize future asset losses. The assumption of the high safety and immunity to unfavourable trends of some types of instrument ceases to be valid in a turbulent business environment. Also, the principle of liquidity must not be neglected in insurers' investment policies, regardless of their comparatively low exposure to this risk compared with other banking institutions. (Schich, 2009, p. 22) Stress tests must be integrated into a contemporary risk management process to enable modelling of the potential effects of events characterised by high intensity and low frequency of occurrence.

Investment losses of insurance companies have been lower than those of banks, largely owing to a high degree of diversification of allocations. Nonetheless, the crisis has pointed to the comparatively limited ability of insurers to reduce the exposure of their investment portfolio to risk through diversification, given the high correlation between different types of instruments, lines of operation, and geographical areas. Regardless of the degree of diversification, the only safe harbour for assets in periods of crisis may be cash, short-term government bonds, and gold. (Klein et al, 2009, p. 78) Therefore a need arises for insurers' models for measuring risks to fully encompass the interactions between these risks, especially for the purpose of determining the level of capital necessary to secure the solvency of insurers.

The financial crisis has emphatically shown that different segments of the financial market cannot be treated as isolated wholes. Unfavourable trends in one segment may give rise to chain reactions in a number of other segments. The approach to risk management related to the assets of insurance companies in the current circumstances must be holistic, with full appreciation of the interdependence of diverse financial instruments, regardless of the degree of their complexity.

Finally, it should be borne in mind that no quantitative model of investment portfolio optimisation is absolutely perfect. The management of risks to which an insurance company is exposed, including investment risks, largely relies on the human factor in the company and requires corresponding qualitative elements, among which corresponding investment discipline and risk culture are of key importance.

5. CONCLUSIONS

The effects of the crisis on the investments of insurance companies did not manifest themselves immediately after the onset of the crisis, due to the fact that it initially affected low-quality instruments and then high-quality ones in which insurers predominantly had their funds invested. For this reason the investment aspect of the operations of insurance companies is increasingly gaining importance at the end of the crisis and in the post-crisis period.

The pressure exerted by supervisory bodies, rating agencies, stockholders, and the public at large is aimed at recomposing the structure of the allocations made by insurance companies. The most pronounced tendencies are seen in the increase in the participation of short-term and long-term government bonds and the reduction in the participation of stocks and financial derivatives. Nonetheless, the said patterns of behaviour of insurance companies as investors cannot be unequivocally adopted in the future. It is necessary to cautiously consider their further potentially positive and negative implications in order to achieve optimal investment results. The lessons of the recent global crisis for insurers' investment policy concern the necessity of taking into account extreme risks, the liquidity principle, and interrelations between risks and the so-called 'soft' qualitative elements in the area of risk management.

Competitive advantages and the possibility of acquiring the status of market leaders in the coming period will be decisively determined by the quality of investment risk management on the part of insurers. Their own and others' experience from the crisis period should be used as a marker in the process of defining investment policy and strategy in the future. In the coming period special attention should be paid to raising insurance company managers' awareness of the increasing possibility of unexpected turns of events, i.e., the expiry of many traditional assumptions in the current business conditions, and also of the development of risk culture and investment discipline.

The challenges in the area of investments of insurance companies operating in Serbia are fundamentally different from those in economically developed countries, and indicate a comparative neglect of investment activities. The underdeveloped financial market, poor supply of financial instruments, pronounced information asymmetry, and insufficient financial capacity of companies due to a low degree of the development of life insurance, are the key reasons why Serbia is lagging behind developed countries in this field. The existing legal framework is indeed a necessary precondition, but it is not enough to improve the current situation. Regardless of the difficulties caused by the global financial crisis, care must be taken of the further development of the financial market, especially the capital market, so that insurance companies can take their place there; a place that rightfully belongs to them, and is a precondition for the fulfilment of their basic function — payment of insured sums, i.e., indemnifying policyholders.

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Received: July 06, 2011
Accepted: October 24, 2011