The fourth quantitative impact study of new regulation in the insurance sector[1]

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The Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) has undertaken to submit to the European Commission draft of implementation measures for Solvency II at the turn of the years 2009 and 2010. The results of a fourth quantitative impact study are being currently used in the preparation of those proposals, particularly for the specification of quantitative requirements and calibration the calculation of regulatory capital. Public comment procedures to these drafts currently take place at the CEIOPS. The article is subdivided into two parts; the first part focuses on the valuation of assets and liabilities and the second part deals with own funds and regulatory capital requirements.

The current system of regulation, hereinafter referred to as „Solvency I", in the Slovak insurance sector is based on European directives adopted in the European Union in the early 1970s and it does not reflect new techniques and methods used in the management of insurance undertakings. The directives are designed in the form of minimum harmonization, i.e. they leave the decision on more strict national regulation to the member states. That creates a relatively inhomogeneous regulatory environment in the European Union as well as it provides potential platform for regulatory arbitrage between the member states.

The regulatory capital requirement calculation for insurance undertakings, the so-called required solvency margin, is a simple factor formula. The formula implicitly takes into account the insurance risk by means of the level of insurance liabilities expressed primarily by means of technical provisions and claims incurred. Other risks, to which insurance undertakings are exposed, are not covered by current legislation in a comprehensive way and the set rules are not sufficiently risk-sensitive.

The aim of the Solvency II project is the introduction of a harmonized risk-oriented regime of regulation and supervision in all member states of the European Union and the unification of the 14 currently existing directives regulating the activities of insurance undertakings and reinsurance undertakings. The main objective[2] of supervision under Solvency II is to protect policyholders and beneficiaries and other objectives are financial stability and objective and stable markets. The term Solvency II sometimes refers only to new elements within the Solvency II project, which can be subdivided into quantitative requirements (also referred to as "Pillar I"), qualitative requirements (referred to "Pillar II") and transparency requirements (referred to as "Pillar III").

On 22 April 2009, the European Parliament approved in the first reading the Directive of the European Parliament and of the Council on the taking-up and pursuit of the business of direct insurance and reinsurance (hereinafter referred to as „the Solvency II directive"), by which the Solvency II project entered the last stage of preparations for its implementation, i.e. the preparation of technical regulations, also referred to as implementing measures of the European Commission, and the transposition of European legal norms into national legislations.

For the purposes of testing Solvency II, the European Commission has asked the CEIOPS to carry out a fourth quantitative impact study (QIS 4) particularly with respect to the applicability of Solvency II and its financial impact on insurance undertakings and reinsurance undertakings. The QIS 4 quantitative impact study took place from April to July 2008 and the summary results were published by the CEIOPS in November 2008.

The QIS 4 quantitative impact study

The objectives and areas of particular relevance[3] within the QIS 4 were above all:

- to obtain the data to support the preparation of implementing measures
- to ascertain the preparedness of insurance undertakings for the possibility to use internal models and to compare the results of using the standard formula and the internal model for the calculation of solvency capital requirements,
- to verify the applicability and adequacy of the calculation of capital requirements,

1 *The article only deals with insurance undertakings, because no reinsurance undertaking was under the supervision of the National Bank of Slovakia when the fourth quantitative impact study was being carried out. To maintain anonymity, values are indicated at their aggregate and/or median level in the article. Opinions presented in the article are opinions of the authors and might not express the position of the National Bank of Slovakia.*

2 *Recital 13 and Article 27 of the taking-up and pursuit of the business of direct insurance and reinsurance, Version adopted in the first reading by the European Parliament*

3 *Call of the European Commission for a fourth Quantitative Impact Study – Call for Advice from CEIOPS (Fourth Quantitative Impact Study) MARKT/2504/08.*

- to verify the proposed simplified calculations for technical provisions, the risk margin and capital requirements,
- to ascertain the impact of the quantitative requirements of Solvency II on insurance undertakings and reinsurance undertakings, particularly on a possible capital insufficiency and its quantification.

In Slovakia, 7 insurance undertakings participated in the QIS 4, of which 6 are composite insurance undertakings and 1 a life insurance undertakings. Compared to the third quantitative impact study (QIS 3), the participation increased by 2 composite insurance undertakings. Out of the participating insurance undertakings, 5 insurance undertakings have sent completely filled-in questionnaires and 2 insurance undertakings have sent only the quantitative part. Two insurance undertakings have also sent information regarding a prepared internal model, which they intend to start to apply for regulatory purposes after the new regulation has been put into practice. No insurance undertaking from Slovakia had participated in the first and second quantitative impact study.

The ratio of participating insurance undertakings to the total number of insurance undertakings supervised by the National Bank of Slovakia at the time of carrying out the QIS 4 was 30%. The market share of participating insurance undertakings measured by total technical provisions was 81% in life insurance and 79% in non-life insurance.

The participation in QIS 4 within the entire European Union was 33.6% measured by the number of insurance undertakings and average participation measured by technical provisions was 75% in life insurance and 69% in non-life insurance. The participation can be evaluated positively from the point of view of Slovakia due to the market share of participating insurance undertakings on total technical provisions, as well as due to the hitherto participation of Slovak insurance undertakings in quantitative impact studies. In terms of the number of participating insurance undertakings, Slovakia has been placed among member states with lower participation.

Valuation of assets and liabilities

For the purpose of setting the own funds, which are primarily calculated as the difference between the assets[4] and the liabilities, all items of the balance sheet have to be taken into account[5]. Solvency II is based on the market value principle, meaning that it is in accordance with realistic valuation according to the current market valuation of assets and liabilities. The QIS 4 quantitative impact study uses the term "economic value" for this purpose, by which, in our opinion, Solvency II attempts to use a term differing from the term "fair value" as used by the IAS/IFRS international accounting standards. The reason is the fact that despite a de facto identical definition and the aim to harmonize valuation under Solvency II with valuation under the IAS/IFRS international accounting standards as much as possible those value do not have to be always identical[6].

In the valuation of assets and liabilities, Solvency II issues from the current definition of fair value under the IAS/IFRS international accounting standards, i.e. assets and liabilities are valued at the value, for which they could be exchanged between knowledgeable willing parties in an arm's length transaction (Article 74 of the Solvency II directive). However, as opposed to the IAS/IFRS international accounting standards, the own credit standing of the insurance undertaking should not be taken into account in the valuation of liabilities. According to the document CEIOPS-CP-35/09[7], however, some member states do not agree with the full application of this principle.

The European Commission will issue implementing measures, probably in the form of regulations, which will prescribe how to calculate the economic value of particular balance sheet items with the aim of ensuring that those items be valued in a uniform way in all European Union member states (Article 74 Section 2 of the Solvency II directive).

The QIS 4 quantitative impact study sets the following hierarchy of methods[8] for the valuation of assets and liabilities (except technical provisions):

1) the value is set based on market prices (mark to market),
2) the value is set based on a model (mark to model) with the parameters supposed to stem from the market,
3) approximation, by which the values are set based on IAS/IFRS international accounting standards. However, this approximation can be applied only in the case of accounting valuation at fair value.
4) local accounting standards (irrelevant in Slovakia).

The technical specification – except for the identification of IAS/IFRS approaches that can be used as approximations for the purposes of QIS 4 – provides only minimum guidance for insurance undertakings as to how they are supposed to proceed in the application of individual methods. The QIS 4 quantitative impact study is the first of quantitative impact studies carried out so far to complexly test the valuation of assets and liabilities (liabilities except for technical provisions) for the purposes of Solvency II.

In Slovakia, insurance undertakings have not had considerable problems with the revaluation of accounting values to the economic value. The main reason is the application of the IAS/IFRS international accounting standards in Slovakia. That has probably been also the main argument why insurance undertakings have expressed their general support for the proposed methodology. In our opinion, the possibility to use the fair value under the IAS/IFRS international accounting standards for the purposes of Solvency II could have a favorable impact on the quality of reporting for the purposes of supervision without creating further administrative costs.

4 The quantitative impact study QIS 4 uses the term „assets" as opposed to the IAS/IFRS international accounting standards using the term „property".
5 This approach is referred to as the „comprehensive balance sheet approach" at times.
6 Relatively large differences could arise, if within stage II of the „Insurance Contract" project the International Accounting Standards Board (IASB) sets other rules for the valuation of technical provisions than Solvency II.
7 CEIOPS Consultation Paper No. 35, Draft CEIOPS „Advice for Level 2 Implementing Measures on Solvency II: Valuation of Assets and Other Liabilities", CEIOP CP 35/09.
8 Section TS.I.A.2 of the Technical specification for QIS 4, QIS4 Technical Specifications (MARKT/2502/08).

Table 1 Total impact on the balance sheet by the ratio of individual components to the balance sheet value

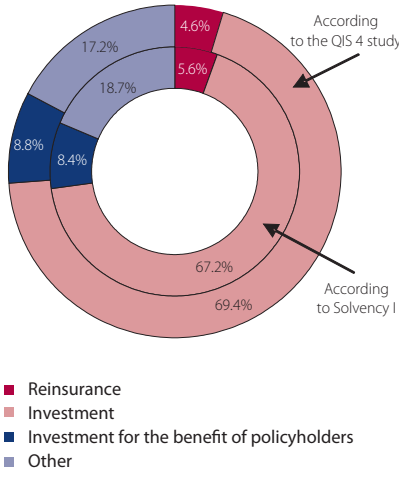
	According to Solvency I/ according to IAS/IFRS	According to QIS 4
Assets		
Reinsurance	5.6%	4.6%
Investment	67.2%	69.4%
Investment for the benefit of policyholders	8.4%	8.8%
Other	18.7%	17.2%
Liabilities		
Shareholders' equity	19.6%	29.7%
Technical provisions	61.6%	41.1%
of which: best estimate		37.4%
of which: risk margin		3.7%
Provisions for policies where the investment risk is borne by the policyholders	8.4%	6.7%
Other liabilities	10.4%	22.4%

Source: NBS.

There have not been large differences between the values under the accounting standards and the values for QIS 4 in the revaluation of assets and liabilities (liabilities except technical provisions) to the economic value. Where possible insurance undertakings have used the valuation under IAS/IFRS. Values for the purposes of QIS 4 have differed from the accounting values only in cases where the value under the IAS/IFRS international accounting standards could not have been considered a proxy of the economic value. One insurance undertaking has stated that it uses fair-value-based valuation for the purposes of internal risk management, the methodology being, apart from some aspects of technical provisions valuation, consistent with valuation under QIS 4. In this connection, it has to be pointed out that within groups internal risk management is directed in a centralized way and does not have to take into account potential local specificities, such as the social and economic environment, in which the subsidiary exists, and this can have an impact on the setting of some assumptions and starting points. Therefore in our opinion, it will be very important to set very prudent requirements for the management of the undertaking (Pillar II within Solvency II).

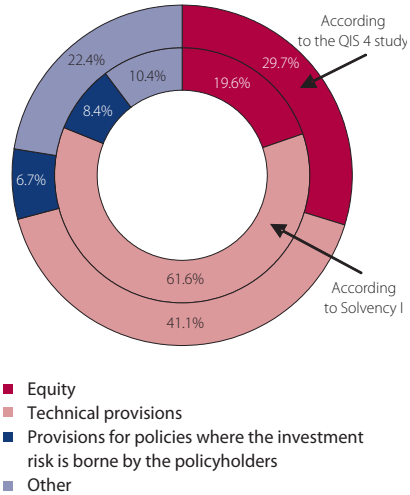
In most cases, insurance undertakings have used a value based on market prices. When a value based on market prices was not available, the insurance undertakings used the method of projecting discounted cash-flows (especially in the

Chart 1 Comparison of the ratio of the individual asset components to the balance sheet value between QIS 4 and Solvency I



Source: NBS.

Chart 2 Comparison of the ratio of the individual liability components to the balance sheet value between QIS 4 and Solvency I



Source: NBS.

valuation of technical provisions). The discounting depended on interest rate swaps. In some cases, the insurance undertakings have used directly the accounting value, for example in the valuation of short-term receivables and liabilities. A revaluation would not make much sense in such cases, because the differences would not be material. The adequacy principle is a key principle for the application of the Solvency II regime and therefore it is possible that such an approach could be accepted in the future in some cases. Particularly the revaluation of reinsurance receivables and intra-group loans to the economic value as well as the revaluation of deferred tax receivables and liabilities has been identified as problematic.

In the European context, some insurance undertakings (particularly life insurance undertakings) have expressed their fear that revaluation under the IAS/IFRS international accounting standards might increase the volatility in assets and liabilities, which might increase the volatility of own funds subsequently. However, the aim of the QIS 4 quantitative impact study has not been to open a discussion on the correctness of fair-value-based valuation.

The total impact on the balance sheet[9]

In general, it can be stated that there has been no change in the relative representation of individual items on the assets side. On the liabilities side, by contrast, the technical provisions have been reduced significantly, which has caused an increase in the equity of insurance undertakings. The median of the ratio of balance sheet values under QIS 4 to the accounting balance sheets has been between 90 and 120%. In absolute terms, the balance sheet value has decreased by 165 million EUR, i.e. by 4.05%.

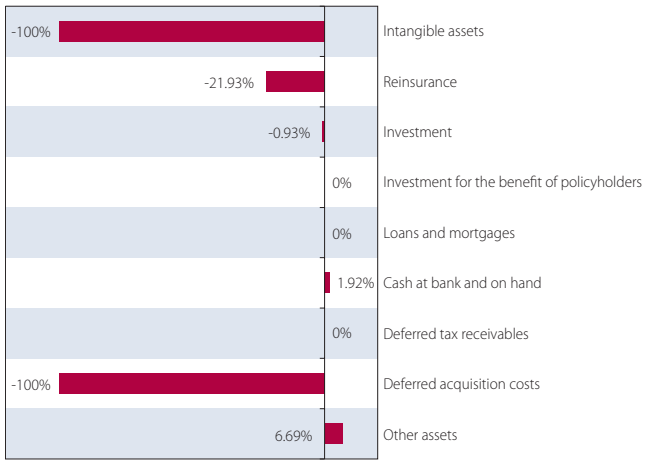
Assets

The largest differences have arisen in the revaluation of investments in land and buildings and in participations to the economic value, because insurance undertakings mostly value these items at historical cost for accounting purposes. The highest decrease as a result of revaluation has been recorded in reinsurance receivables and it was due to the revaluation of technical provisions; the highest increase in value, by contrast, has been identified in the case of land and buildings. Intangible assets have been valued at zero, which is in line with our opinion that intangible assets do not have to be liquidable, when the insurance undertaking is in troubles. The economic value has been available to the insurance undertakings for most financial instruments and the insurance undertakings value these instruments at the fair value for accounting purposes, as well.

Other liabilities (liabilities other than technical provisions)

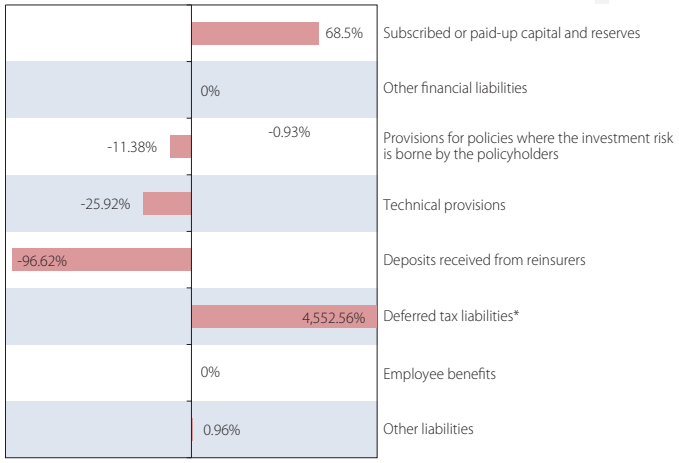
The largest change has been identified in the case of deferred tax liabilities and deposits received from reinsurers, which however has not had a large impact on the total result. The reason has been particularly the fact that within other liabilities (liabilities other than technical provisions), insurance undertaking have used accounting values for QIS 4 valuation.

Chart 3 Changes in the valuation of individual asset items



Source: NBS.

Chart 4 Changes in the valuation of individual liability items



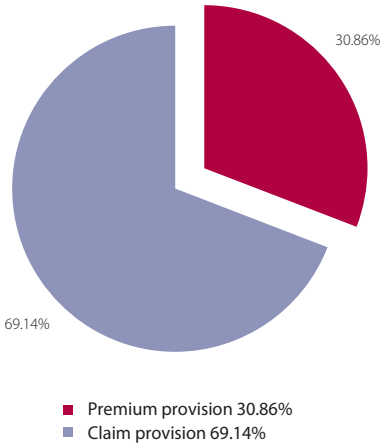
Source: NBS.
**For practical reasons, we have the shortened the scale of changes, so that the total change of deferred tax liabilities cannot be seen.*

Technical provisions

The methodology for the valuation of technical provisions is an area that has undergone fundamental changes compared to the current regulation. The value of technical provisions should correspond to the amount, at which the insurance undertaking would transfer the insurance portfolio, i.e. the rights and obligations from insurance contracts, to another insurance undertaking. The technical provisions are calculated as the sum of a best estimate and a risk margin with the exception of hedgeable risks, i.e. risks whose cash-flows can be replicated by the cash-flows of financial instruments. The value of the technical provisions of hedgeable risks is to be set at the level of the

9 QIS 4 uses the term „balance sheet" as opposed to the IAS/IFRS international accounting standards, which use the term „statement of financial position".

Chart 5 Comparison of the best estimate of the technical premium provisions and of the technical claims outstanding provisions



Source: NBS.

market value of those financial instruments. The best estimate corresponds to the value of expected future cash-flows from insurance contracts over their lifetime, taking into account the time value of money by means of the relevant "risk-free interest rate"[10]. In the cash-flow projection, it is necessary to identify and take into account all sources of uncertainty of future cash-flows, for example the fluctuation in the timing, frequency and amount of the claim of insured events, a change in the behavior of the insured persons and the interdependence of two or more sources of uncertainty.

The valuation method applied by the insurance undertaking and the assumptions used should be realistic and reflect the nature of portfolio and of the corresponding cash-flows. The insurance undertaking should use all relevant and available data from internal and external sources to determine the assumptions fitting best to the characteristics of the insurance contract portfolio.

The valuation of technical provisions in life insurance should be based on a projection of future cash-flows for the individual insurance contracts. A certain approximation by means of suitably selected groups of contracts is possible within the application of the proportionality principle. The valuation technique can generate negative values in specific situations (for example for a "young" portfolio). Such a situation is acceptable and it is not necessary to replace the value of the technical provisions by zero.

The selection of the valuation technique depends on the nature of the liabilities and risks, which influence the cash-flow, and does not depend on the formal inclusion of the insurance contract in life or non-life insurance. For example an annuity resulting from a liability insurance should be valued by means of the life insurance technique.

Besides others the European Commission can adopt an implementing measure, which will set simplified methods and techniques for the calculation of technical provisions.

In non-life insurance, premium provision and claims provision have to be valued separately. The premium provision largely corresponds to the current unearned premium provision (UPP). The ratio of this provision valued under QIP 4 to the UPP was 94.7% at a median value.

The premium provisions relate to insured events that occur after the valuation date during the period covered by insurance. The future cash-flows projection should include all future claim payments, claims settlement expenses, cost of portfolio management and future premiums of existing insurance contracts. The claims outstanding provisions relates to insured events that occurred before the valuation date irrespective of the fact whether the claim was notified or not. The cash-flow projection should include all premium payments and claims settlement expenses.

According to Solvency II, the risk margin has to be calculated by means of the cost of providing an amount of own funds equal to the level of the solvency capital requirement (SCR) over the lifetime of the insurance contract portfolio. This concept is accepted by the market, but some insurance undertakings have considered the rate[11] determining the cost of holding own funds to be too high. The risk margin calculation is based on the concept of an "empty" acquiring insurance company and the assumption of a transfer of the insurance contract portfolio of the individual lines of business carried out separately. The influence of diversification between the groups of insurance contracts is not taken into account in the determination of the risk margin.

The fundamental changes in the valuation of technical provisions under QIS 4 as compared to the present have caused a significant change in the value of technical provisions.

The ratio of technical provisions to the current value of technical provisions has been 74.8% in life insurance and 85.9% in non-life insurance. The risk margin's participation in the technical provision has been 12.9% in life-insurance and 2.9% in non-life insurance. The difference in the risk margin has resulted from the longer-term character of liabilities in life insurance. The decrease in the value of technical provisions in life insurance was mainly due to the following reasons:

- cancellation of implicitly included margins in the modeling of expected future flows,
- non-existence of a minimum amount of technical provisions set by the sum of surrender values,
- the possibility of changes in assumptions.

In non-life insurance, the decrease in value has been due to taking into account the time value of cash-flows. Apart from one insurance undertaking, which has used the stochastic approach, the insurance undertakings have applied the deterministic approach for the purposes of calculating the technical provisions. In non-life insurance, for the claim provision, the insurance undertakings

10 A risk-free interest rate is an interest rate, which does not take into account the credit risk.
11 The cost of capital rate has been set at 6% in the QIS 4.

have used the proxy of the sum of individual reported insured events supplemented with triangle methods for incurred but not reported claims. In the calculation of technical provisions, there have been complications particularly regarding the valuation of options and guarantees and the projection of required capital for the calculation of the risk margin. The text of the technical specification did not indicate precise way of valuing the technical provisions for policies where the investment risk is borne by the policyholders. Two approaches have been chosen: technical provisions determined by the value of the fund and technical provisions determined by a projection of the best estimate and the risk margin. In connection with the publication of the consultation document CEIOPS-CP-41/099, it can be stated today already that their value should have been determined by the value of the fund minus the current value of future profits[12].

To be continued in the next issue.

12 *Consultation Paper No. 41, Draft CEIOPS's Advice for Level 2 Implementing Measures on Solvency II: Technical Provisions – Article 85 c Circumstances in which technical provisions shall be calculated as a whole, CEIOPS-CP-41/09.*