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Impact of Savings on Portfolio Structure of Insurance Companies

*Drago Jakovčević**

*Ivan Lovrinović**

Abstract: This paper explores the trends in national savings from domestic sources and foreign contributions in Croatia during the last past five years. The aims of the study are on the quantitative and qualitative analysis of the life insurance premiums as a form of long-term savings. It also reflects upon the interdependence of insurance and savings trends in the banking sector characterised by significant growth of the past years, especially foreign currency deposits compared to kuna deposits.

JEL Classification: E21, G22

Key words: savings, life insurance, portfolio

Introduction

In the broadest sense of the term, savings represent income earned but not spent. Income and savings are positively correlated since, as a rule, a higher income can bring a growth in savings. However, income is conditioned by many factors, primarily economic trends, as exemplified by GDP movements, monetary and tax policies, and particularly, the exchange rate and interest rate policies If an economic cycle has an upward tendency, and economic entities increase their income, filling the budget coffers with more money, incomes can grow and, in turn, stimulate the growth of savings. As a rule, investments are stimulated by various forms of savings which are channelled into financial institutions, and this transformation of savings into a financial, i.e. investment portfolio, is indispensable for almost all financial intermediaries in achieving profitability.

* Drago Jakovčević and Ivan Lovrinović are at the Graduate School of Economics and Business, Zagreb, Croatia.

Since an increase in investment stimulates economic growth, the significance of financial institutions can be evaluated in accordance with their supply of instruments designed to attract depositors that stimulate investment and economic growth by means of their deposits. Setting out from these observations about the impact of savings on investment and economic growth, we may assume that an efficient financial system is a factor in economic growth. In this sense, a financial system may be evaluated according to the way in which savings are allocated to deficit-making economic sectors, and particularly according to the way in which savings influence the increase of production capacities in individual sectors. By creating savings, depositors forgo consumption, postponing it to some future moment. However, savings are not exclusively an economic category, as they are influenced by other factors as well, e.g. social or psychological factors, which explains the oscillations and deviations of savings in relation to income, but at the same time renders their quantification more difficult. Therefore, any responsible national economic policy should be based on an examination of the trends and impact of savings as an input variable in a financial system and of the role of savings in financial intermediation.

The allocation of savings to instruments available on financial markets depends on the following factors: the type of financial institution, legal limitations on investment, the degree of development of the financial markets, tax breaks and incentives, and the quality of portfolio management. Every transactor tends to achieve continuous optimisation of its assets and liabilities, thus stimulating a mutation and fluctuation of the financial resources and their manner of investment. This entails continuous restructuring of each unit in terms of property and finances and, consequently, of the economy as a whole. The main fluctuations occur in banks, financial companies, investment funds, savings banks, insurance companies, and pension funds. Each of these intermediaries is free to choose among alternative sources of raising and investing funds, and this forms the basis for autonomous management of its own finances. The aims of the limitations that exist here are to prevent abuses and define the rules of the game.

The financial market in Croatia is at a stage where a system hitherto centred on banks is disintegrating. Generally speaking, the financial market is developing on a debts/claims basis. This is why all financial entities are making calculations and seeking ways to rectify their position, swapping one instrument for another or undertaking some other kind of operation. It is important to emphasise here that these entities are not either debtors or creditors, but are, rather, in the dual position of being both debtors and creditors alike.

Determinants, Forms and Allocation of Savings

Savings, as a monetary surplus, are derived from the income or revenue of physical and legal entity. The quantity of savings is determined by the adequacy of revenue or income in relation to costs and expenditures. A surplus of monetary expenditures over receipts generates scarcity on the micro and macro levels of the economy, i.e. a demand for surpluses generated by various units or sectors. Therefore, the volume and time limits of the cycle in which savings are allocated primarily hinge upon the liquidity and development needs of deficit-making sectors. States and economic entities tend to dominate in the structure of deficit-making sectors. While the state increasingly finances its deficits on the domestic and foreign capital markets the economies traditionally employ intermediated financing via the banking system. The chief depositor, however, is the household sector, thus representing the most important potential source for financing the development needs of any society.

Changes in the investment behaviour of the household sector may be viewed as one of the key causes of diversification in financial relations and the establishment of a new, polycentric configuration of the financial market. The household sector has been increasingly exposed to numerous, more sophisticated modes of entry into the network of financial relations, in terms both of contributing to its growth and of borrowing from it. For example, the investment structure of the household sector in the US market, i.e. the most developed financial market, indicates that, of a total of US$ 17,524 billion invested in 1993, the biggest part was invested in pension funds (US$ 4,981 billion), with a further US$ 3,094 billion invested in shares, about US$ 200 billion dollars in investment funds, and around US$ 2,700 billion in bank deposits (Lovrinović, 1997). This structure has not significantly changed in more recent years (BIS 2002).

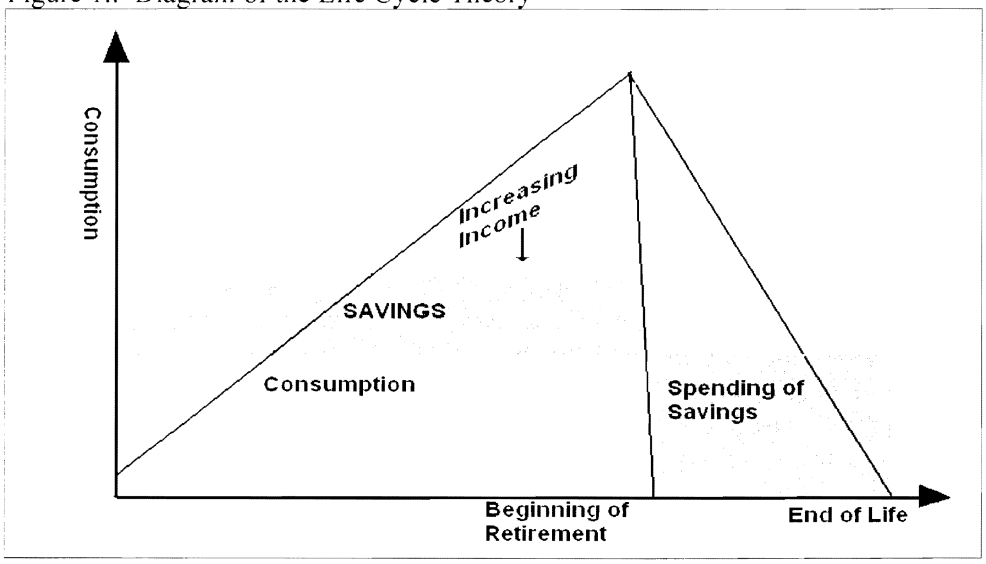
Savings trends in certain countries are subject to analytical errors. This is visible in the case of the US, where savings patterns in the household sector have changed considerably. The conventional analysis of savings makes use of data on the volume of savings deposits in bank accounts, whereby the volume of savings is greatly reduced, giving a distorted picture of the amount of total savings. If we compare savings volumes in the US and Japan in relation to their GDP figures, we might conclude that the savings volume of the household sector in Japan in relation to the country's GDP is two times greater than that in the US. This would indeed be true if we took into account only savings in banks and savings banks in the US. However, as is well known, the average Japanese citizen is still markedly conservative in his or her investing habits and, as a rule, will deposit surplus money in a bank. In contrast, the average American has increasingly tended to invest in investment funds, insurance companies, and the like. The purchasing of pension schemes, insurance policies, stakes in investment funds, and so on thus represents a new means of savings, one,

which also has to be taken into consideration. The greater part of the American population has changed its way of investing, giving up on deposit investment in banks in favour of riskier investments in funds and other forms of investment, whereby its savings have spread to all parts of the financial market. In the last several years we have witnessed a slow but inevitable shift in the investment behaviour of the household sector in Croatia as well.

Numerous factors de-motivate consumption and stimulate the allocation of savings to different forms of financial instruments. Keynes' doctrine itself is founded on the assumption that the relationship between income and consumption is disproportional. According to Keynes, income that grows faster than consumption finally brings about a more rapid growth of savings in relation to consumption. He ascribes this disproportion or discrepancy to psychological factors.

Similar to the above, Milton Friedman advanced a thesis of permanent income consisting of two parts: fixed income and variable income. According to Friedman, the former, i.e. fixed income, defines the proportion of savings and consumption, and in fact represents a decision by the individual with regard to his or her consumption. However, Modigliani, writing together with Bamberg, provided an alternative explanation. Their basic hypothesis is that households tend to economise future costs. In this sense, there is a life cycle at the level of each individual, one which may be divided into two periods: exclusive consumption, during the time of a person's growth or retirement; and the period of active life, characterised by partial consumption or savings (Ando and Modigliani, 1985).

Figure 1.: Diagram of the Life Cycle Theory [1]



If we apply this hypothesis at an aggregate national level, it follows that a single cycle is the result of individual cycles, and that each cycle is essentially determined by the demographic structure of the population, i.e. by the age and sex structure. In this life cycle theory, the rate of global savings is constant over time. Throughout their active lives, individuals try to maintain the rhythm of savings despite a continuous increase in income. Global savings hinge upon the rate of growth, which is in turn conditioned by economic and demographic trends. A high level of economic activity brings about an increase in the rate of savings among the younger population, while a social contribution system causes a decline in the savings rate.

Regardless of the numerous objections made to the life cycle theory, it is worth noting that its hypotheses enable us to explain the increasingly dynamic sales of life insurance on the financial markets. The same conclusion can be drawn regarding the current boom in innovations in life insurance, where, besides the risk premium, a savings component is being promoted as well.

New Trends and the Structure of Savings in Croatia

Over the last several years there has been an upward trend in savings in Croatia, which is noticeable in almost all forms of savings. Although the structure of savings may be classified using various criteria, we shall first differentiate bank savings from non-bank savings. Croatia's banking system is bank-centred, which means that the largest part of savings constitutes, at the same time, the most abundant source of funds in the banking system, especially if the term deposits of building societies are considered alongside the term deposits in kunas and foreign currencies in banks. At the end of 2002, foreign currency deposits and term deposits accounted for 83 per cent of total bank deposits. It may be concluded that the enterprise and household sectors have invested the largest part of their surplus in banks. Thus the stability and liquidity of Croatia's banking system is based on the sustainability of foreign currency deposits and term deposits.

In terms of non-bank savings, open-end and closed-end investment funds predominate. It should be pointed out that the pension reform project was completed only at the beginning of 2002, such that the first obligatory pension contributions were paid in as late as April 2002. This meant that the total contributions paid into obligatory pension funds by the end of 2002 amounted to 1.938 billion kunas, a figure which does not reflect either the real share and significance of retirement savings, nor the importance of obligatory pension funds for the financial system as a whole. By the end of 2003, the obligatory pension funds had received HRK 4.383 billion in savings, so it is now possible to estimate an annual increase of savings in obligatory pension funds of about HRK 2.5 billion in the future. [2]

Table 1.: The Structure of Savings in the Period 1999-2002 (millions HRK)

	1999	2000	2001	2002
BANK SAVINGS				
Deposits in HRK and term deposits in banks	5.397	7.651	10.213	13.001
Foreign currency and term deposits in banks	36.966	46.902	71.837	72.055
Term deposits in building societies	-	438	1.137	2.013
TOTAL BANK SAVINGS	42.363	54.991	83.187	87.069
NON-BANK SAVINGS				
Obligatory pension funds	-	-	-	1.938
Open-end investment funds	-	191	1.432	2.392
Closed-end investment funds	-	494	612	2.334
Life insurance	685	759	925	1.152
TOTAL NON-BANK SAVINGS	685	1.444	2.969	7.816
TOTAL SAVINGS	43.048	56.435	86.156	94.885
NON-BANK / TOTAL	1.6%	2.6	3.4	8.2

Source: HNB Bulletin, 88/2003, HUO Bulletin 2003, Hagena, Monthly Report, 2nd January 2004.

This growth trend in pension savings indicates that pension funds are gaining in significance on the domestic market. Besides this, the pace of development of Croatia's financial markets during the last several years has led to a marked increase in other forms of non-bank savings with regard to the liabilities of institutional investors, particularly investment funds. Savings of surplus generating units transferred to closed- and open-end funds have become the largest potential source of investment and a key determinant of fund (ownership) stakes.

By the end of 2003, life insurance represented virtually the only form of non-bank savings. Although other institutional investors were competitive, penetrating the market in 2001 and 2002, life insurance remained a significant form of savings. Moreover, this type of insurance has become even more attractive, as is indicated by the growth indexes for policy sales in 2000/2001 and 2001/2002. While sales of life insurance policies in 2001 increased by 21.9 per cent compared to the previous year, growth in 2002 represented a further 24.5 per cent, which is by no means negligible. One explanation for the firm market share that life insurance has established may be found in the tax benefits and incentives it brings with it. The Income Tax Act (Official Gazette nos. 127/00 and 150/02) and the Rules on Income Tax (Official Gazette nos. 54/01 and 2/03) state that life insurance premiums are tax deductible, i.e. a recognised expenditure for tax purposes. Moreover, the tax benefits of life insurance may also be seen in the lower tax rate and tax base used when settling an insurance policy. Following the termination of a life insurance contract and settlement of the policy, a 15 per cent tax rate is applied, with the tax base being not total capitalised savings but,

rather, only the amount of total premiums that represented a tax relief for the person insured.

Specific Features of Life Insurance

Life insurance constitutes a specific category within insurance for individuals. It is a long-term type of savings insurance for a certain amount, which the insured person or, in the case of his or her death, the inheritor(s) can use. In contemporary finance a life insurance policy is regarded as a liquid security, providing quality assurance and a sound return on investment with minimum risks.

Life Insurance Risks

It is the savings component of life insurance that gives this type of savings a significant and measurable advantage over all other forms of bank savings. In its broadest sense, life insurance covers the following risks (Andrijašević and Petranović, 1999):

- the death of a breadwinner
- education of children
- mortgage debts (collateral for loans)
- protection of partnerships
- protection of business dealings.

A common trait of all these risks is that, should an insured event occur, e.g. an actual death, the insured person is compensated up to the maximum insured value, while, if the event does not occur, he or she enjoys the benefits of interest-bearing premiums paid by the insurer.

However, insurers also run risks which can significantly affect their financial position and which thereby have an indirect impact on the real value of the life insurance policies they issue. First of all, there is an objective probability that real mortality may be higher than expected mortality, thus increasing claims, i.e. payment costs, and this can hinder the fulfilment of obligations towards the insured.

Insurance companies are also faced with other risks:

- a too high interest rate calculated in the premium
- a decline in the value of the insurer's property
- natural disaster risks which can endanger an insurance company's business

- systemic risks, which can jeopardise all financial institutions, insurance companies, included.

Characteristics of Insurance Companies

Numerous factors determine the characteristics of life insurance. As a rule, these characteristics are heterogeneous, and typify different forms of insurance. In the current conditions of sharp competition among financial institutions, new forms of life insurance are being developed in combination with other forms of insurance, usually in accordance with the risks covered by the gross premium. Thus, life insurance is usually combined with accident insurance, with a different premium and insured value being charged for each individual type of accident.

The following are the main forms of life insurance (Modrić, 2003): term insurance; whole life insurance; combined insurance; and other forms of insurance.

Today, the most popular form of life insurance is probably combined insurance or endowment insurance. One characteristic feature of combined insurance is that insurance companies pay the insured in the following cases:

- the actual death of the insured
- during the period of the insurance contract
- after the contract has expired, e.g. in the case of pure endowment insurance.

Common characteristics of all forms of life insurance include, in their most concise form, the following aspects:

- Gross premiums contain a component of risk and savings
- Coverage of a large time span
- Fixed (uniform) premium during the insurance period
- Insurance conditions agreed at the beginning cannot be changed
- Policy can be paid up to the amount of its surrender value
- Policy can be used as a pledge or guarantee.

The Structure and Importance of Life Insurance Premiums for Insurance Companies

The risk premium and a savings component are the key determinants of the type of life insurance, since it is the coverage of risks and the possibility of earning interest which make life insurance a more attractive form of investment than others.

However, the gross premium structure contains some specific elements that require insurance companies to give this type of insurance special treatment.

If a gross premium is shown mathematically in the equation:

$$BP = NP + \frac{1}{K} + pP + cP$$

Where, BP = annual gross premium for a unit of insured value; NP = net premium calculated using the mortality tables; $\frac{1}{K}$= a calculated interest rate in a gross premium; pP = a share of acquisition costs recognised to intermediaries, proportionate to the gross premium; cP = administrative costs proportionate to the gross premium, i.e. to the insured value paid throughout the duration of the insurance policy, then, the outcome is that a life insurance premium chiefly depends on three factors: mortality, interest and costs.

The mortality of the insured person is the basic risk in life insurance, and its calculation is carefully performed using actuarial mathematics. The two key determinants of mortality risk are probability of death and endowment. These determinants differ according to the age and sex of the insured person.

The interest rate is another element, which is calculated when determining a gross premium. The possibility of earning on an interest-bearing investment is evaluated for the entire duration of the insurance policy. The higher the interest rate calculated the smaller the gross premium for the same insured amount, age, and so on.

Costs are the third component of the gross premium, and consist of acquisition costs or α costs, settlement or β costs, and administrative or γ costs. *Acquisition* costs are those paid to agents or intermediaries, and are calculated only once, in proportion to the insured amount. *Collection* costs are the costs of collecting the premium, and are calculated in proportion to the gross premium during the premium payment period. *Administrative* costs pertain to management, staff and other relevant costs related to the insurer's business operations. They are calculated in proportion to the insured amount during the insurance period.

The structure of a gross life insurance premium raises the problem of establishing its amount. Any negative deviation from the expected values calculated in the price of a life insurance policy can render an insurer's operations unprofitable, while subsequent increases in prices or changes in fees can threaten an insurance company's competitiveness.

Table 2.: Share of Life Insurance in the Insurance Sector in of Croatia (in '000 HRK)

Period	1997	1998	1999	2000	2001	2002
Life insurance premiums	400.300	582.240	684.792	759.178	925.179	1.152.383
Total premiums	3.502.464	4.063.679	4.334.416	4.534.705	5.098.697	5.578.807
Share of total premiums (%)	11.43	14.33	15.80	16.74	18.15	20.66

Source: Insurance Supervision Authority

It is possible to determine the importance of life insurance for insurance companies and the insurance industry in general by analysing the share of the entire portfolio, which this type of insurance represents, i.e. its share of the revenues of the insurance industry. Table 2 shows the dynamics of the continuing increase in life insurance sales in Croatia. The share of life insurance premiums in the total revenue of Croatia's insurers has significantly increased over the last five years. In 1997 it represented 11.43 per cent, while by the end of 2002 this figure had nearly doubled.

Life insurance should be accorded even greater importance than its current share of the total portfolio suggests, i.e. its share of insurance companies' total revenue. Several reasons exist for this.

First of all, life insurance, which is, in fact, a long-term form of savings by the insured person in a financial institution, represents a long-term liability for that institution. In making use of this liability, the insurance company must shape an investment portfolio, which will, at least, yield the returns promised in the policy. Furthermore, this form of savings covers the risk of death for the insured person, whereas for the insurance company it constitutes a potential liability, i.e. the obligation to pay the agreed amount, thus reducing the company's liquidity. Moreover, the insured person has the right to have his or her policy paid out up to the amount of the surrender value before it is due.

Such an approach, combining risks and long-term savings (the premium) with the possibility of paying out a policy before it comes due, requires insurance companies to secure instruments for mathematical reserves. The importance of being able to manage mathematical reserves goes beyond the autonomy, individuality and other specific features of any insurer as a legal person and its management. The concept of managing mathematical reserves and, thereby, the assets they produce, is extremely important for the stability of any insurer. Insurance companies are a necessary factor in the financial structure, since, in their capacity as investors, they allocate collected household savings to the financial markets. Given that the stability of the financial system is of strategic interest to any state, regulators impose legal obligations on all insurance companies that are registered to conduct life insurance operations.

The Scale of Impact of Mathematical Reserves on an Insurer's Investment Portfolio

Mathematical reserves are a form of premium reserves typical of life insurance, calculated using actuarial mathematical methods. Such calculation is based on the concept of risk equalisation, whereby, over the duration of a life insurance policy in which risks increase with time, larger reserves are created in earlier periods (when risks are smaller) with the same average premium, while in later periods reserves are smaller (while the risk is greater). The main elements of risk used in calculating mathematical reserves are mortality, interest and costs. Based on a calculation of the average risk of a life insurance policy, it is possible to determine an average premium for every insured person, taking into account their age and sex.

By using an average life insurance premium, the larger resources accumulated during the first half of the insurance period cover increased risks during its second half. In other words, mathematical reserves are a premium surplus formed by the interest-bearing accumulation of premium savings during the agreed life insurance period. One factor that strongly affects the amount of mathematical reserves is the one-time sales commission. As a rule, the sales commission is paid during the first year of the insurance policy, and is calculated based on the insured amount. Therefore, insurers must both plan for sufficient liquidity to be able to cover commission to their intermediaries, and include their entire liability to intermediaries in the mathematical reserves, also bearing in mind the time horizons of the policy. The practice of taking the intermediary's commission into account and factoring it into the mathematical reserves is exemplified by Zillmer's method also called *zillmerisation*.[3] By means of zillmerisation, mathematical reserves are reduced in proportion to the present value of those parts of the premium, which have not yet become due, and from which the intermediation costs of making the policy are to be covered. Another important objective is achieved here, namely, adjusting the value of mathematical reserves to the calculated real surrender value of the life insurance policy.

In addition to the aforementioned characteristics and specific features, mathematical reserves occupy an important place among the sources of funds on insurance companies' balance sheets, one, which is identical to that of technical reserves for non-life insurance. Thus, mathematical reserves represent a long-term liability for insurers, out of which insurance companies pay agreed amounts of life insurance in the event of damages, the surrender of a policy, or capitalised savings. The share of mathematical reserves in total technical reserves depends on the structure of liability assumed by an insurer in its life and non-life insurance operations. An increased share of life insurance in an insurer's total portfolio necessitates increased liabilities in the mathematical reserves item.

Table 3.: The Relative Significance of Mathematical Reserves Among Overall Insurance Industry Financial Resources in Croatia

Description of item	1999	%	2000	%	2001	%	2002	%
Owner's equity	1,456,872	19.10	1,500,296	17.41	1,753,120	18.13	1,883,987	16.98
Mathematical reserves	1,172,145	15.37	1,639,409	19.03	2,104,509	21.76	2,826,495	25.47
Other technical reserves	4,182,802	54.84	4,618,637	53.61	5,083,839	52.57	5,437,999	49.01
Other liabilities	816,100	10.70	857,116	9.95	728,647	7.54	948,337	8.55
Total liabilities	7,627,919	100	8,615,458	100	9,670,115	100	11,096,818	100

Source: Insurance Supervision Authority

During the 1999-2002 period, the relative importance of mathematical reserves increased with regard to all other sources of liability for insurance companies. Its relative share of 15.37 per cent in 1999 grew to 25.47 per cent in 2002 of total financial resources. Table 4 shows that, among all other technical reserves, mathematical reserves are the most important for insurers, even more important than owner's equity, whose share of total sources of liability fell from 19.10 per cent in 1999 to 16.98 per cent in 2002. Mathematical reserves are crucial in defining an insurance company's investment portfolio. Mathematical reserve funds are, in fact, owned to the largest extent by insured persons themselves; so it is of the utmost importance to monitor the efficiency of investments financed using mathematical reserves. Moreover, the annual increase in mathematical reserves in an insurance company's balance sheet liabilities functions as expenditure in the profit and loss account. In terms of corporation tax, this expenditure is not taxable, thus according mathematical reserves the status of a privileged expenditure.

However, it is the manner in which mathematical reserves are treated legally that determines whether they will be efficiently managed. According to the Insurance Act, mathematical reserves constitute 'the difference between the present value of all future obligations of an insurer and all future obligations of a policy holder'. [4] The regulator places great emphasis on the future status of the savings entrusted to insurance companies, as is reflected in the obligations these companies must fulfil regarding the structure of investment portfolios whose source of financing comes from mathematical reserves. The mathematical reserve funds of life insurance policies represent the value of an investment portfolio, while the structure of this portfolio is limited according to investment class (the type of investment); the share

of this class in total mathematical reserves; and the maximum amount of a financial instrument from the same issuer.

In this sense, an investment portfolio based on mathematical reserves must be designed in such a way as to observe certain limitations on investment. Specifically, such a portfolio may contain:

- securities issued by the Republic of Croatia, the Croatian National Bank or the Croatian Bank for Reconstruction and Development, in a minimum amount of 50 per cent of the value of the mathematical reserves;
- securities whose payment is guaranteed by the Republic of Croatia, in a maximum amount of 30 per cent of the mathematical reserves;
- deposits and loans to a bank whose registered office is in Croatia, in a maximum amount of 50 per cent, i.e. up to 10 per cent of the mathematical reserves in the same bank;
- loans to life insurance policy holders up to the surrender value of said policy, but not more than 30 per cent of the value of the mathematical reserves;
- fixed income property, up to a maximum of 20 per cent of the mathematical reserves.

Table 4.: The Structure of Investment Financed by Mathematical Reserves

	1999	Share %	2000	Share %	2001	Share %	2002	Share %
TOTAL INVESTMENTS	1,172,145	100	1,639,409	100	2,104,509	100	2,826,495	100
Securities	491,199	41	985,783	60	1,407,677	66	2,090,369	74
Deposits	342,941	29	381,933	23	398,446	18	394,406	14
Property	16,544	1	43,988	2	73,529	3	150,934	5
Other	321,461	27	227,725	15	224,857	10	160,786	7

Source: Insurance Supervision Authority

Generally speaking, the insurance industry in Croatia has been observing the legal limitations on investing mathematical reserve funds. While in 1999 investment in government securities was smaller, since 2000 the structure has been adjusted to meet legal limitations. However, there is a small part of mathematical reserves in the insurance industry which is not in accordance with these limitations, but for which the consent of the Insurance Supervision Authority may be obtained.[5] Since this represented only 3.9 per cent of the total mathematical reserve funds in 2002, and these are mainly loans not insured by other appropriate insurance instruments, this deviation should not jeopardise the stability and efficiency of the life insurance investment portfolio.

By the end of 2002 Croatia's insurance companies had purchased more than HRK 2 billion in bonds. Thus it may be said that the increased offer of government bonds has helped to adjust the mathematical reserve investment portfolio. On the other hand, the increased issue of government bonds and, consequently, the higher investment of mathematical reserves in these bonds means, in fact, that depositors' savings have been transformed through the intermediation of insurance companies, being allocated to cover budgetary expenses.

Since mathematical reserves have reached 25 per cent of total financial resources, it may be concluded that the savings contained in mathematical reserves are financing 25 per cent of insurance assets. Furthermore, since 66 per cent of total mathematical reserves are invested in government bonds, the result is that 16.5 per cent (0.25 x 66) of total insurance industry assets are being directed toward the state through financial intermediation, to be used by the state to yield a return.

Conclusion

The volume of savings in Croatia doubled in the period between 1999 and 2002. One of the most important reasons for this was the necessary conversion of German marks into euros. In the process, bank liabilities recorded unprecedented growth, such as had not been seen in Croatia since it gained independence. The most significant growth in savings, in terms of volume and intensity, was realised in the area of bank savings, primarily by means of foreign currency deposits and savings deposits. However, non-bank savings reached an 8.2 per cent share of total bank and non-bank savings.

In spite of the development of financial markets and the completion of pension reform, life insurance, as a specific form of insurance, has not lost its importance. Taxes break and incentives, as well as other innovative offers made by insurers, have brought about an increased demand for life insurance policies. During the 1997-2002 period, the share of life insurance in the total insurance portfolio grew from 11.43 per cent to 20.66 per cent.

Life insurance has specific characteristics with a significant, multidimensional impact on insurance companies' structure of financial resources and their investment portfolio. First of all, because of the structure of life insurance premiums, in which risk and a savings component are intertwined, insurance companies must calculate mathematical reserves. By means of this specific instrument, which comprises mortality risks, interest and costs, insurers can plan their liquidity as well as maintain profitability and a high degree of security.

Financial systems are usually regulated by special laws and supervisory and control bodies, and Croatia's insurance industry is no exception. Croatia's laws

prescribe the amount, form and share of individual issuers in overall investments proceeding from mathematical reserves. As this is a vulnerable segment of payment involving insured amounts and capitalised savings owned by insurees, the prescribed structure of investment reflects the principles of a risk-averse investment policy preferring security to profitability. An analysis of insurance industry financial resources indicates that mathematical reserves have achieved one quarter of overall liabilities. Government bonds, whose share of total insurance industry assets in 2002 attained a relative value of 16.5 per cent, significantly dominate the life insurance investment portfolio.

Based on the above analysis, we may conclude that changes in investment behaviour have occurred in the household sector in Croatia, revealing a marked increase in non-bank savings. These changes in household sector behaviour have, in turn, led to changes in the institutional and operational configuration of the overall financial market.

NOTES

[1] 'Problem Economique', No.2637, Paris, 1999

[2] Source, Hagena, Monthly Bulletin, 2 January 2004

[3] After German actuary dr August Zillmer

[4] Insurance Act (Narodne novine, 46/97, 116/99, 11/2002

[5] Article 55b of the Insurance Act

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