# The insurance sector at a milestone: positive initial experiences with the newly introduced Solvency II system\*

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Indisputably, the most important event of the year on the European insurance market was the transition to the so-called Solvency II (S2) regime, which laid down the new riskbased own funds requirement. In our study, we assess the first Hungarian results based on the "Day 1" S2 submissions, the MNB's first S2-based risk assessment and the EIOPA<sup>1</sup> stress test examining the impact of the persistently low yield environment on capital adequacy. The first experiences of the new regime are positive. The sector-level 204 per cent capital adequacy is reassuring overall. Within this, the capitalisation of 20 out of the 28 insurers is above the 150 per cent stipulated in the MNB's recommendation on the volatility capital buffer. In 2016, the MNB introduced a new risk assessment approach based on S2 and business models, and according to that, the overall risk level of the sector is moderate, but the challenges include the low yield environment from the perspective of profitability, the level of digitalisation among operational risks as well as the adjustment to the MTPL and the life insurance market situation with regard to insurance risks. The moderate risk rating with respect to capital risk is borne out by the results of the EIOPA stress test: the persistently low yield environment has no substantial impact on capital adequacy at the sector level, however, when it is coupled with a market shock, some market participants may experience difficulties.

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# 1. Introduction

The Solvency II (S2) insurance regulation introduced on 1 January 2016 brought about several qualitative and quantitative changes as compared to the previous Solvency I (S1) system, and was the most momentous event for the insurance

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sector all across Europe. Within the quantitative elements, the key difference is the valuation of assets and liabilities on an economic basis, and the risk-based calculation of the capital requirement instead of the earlier, factor-based model using technical provisions, exposure, claim and the insurance premium. The introduction of S2 led to substantial changes not only for insurers but also from the perspective of regulatory and supervisory practice. On account of the special topicality of the issue, it is crucial to summarise the experiences in connection with the insurance sector's transition based on the "Day 1" S2 reports for 1 January 2016 received in May 2016 and the audit report verifying their accuracy, the Q1 submissions also received in May 2016 and the risk assessment based on those, as well as the results of the stress test carried out by the European Insurance and Occupational Pensions Authority (*EIOPA*) examining the impact of the persistently low yield environment and other market shocks.

The establishment of the new system was a long process: the European Commission launched a review of the insurance sector's regulation within the framework of the S2 project in April 2001. The aim of the initiative was to expand of the European Union's insurance market, give priority to the protection of clients' interests, boost the competitiveness of European insurers and standardise the supervision of the insurance sector. In addition to these goals, the harmonisation with the whole financial sector was also an important aspect during the development of the S2 system, and therefore the new regime was sought to be aligned with the rules applied in the field of banking. As a result, similar to the Basel II system, the S2 rests on three pillars: the calculation methodology of the own funds requirement and the technical provisions (Pillar 1), the quality requirements with respect to corporate governance practices and the capital add-on that may be imposed by the supervisory authority (Pillar 2), and supervisory reporting and disclosure (Pillar 3). Similar to banking practices, the S2 system is based on risk management, riskbased requirements and the relationship between risk exposure and solvency requirements.

The S2 Directive (2009/138/EC) was adopted by the European Parliament on 25 November 2009 and was to be implemented by the Member States by 1 January 2016. Transposition of the EU regulation affected the Hungarian regulation at several points (*Szedlák 2015*). After the approval of the directive, long negotiations were conducted between the panel of experts of the European Parliament, the European Council and the European Commission with respect to the S2 valuation of the technical provisions for insurance products containing long-term guarantees, and therefore adoption of the second-level regulation was postponed until 2014. The transitional period until the actual implementation of the S2 Directive provided an opportunity to insurers for preparing for the qualitative and quantitative requirements stipulated in the directive (*Haraszti 2015*) and to national authorities for the modification of the regulatory practices. To facilitate the preparation and harmonisation of the individual Member States' regulatory work, EIOPA issued guidelines for the transitional period (2014 and 2015) in four topics.

In order to meet EIOPA's requirements, the Magyar Nemzeti Bank (*MNB*) implemented all four preparatory guidelines. The MNB transposed the guidelines on corporate governance, the pre-application of internal models and the forward-looking assessment of insurers' own risks in the form of recommendations, and it informed insurers regarding the submission of the information set forth in EIOPA's transitional measure "Guidelines on Submission of Information to National Competent Authorities" via several channels. The MNB held a market consultation in December 2014 and requested Hungarian insurance market participants in an executive letter to familiarise themselves in the preparatory period with the practices of reporting standardised at the European Union level and in force under S2 as well as with the information to be submitted.

In addition to the above, in the spirit of the proactive supervisory approach, the MNB prepared regular Quantitative Impact Studies (QIS) with the voluntary participation of the insurers, thereby assisting the Pillar 1 preparation. The primary objective of the impact studies was to assess the quantitative impact of the transition to Solvency II, i.e. the effect on technical provisions and the capital position, at the institutional and sector level, and at the same time it provided insurers an opportunity to gain a deeper insight into the S2 methodology. The latter was facilitated by the question-answer process during the QISs, where the MNB clarified the issues that were raised, as well as by the market notices containing the sector-level results of the impact studies. In the last two years, the MNB also published the results in the industry journal "Biztosítás és Kockázat" (Insurance and Risk). The preparatory guideline on the submission of the above-mentioned information enabled the most recent of the ten quantitative impact studies carried out since 2006, i.e. the one for the end of 2014, to be based on the new reporting tables in effect from 1 January 2016 (Bora et al. 2015, 2016; PSZÁF 2011, 2012, 2013).

Similar to the impact studies, Pillar 1 preparation was also supported by the fact that the MNB conducted pre-application surveys among the insurers that wished to use an internal model. In addition to the individual, institution-level surveys, the MNB also took part in group-level pre-application assessments and gained valuable information on the preparedness of the groups. The surveys involved several institutions, but in the end only one of them is expected to submit an application for an internal model in 2017.

In order to support Pillar 2 preparation, in addition to presenting its expectations at prudential discussions, the MNB prepared a qualitative impact study in 2014,

in which it assessed in a comprehensive questionnaire the measures insurers had taken in order to prepare for the corporate governance requirements of the S2 system. In addition to the survey, the MNB processed the results of the forward-looking assessment of Hungarian insurers' own risks (based on the ORSA principles) (hereinafter: FLAOR report) based on Annex 1 of MNB Recommendation 6/2014. The institutions were informed about the results and the identified shortcomings in an executive letter, and about the sector-level experiences at professional events. Moreover, based on the processed results, the MNB supplemented its relevant recommendation.<sup>2</sup>

Our study presents the lessons learnt from S2 effective from 1 January 2016, the period since then and the transition from the S1 system. The analyses cover the entire Hungarian insurance market, since all insurers supervised by the MNB are subject to S2, with the exception of small associations.<sup>3</sup> In Section 2, we present a detailed overview of the results of the "Day 1" S2 submissions for 1 January 2016 with respect to technical provisions, capital requirements and capitalisation. In Section 3, we present the experiences of the 2016 Q1 sector-level risk assessment, the first that was based on the S2 principles, and finally in Section 4 we discuss the results of the EIOPA stress test examining the impact of the low yield environment and market shocks.

# **2.** Based on the first successful S2 reports, the capital adequacy of the insurance sector is reassuring

The "Day 1" S2 reporting obligation for 1 January 2016 regulated uniformly at the European Union level was fulfilled by all Hungarian institutions subject to S2 with the exception of one insurer by the 20 May 2016 deadline, in line with the legal obligation stipulated in Commission Delegated Regulation (*EU*) 2015/35. The reporting package for 2016 Q1 was received on 26 May 2016. The "Day 1" S2 submissions covered less than the annual submissions, as they focused on data on the balance sheet and capital requirements. Within the framework of the 2016 Q1 submissions, in addition to the S2 international reporting tables, the national reporting tables stipulated in *MNB Decree 48/2015 (8 December*) amended in view of the S2 system were also submitted.

During the assessment of the submitted information with respect to data quality considerations, several issues were raised, mainly about stock data, technical provisions and the revaluation of balance sheet items for S2. After remedying the shortcomings which were detected, Hungarian insurers fulfilled their reporting

<sup>&</sup>lt;sup>2</sup> Magyar Nemzeti Bank Recommendation 3/2016 (6 June) on the own risk and own funds assessment system

<sup>&</sup>lt;sup>3</sup> The weight of small insurance associations is insignificant, they generated merely 0.04 per cent of the sector-level premium income in 2014, the most recent year for which data are available (*MNB 2016b*).

obligation to EIOPA, faring exceptionally well in European comparison, without major validation errors and with 100 per cent coverage.

In addition to the MNB's data quality control, another check was performed. This is because in view of the data quality risks inherent in the new S2 reporting system, the MNB requested insurers in an executive letter in December 2015 to perform an audit control of the S2 "Day 1" submissions. Based on the recommendations made by the auditor, several institutions submitted modified S2 "Day 1" information. The findings typically involved methodological shortcomings with regard to the valuation of balance sheet items and provisioning, application of the so-called look-through approach, documentation and control functions. In the case of several insurers, the methodological adjustments resulted in less own funds and higher solvency capital requirements, however, with the exception of one insurer, the capitalisation of the institutions did not drop below the statutory limit after the adjustments.

In S2 terms, the sector-level capitalisation for 1 January 2016 is 204 per cent, which is consistent with the 218 per cent in the most recent impact study concerning the end of 2014<sup>4</sup> (Bora et al. 2016, p. 32). Despite the high sector-level capitalisation, the capitalisation of individual institutions varies widely. In both instances, the S2 capital requirement doubled compared to the S1 value as a result of the risk-based assessment of the solvency capital requirement, and own funds increased by more than 100 per cent on account of the economic revaluation. Based on the results, the transition to the new system was in line with expectations.

# 2.1. Assets, liabilities

On 1 January 2016, the assets valued in line with S2 amounted to HUF 2,566 billion, which was 4 per cent more than the S1 asset value, due to the differences in the valuation principles and the items that can be included on the balance sheet. When comparing the S2 value for 1 January 2016 to the asset value for the end of 2014, we see a 2 per cent increase, which can be attributed to the growing portfolio, the rise in the value of government securities on account of the continued fall in yields, and the 2015 stock market rally. Thus, we can say that insurers' smooth transition to the S2 system was also assisted by the favourable economic and yield environment in early 2016.

On 1 January 2016, sector-level liabilities in the S2 system amounted to HUF 2,081 billion (*Table 1*), which was lower than the S1 value by almost 16 per cent, due, *inter alia*, to the inclusion of future profits and the discounting of non-life insurance technical provisions.

<sup>&</sup>lt;sup>4</sup> The impact study at the end of 2014 was prepared based on the data from the 29 insurers subject to S2, and the present article discusses the data from the 28 institutions on 1 January 2016.

Table 1         Revaluation of the balance sheet in Solvency I and Solvency II         HUF million							
	Solve	ency I	Solvency II				
	31 Dec. 2014	1 Jan. 2016	31 Dec. 2014	1 Jan. 2016			
Assets	2,398,141	2,465,976	2,510,370	2,566,183			
Liabilities	2,398,141	2,465,976	2,029,433	2,080,794			
Source: MNB data reporting.							

## 2.2. Technical provisions

On 1 January 2016, aggregate sector-level S2 technical provisions<sup>5</sup> were close to HUF 1,900 billion, which was 4 per cent higher than at the end of 2014 (*Table 2*). Technical provisions increased due to the combined effect of several factors, which are presented in detail below.

S2 technical provisions in the *life segment* were close to HUF 1,700 billion, more than half of which were made up of unit-linked life insurance technical provisions. Life insurance technical provisions linked to non-unit-linked and non-health insurance products have remained practically stable since late 2014 (-1 per cent), but the technical provisions of health insurance that is pursued on a similar technical basis to that of life insurance business  $(SLT)^6$  have nosedived to HUF –2.6 billion, which was caused by the expected future profits of health insurances. The change in the (SLT) health insurance technical provisions is a result of the expansion of the health insurance portfolio and the increased accuracy of the models, since several insurers started to separate similar technical basis to life insurance, longterm supplementary health insurances with huge future profits from life insurance policies. Out of the 28 insurers, 10 institutions have (SLT) health insurance technical provisions, the largest of which amounts to HUF 580 million. Three insurers have an especially large profitable health insurance portfolio, and in their case the (SLT) health insurance technical provisions amount to HUF –4.7 billion overall. As under S2 the annuity stemming from liability insurance established in line with the life insurance principle and health insurance obligations have to be recorded among life insurance technical provisions, four non-life insurers reported life insurance obligations. Insurers calculate non-unit-linked life insurance technical provisions as the sum of the risk margin and the best estimate.

<sup>&</sup>lt;sup>5</sup> Technical provisions equal the present value of the sum of future cash flows (incoming and outgoing) plus the risk margin.

<sup>&</sup>lt;sup>6</sup> Pursuant to Article 55(2) of Commission Delegated Regulation (EU) 2015/35 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (*Solvency II*), the assignment of an insurance obligation to a line of business reflects the nature of the risks relating to the obligation. Pursuant to Article 55(3), obligations of health insurance pursued on a similar technical basis to that of life insurance hould be assigned to the lines of business for non-life insurance should be assigned to the lines of business for non-life insurance should be assigned to the lines of business for non-life insurance.

### Table 2

### Changes in technical provisions

HUF million

	Solvency I		Solvency II	
	31 Dec. 2014	1 Jan. 2016	31 Dec. 2014	1 Jan. 2016
Life insurance technical provisions (without UL)	603,434*	606,763*	664,621	657,109
(SLT) health insurance technical provisions	-	-	482	-2,640
Unit-linked technical provisions (UL)	1,023,815	1,073,362	941,044	996,105
Non-life insurance technical provisions	429,725	443,795	214,259	242,331
Non-life health insurance technical provisions	-	-	3,193	6,780
Total	2,112,829	2,178,475	1,823,599	1,899,686
*Mathematical reserve. Source: MNB data reporting.				

The drop in SLT health insurance and non-unit-linked life insurance technical provisions was more than offset by the 6 per cent rise in *unit-linked technical provisions*. The increase is consistent with the 5 per cent expansion of unit-linked technical provisions as calculated in S1. Two insurers continued to calculate a portion of their unit-linked technical provisions using a replicating portfolio as a whole, which amounted to approximately 10 per cent of the sector-level unit-linked technical provisions.

The S2 value of *non-life insurance technical provisions* increased more than life insurance technical provisions (by 15 per cent compared to the end of 2014); therefore their volume exceeded HUF 249 billion on 1 January 2016. *The technical provisions of health insurances that is pursued on a similar technical basis to that of non-life insurance business (NSLT)* more than doubled, but they still represent a small share of all non-life insurance technical provisions. One-third of the NSLT health insurance technical provisions amounting to more than HUF 6.7 billion are held by one insurer, which can be attributed to the MTPL technical provisions. Due to the technical provisions maintained for income insurance risk, another 46 per cent of the NSLT health insurance technical provisions are kept by two insurers. Non-life insurance technical provisions other than health insurance technical provisions increased by 13 per cent as compared to the end of 2014.

In addition to the above-mentioned discounting and the inclusion of future profits, the other important reason behind the difference between the life and non-life insurance technical provisions as calculated in S1 and S2 is the assignment of

obligations to lines of business and the resulting realignment, since that has to reflect the underlying risks linked to obligations under the new regime.

# 2.3. Solvency c apital requirement and minimum capital requirement

The S2 sector-level capital requirement remained practically stable as compared to the end of 2014, increasing by merely HUF 1.7 billion by early 2016 (Table 3), but there is large dispersion between institutions as regards the difference. More than 10 per cent change in the solvency capital requirement can be observed in the case of 13 out of the 28 insurers. As a result of the risk-based capital requirement calculation in line with S2, the capital requirement for 1 January 2016 exceeds the S1 value by roughly 90 per cent.

HUF million						
	31 Dec. 2014	1 Jan. 2016				
Market risk	88,034	85,674				
Counterparty default risk	35,416	47,742				
Life insurance risk	76,188	78,163				
Health insurance risk	11,064	15,029				
Non-life insurance risk	111,391	106,433				
Intangible asset risk	257	432				
Operational risk	24,995	24,909				
Diversification	-94,356	-96,876				
Adjustments	-42,620	-49,343				
Solvency capital requirement	212,860	214,507				

The distribution of the solvency capital requirement between risks<sup>7</sup> in early 2016 did not change significantly as compared to the end of 2014 (it changed by over 3 per cent, see *Figure 1*). Based on the solvency capital requirement by risks, the most important are still the non-life insurance, market and life insurance risk modules. In the previous year, the proportion of the capital requirement of life and non-life insurance risks<sup>8</sup> decreased in favour of health insurance, which can be primarily attributed to the separation of supplementary insurances from the main insurance by underlying risks. The rise in the proportion of the capital requirement for counterparty default risk within the undiversified capital requirement by 1 January 2016 (13 per cent) is also worth noting. This increase is chiefly the result of the risk that emerged in the case of five insurers.

<sup>&</sup>lt;sup>7</sup> The "Day 1" Solvency II information submitted for 1 January 2016 is less detailed than the future regular, annual submissions, and therefore the distribution of the solvency capital requirement is only known for the main risk modules.

<sup>&</sup>lt;sup>8</sup> Compared to the undiversified capital requirement.



Two out of the 28 insurers have a *capital requirement for intangible asset risk* for 1 January 2016, while at the end of 2014 only one insurer reported this. Out of the adjustment factors, the *loss-absorbing capacity of technical provisions* increased by 2.5 times by 1 January 2016 as compared to the end of 2014, and 80 per cent of this change could be attributed to three insurers. The adjustment due to the loss-absorbing capacity of technical provisions was included in the calculations of 12 institutions in early 2016 as compared to 7 one year earlier. In Hungary, the adjustment due to the loss-absorbing capacity of technical provisions should be included in the calculations of insurers that offer with-profits policies; however, there is no standardised practice for the interpretation of the corresponding future discretionary profit-sharing, and thus there are still life or composite insurers that did not record such an adjustment. The loss-absorbing capacity of deferred taxes were reported by 23 institutions, two more than at the end of 2014.

According to the information submitted for 1 January 2016, the capital requirement calculated with the standard formula was lower in the case of seven institutions than the minimum capital requirement calculated with the linear formula, and in their case the minimum capital requirement is determined by the legally stipulated

absolute lower limit. At the end of 2014, in addition to the above-mentioned seven insurers, one more institution's capital requirement was determined by the minimum capital requirement calculated with the linear formula, but its capital requirement calculated for 1 January 2016 with the standard formula exceeds the minimum capital requirement. The corresponding absolute lower limit in S1 was the minimum guarantee fund, which determined the capital requirement of 15 institutions according to the S1 values for the end of 2015.

# Hungarian innovation – the MNB's recommendation on the volatility capital buffer

The S2 system differs from the earlier S1 regime in terms of both quality and quantity. Out of the quantitative elements, the key difference is the transition to the risk-based calculation of the solvency capital requirement, and the introduction of the valuation based on economic principles in the case of assets and liabilities. During economic valuation, the value of assets has to match the market price, while liabilities (in absence of a market price) have to match a modelled value, using information from the financial markets. The solvency capital requirement in S2 has to be determined as the economic capital of the insurer that guarantees that it can meet the obligations to policyholders and beneficiaries over the following 12 months with a 99.5 per cent probability (Govt. Decree, Article 26). The new system introduces the concept of minimum capital requirement, which sets a level under which policyholders and beneficiaries would be exposed to unacceptable levels of risk during the pursuit of insurance activities. The Hungarian regulation (Insurance Act, Articles 99 and 101), in line with European requirements, prescribes continuous compliance in the case of both the solvency capital requirement and the minimum capital requirement, i.e. insurers need to have the capital for meeting the capital requirements.

Since insurers must determine compliance with the solvency capital requirement annually, and the amount of own capital and compliance with the minimum capital requirement quarterly (*Govt. Decree, Articles 27 and 54*), in the interim period a capital shortfall may emerge. In order to ensure continuous compliance with the capital requirement, the expectation that insurers should hold capital in excess of the capital requirements is warranted.

The MNB first mentioned the necessity of holding capital in excess of the capital requirement at the November 2014 conference of the MABISZ (Association of Hungarian Insurance Companies): the MNB argued that insurers' capital position in the S2 was expected to be more volatile than before, which could be managed by holding a so-called *volatility capital buffer*. The volatility of insurers' capitalisation mentioned at the conference

was attested by the results of the quantitative impact studies (Bora et al. 2015, 2016; Lencsés 2015; MNB 2016a). In his study published in 2016, Zoltán Zubor (2016) presented a method for determining the size of the volatility capital buffer. In the article, the author derived the capital to be held in excess of the capital requirement from the solvency capital requirement. In his approach, when determining the volatility capital buffer, we have to find the quantile pertaining to the confidence level of the same probabilistic variable the 99.5 per cent quantile of which is the solvency capital requirement, therefore the size of the volatility capital buffer is proportionate to the solvency capital requirement. The amount of the capital held in excess of the capital requirement is influenced, inter alia, by the probability distribution of the unexpected losses and the given confidence level. The author determined the potential size of the volatility capital buffer by assuming well-known distributions. By assuming a normal distribution of unexpected losses, the proportion of the volatility capital buffer relative to the solvency capital requirement is 49.8 per cent with the 90 per cent quantile.

In its recommendation No. 6/2016 (14 June) on holding the volatility capital buffer ensuring continuous capital adequacy, the MNB requires insurers to determine the size of the volatility capital buffer in a way that it guarantees, with at least 90 per cent probability, that insurers' capital adequacy does not drop below 100 per cent over a one-year horizon. The MNB expects insurers to be able to prove that they meet the above-mentioned expectation when determining the capital to be held in excess of the statutory limit. If insurers are unable or unwilling to prove that they meet the above-mentioned expectation, the MNB recommends that the size of the volatility capital buffer held by the insurer be 50 per cent of the last reported solvency capital requirement. During the drafting of the recommendation aimed at managing capital adequacy risk, which can be deemed ground-breaking at the European level, the MNB considered the above-mentioned mathematical approach, as well as the experiences of the quantitative impact studies, the values of the capital adequacy indicators targeted by the institutions and recorded in the FLAOR reports, and the comments received during the professional consultation.

# 2.4. Capital adequacy

The sector-level solvency ratio in S2 for 1 January 2016 is 204 per cent, which dropped from the 218 per cent at the end of 2014 on account of a 5.5 per cent decrease in own funds and the practically unchanged capital requirement. The proportion of institutions with capitalisation of above 150 per cent is basically the same in the impact studies for the end of 2013 and 2014 and in the "Day 1" S2 submissions for 1 January 2016 (70 per cent); however, the capital level of

the individual institutions fluctuates over the years. The change in own funds as compared to the end of 2014 varies widely in the sector, we can observe an 80 per cent drop as well as a rise of over 400 per cent.

As, due to the future expectations that are taken into consideration during the assessment of the economic environment and the liabilities, the valuation methodology in S2 entails the risk of larger short-term fluctuations in own funds and the capital requirement, the MNB issued its Recommendation No. 6/2016 (14 June) on stabilising the prudential level of capitalisation. *The 150 per cent capital level* required in the recommendation on holding the volatility capital buffer ensuring continuous capital adequacy *enables insurers' own funds to continuously exceed the capital requirement*.



The solvency ratio of 20 out of the 28 institutions subject to S2 exceeds the 150 per cent value in the recommendation, and the solvency ratio of six insurers is between 120 per cent and 150 per cent. The solvency ratio of two institutions remains under 100 per cent: in both cases, the capital adequacy was already low in the S1 system, and it decreased further due to the expected losses, and in one case the capital requirement also rose drastically on account of the risk-based calculation.

If the capital level of the sector is compared in the two systems, the S1 sector-level capitalisation for the end of 2015 was 169 per cent (just as at the end of 2014), which is well below the 204 per cent in S2 (*Figure 2*). The difference is due to the rise in the capital requirement (89 per cent) and in own funds (129 per cent). The

S1 solvency ratio remains below the prudential level of 120 per cent in the case of four insurers, and one institution's capital level is 120 per cent. With respect to the solvency ratio, the standard deviation among institutions is huge in Solvency I as well, the largest value being 510 per cent<sup>9</sup> and the smallest being 101 per cent (*Figure 3*).



# **3.** The MNB introduced a new risk assessment approach based on S2 and business models in 2016

In its 2014 supervisory strategy and at the MABISZ conference held that year, the MNB announced that it aimed to revise its risk-based methodology with an approach that focused on S2 and business models (*MNB 2014a; Lencsés 2015*), which was successfully introduced in 2016. The goal of business model analysis is to identify the factors that determine the sustainability of insurers' business models and to gain deeper insight into these factors, thereby creating a supervisory programme tailored to the unique features of the individual institutions (*Dénes et al. 2014*). The core of the new risk assessment methodology is the risk menu that contains all the identified risk categories and risk segments. In developing the

<sup>&</sup>lt;sup>9</sup> On account of the S2 valuation, the insurer undertook a capital increase amounting to HUF 4 billion in 2015 Q4.

new risk menu, the MNB utilised the experiences in EIOPA's SRP<sup>10</sup> working group focusing on supervisory methodologies, as well as the EIOPA SRP handbook still in production that summarises good and desired practices.

The risk menu included a new category, the business model, which integrated previously existing risk groups (such as profitability or environmental risk), and was supplemented with new risk segments (such as the viability of the business model or vulnerabilities). Another vital innovation is that the classification in the category of financial and operational risks follows the structure of the risk modules of the standard formula for calculating the solvency capital requirement, thereby ensuring consistency between the methodology and the submissions. Within corporate governance, risk management, own risk and solvency assessment (ORSA) and the internal control system are separate risk groups, and the latter covers the assessment of the key functions (risk management, actuarial function, compliance, internal audit).

The first risk assessment with the new methodology was performed for 2016 Q1, and it was based on the "Day 1" S2 data submission for 1 January 2016 and the Q1 data submission. The reports for 2015 were received in parallel with the "Day 1" data submission, while during the Q1 data submission, market participants had to submit the S2 data tables as well as the so-called national tables. There is no uniform, EU-level regulation for filling out the latter, and therefore national supervisors (such as the MNB) may require the submission of these data in line with local market characteristics at their own discretion.

According to the quantitative and qualitative assessment performed based on the new methodology, the sector-level risks of insurers decline in the moderate and significant categories, typically with a stagnant or growing outlook. The sector-level risk map (*Table 4*) was also updated with respect to its content, in line with the new risk menu.

<sup>&</sup>lt;sup>10</sup> Supervisory Review Process.

Table 4						
Risk map of the insurance sector						
Risk category	Risk groups	Risk rating	Outlook	Written assessment of risks		
Business model	Environment Strategy, busi- ness plans Profitability	$\bigcirc$	1	Overall, insurers' profitability is sound (quarterly ROE: 7.8 per cent). In the case of loss-making institutions, we can mainly identify problems with the business model and economies of scale. One of the vulnerabilities is the lopsided marketing mix (e.g. the absence or the exclusive dominance of the banking channel). In the future, profitability risks may arise in the life insurance segment due to the disappearance of lapse profits, and in the MTPL segment due to the high claim ratio in paral- lel with the effect of the low yield environment filtering through to the yields on technical provisions.		
Corporate governance	Exercising ownership rights Internal gover- nance Risk assess- ment system and ORSA Internal cont- rol system	$\bigcirc$		Governance and ownership control are appropriate. Overall, the regulation and operation of internal control systems is appropriate. Insurers apply the S2 corporate governance rules. The risk level dropped from significant to moderate, owing to the transposition of the S2 Directive in 2015 with the assis- tance of the MNB, the preparatory recommendations and the early preparation that was launched in connection with these.		
Financial and opera- tional risks	Insurance risk Market risk Credit risk Operational risk Other relevant risks			In the life segment, the low yield environment represents a risk from the perspective of generating the guaranteed inte- rest. In the non-life segment, MTPL claim ratios are high. With respect to operational risks, most of the shortcomings are in accounting, due to the IT systems.		
Capital and reserve risk	Capital Reserves	$\bigcirc$	1	The transition to S2 meant a positive shift for one-third of the sector with respect to solvency ratio. Sector-level solvency ratio is 204 per cent. The capital adequacy of 20 institutions is above 150 per cent. On account of the S2 rules' characteristics, volatility is expected to increase, which warrants the holding of a volatility capital buffer.		
Market presence risk	Products Clients	$\bigcirc$		Consumer protection penalties were imposed on several ins- titutions for inadequate complaint handling, information provision and secrecy practices. Currently, the lifecycle of life insurance products is short, which suggests an unfavourable cost structure and low client confidence. As a result of the MNB's ethical life insurance concept and the increasing popu- larity of pension insurance products driven by the recommen- dation, this period is expected to lengthen.		
	Degre	e of risk				
		$\bigcirc$				
high	significant	moderate	low			
	Rísk d	outlook				
T	-	Ļ				
Source: MI	NB.					

With respect to sector-level risk assessment, it should be noted that the risk rating of corporate governance has changed from significant to moderate (with a stagnant outlook), which was facilitated by the transposition of the S2 (2009/138/ EC) Directive's requirements concerning corporate governance in 2015 with the MNB's assistance, the preparatory recommendations and the early preparation that was launched in connection with these. In the new system, market presence risk received a moderate rating with a stagnant outlook. Financial and operational risks are still rated as *significant* with a stagnant outlook, due to the low yield environment and the risks identified in connection with the operation of IT systems, especially the lack of digitalisation and the often obsolete record-keeping systems, and these risks are not expected to diminish over the short term. In the business model risk category, the vulnerability is the lopsided marketing mix, and its risk rating is moderate with an increasing outlook. The deteriorating outlook is primarily justified by factors jeopardising the currently favourable profitability, e.g. the low yield environment and the risks surrounding the efficiency of the MTPL segment. The combined risk rating of *capital and reserve risk* is still *moderate*. The transition to S2 brought about positive changes for one third of the institutions, presenting serious problems for only one insurer. However, owing to the early intervention by the MNB and the size of the institution, this issue has no effect on the whole sector. In the category of capital and reserve risk, risks are expected to heighten, due to the volatility caused by the S2 system.

The MNB performs risk assessment not only at the sector level but also for individual institutions. This risk-based methodology is centred on the impact rating of the institutions. The individual institutions or groups of institutions are divided into different categories based on their impact on the financial system. The rating uses several quantitative categories (premium income, technical provisions, number of policies. etc.), and it differentiates between institutions with *strong, above medium, below medium* and *weak* impact (*MNB 2015, 2016*). The impact rating determines which risk is assessed to what depth by the MNB (*Table 5*).

Table 5 Place of institutions in the impact—probability matrix									
			PROBABILITY						
Low Moderate Significant High					Total				
IMPACT RATING	Strong impact		3	4		7			
	Above medium impact		5	5	3	13			
	Below medium impact		6	2		8			
	Total		14	11	3	28			
Source: MNB.									

Based on the risk assessment of the institutions, 3 insurers received *high*, 11 received *significant*, and 14 received *moderate* risk rating. The high rating was caused by the rating of the capital and financial and operational risks. Overall, institutions can be said to face significant financial and operational risks due to the factors described in the section on sector-level rating. Although there is no low rating in the aggregate assessment of the institutions, it should be noted that several institutions received a low rating in the individual risk categories (typically in the case of capital and reserve risk).

According to the new methodology, the sectors' risks are *moderate*, while overall the financial and operational risks are *significant*, principally due to the functioning of the IT systems, and, in the case of insurance and market risks, the negative effects of the low yield environment.

# 4. The persistent low yield environment does not entail a systemic capital adequacy risk, but when combined with a market shock, it may cause stress for some undertakings

Government bonds yields started to fall in 2011 in the euro area, and in 2012 in Hungary (*Figure 4*), and as a result by 2016 yields had reached a historic low (*ECB 2015; Felcser et al. 2015*).



The impact of the low yield environment on the insurance sector was already examined by EIOPA Stress test 2014 (*ST2014*). In the survey that was based on end-2013 data, an individual entity level quantitative analysis had to be carried out on the national insurance markets, to establish how much the different low yield curves influenced the S2 financial position and the investment policy of the insurers, as well as their strategy regarding the range of life insurance products. The EU-level results showed that if yields remained persistently low, 24 per cent of the participating insurers would not comply with the S2 capital requirements (*EIOPA 2014*). In the Hungarian insurance sector, the survey indicated a more subdued impact than the European average (*MNB 2014b*).

In view of the drop in yields since the ST2014, it is not surprising that in its 2016 stress test (*ST2016*) EIOPA focused on examining the effects of the low yield environment. This is especially true considering that in its December 2015 Stability Report, EIOPA cited the low yield environment and the resulting reinvestment risk as the greatest risks faced by the insurance sector (*EIOPA 2015*).

In the ST2016, the effects of the persistent low yield environment (*"low-for-long"*) and the low yields combined with a market stress (*"double-hit"*), which were also part of the previous stress test, are compared to the baseline scenario, i.e. the values presented in the "Day 1" Solvency II submissions for 1 January 2016. In the

case of the "low-for-long" scenario, the yield curve used in the calculations had to include yields on its short- and medium-term section (1-5 years) that basically equalled the risk-free yield at the end of 2015, yet the long end of the yield curve converged towards 2.3 per cent compared to the 4.2 per cent in the baseline scenario. The "double-hit" scenario was prepared by the European Systemic Risk Board (ESRB) at the request of EIOPA. The term "double-hit" refers to the shock affecting both sides of insurers' balance sheet, in a way that the drop in the value of the assets side is coupled with a rise in the value of the liabilities. Accordingly, it was assumed during the calibration that due to the increase in risk spread, the expected yields of both government bonds and corporate bonds would rise, leading to a fall in the value of insurers' bond investments. Another assumption was that the impact of the bond market turbulence described above would feed through to other asset markets, and thus the price of stocks, properties and commodities would fall, and swap yields would drop (ESRB 2016; EIOPA 2016a). In most European countries, EIOPA derives the risk-free interest rate (RFR) used for calculating the technical provisions from the swap yields, and therefore a drop in the latter entails a decrease in the RFR as well (EIOPA 2016b). In the countries where the RFR is determined based on government bond yields (thus, inter alia, in Hungary), a drop in the RFR was also assumed in the "double-hit" scenario (Figure 5), which, even when only taking into account discounting, leads to an increase in technical provisions and thus the value of liabilities.



It must be noted that the ST2016 only examined the impact of the individual scenarios on the balance sheet, i.e. own funds, and EIOPA did not expect the recalculation of capital requirements (minimum capital requirement, solvency capital requirement). However, the expected cash flows had to be included in the case of both the baseline and the stress scenarios.

During the ST2016, EIOPA mainly wished to analyse the effect of the shocks on institutions that have a portfolio with a guaranteed yield, i.e. traditional savings-type life insurance policies. Therefore, the ST2016 had to be performed at the institution level<sup>11</sup> for all scenarios, ensuring that market coverage was at least 75 per cent<sup>12</sup> in each Member State relative to the gross non-unit-linked life insurance technical provisions. Another requirement was that participants had to represent the national insurance market, and that the sample should include the institutions most exposed to the low yield environment. Accordingly, the MNB requested 11 insurers to take part in the stress test on a voluntary basis, and 10 of them prepared the study. The participating Hungarian institutions hold 87 per cent of the non-unit-linked technical provisions for 1 January 2016 in Solvency II terms. Although the final figures are not known yet, according to preliminary data, coverage is above the European average (77 per cent). We will now present the preliminary Hungarian ST2016 results that have passed the national and the first-round central validation. EIOPA is expected to publish the final, EU-level results in December 2016.

# 4.1. The impact of the persistently low yield environment is moderate

According to the "Day 1" submissions, the capital adequacy of the 10 institutions taking part in the ST2016 was 212 per cent, and we present the impact of the stresses compared to this. The persistently low yield environment continues to have a moderate effect on participants' capital position, whereas the "double-hit" scenario causes a substantial, 13 per cent decrease in aggregate capitalisation (*Table 6*). In addition, in the latter scenario, the capital adequacy of one institution drops below 100 per cent.

<sup>&</sup>lt;sup>11</sup> During the ST2014, only the parent companies in an insurance group were expected to fill out the "doublehit" scenario, and therefore Hungarian insurers took part in the survey only indirectly.

<sup>&</sup>lt;sup>12</sup> The minimum coverage expected during the ST2014 was 50 per cent.

HUF million						
	Baseline	Double-hit	Low yield environment	Δ (DH; Baseline)	Δ (LY; Baseline)	
Assets	2,065,115	1,917,106	2,084,184	-7%	1%	
Liabilities	1,672,650	1,575,846	1,697,369	-6%	1%	
Of this: Technical provisions	1,534,778	1,447,374	1,560,729	-6%	2%	
Non-life insurance technical provisions	200,406	198,960	205,676	-1%	3%	
Life insurance technical provisions	571,999	564,093	590,555	-1%	3%	
Unit-linked technical provisions	762,373	684,321	764,498	-10%	0%	
Own funds	348,289	301,965	339,461	-13%	-3%	
Solvency capital requirement	164,461	164,461	164,461	0%	0%	
Solvency ratio	212%	184%	206%	-13%	-3%	
Source: MNB.	Source: MNB.					

# The moderate sensitivity to the low yield environment scenario can be attributed to two reasons. First, the overwhelming majority (90 per cent) of the participating insurers' cash flows taper off during the first 20 years (*Figure 6*), and therefore the fact that the long end of the yield curve converges to 2.3 per cent instead of 4.2 per cent has a marginal impact. Second, there is not much difference in the yields in the shock and the baseline scenarios. In the case of the RFR in the first 20 years, a drop of merely 57 basis points is observed, which is reduced further if we use the weighted values of the cash flows (34 basis points).

Thus, it is not surprising that the persistent low yield environment scenario has an effect of merely +0.9 per cent in the case of participating insurers' asset value, and +1.5 per cent in the case of their liabilities, and therefore it only marginally influences the solvency ratio of insurers (-3 per cent).

The more pronounced impact of the "double-hit" scenario on aggregate capitalisation (–13 per cent) is due to several reasons. On the one hand, more asset classes' value is reduced than in the other scenario (e.g. the value of stocks dips by 25 per cent), and on the other hand, there is a greater shift in the yield curve as well (70 basis points in the relevant first 20 years when weighted with the cash flows). As a result of the drop affecting several asset categories, the value of assets diminishes considerably, by 7 per cent, which cannot be offset by the decrease on the liabilities side; therefore own funds and thus, on account of the steady capital requirement, the solvency ratio is also reduced.

Table 6



In addition to the aggregate results, which can be considered sector-level figures, the resilience of the individual institutions to shocks is also worth examining. In the case of the persistently low yield scenario, no substantial effect can be identified at the individual level, but in the *"double-hit"* scenario we can see significant changes. In the case of all insurers, we can observe a decrease in capitalisation of between 2 per cent and 72 per cent as compared to the baseline scenario.

Although as we mentioned earlier, insurers did not recalculate the solvency capital requirements in the stress situations, which may materially influence the above results about capital adequacy,<sup>13</sup> we can safely say that the most sensitive insurers proved to be those with an overwhelming share of traditional life insurance in their portfolio (*Figure 8*).

It should be noted that in the case of the insurers that were affected the most by the "double-hit", the capital position was better in the low yield environment scenario than in the baseline scenario. This is because in their case, longer-term government securities dominate the assets side, the value of which rises more due to a drop in yields than that of the technical provisions.

Thus, the results of the ST2016 suggest no systemic risks in the case of the persistent low yield environment scenario or the scenario combined with a market shock either. However, in the case of some insurers, shocks have a substantial effect, which must be taken into consideration by both the institution concerned and the MNB.

<sup>&</sup>lt;sup>13</sup> For example, the capital requirement of equity and property risk equals the given percentage value of the exposure, i.e. if the value of the exposure decreases, the capital requirement becomes lower in line with that.





# 5. Summary

The transition to the Solvency II system was completed successfully and as planned, and the sector's aggregated solvency ratio for 1 January 2016 is adequate (204 per cent). During the audit control of the "Day 1" Solvency II submissions received by the 20 May 2016 deadline, smaller shortcomings in calculation were detected, which did not change the high sector-level capitalisation. As in the S2 system the valuation of assets and liabilities on a market basis and the risk-based calculation of the capital requirement entails the risk of volatility in own funds and the capital requirement, in its recommendation on holding a volatility capital buffer, the MNB suggests insurers a capital level of at least 150 per cent so that institution-level own funds continuously and reliably meet the capital requirement. For 1 January 2016, the S2 capitalisation of 20 out of the 28 institutions exceeds the minimum 150 per cent capital level in the recommendation, and out of the remaining 8, 6 institutions' capitalisation is between 120 per cent and 150 per cent, which was taken into account by the MNB during the institutions' risk assessment.

The first S2 risk assessment for Q1 with a risk-based methodology, which was developed in line with the unique characteristics of the S2 system and revised with a business model-based approach, ran smoothly. Based on the risk assessment of the whole sector, 3 insurers received high, 11 received significant, and 14 received moderate risk rating. In the case of the institutions with a high risk rating, the MNB has already taken action, as a result of which risks are expected to decrease in the future. One of the key areas of the S2 regulation's qualitative elements is the regulation of corporate governance, where, owing to the transposition of the S0lvency II (2009/138/EC) Directive's relevant sections in 2015 with the MNB's assistance, the preparatory recommendations and the early preparation that was launched in connection with these, the sector-level risk rating changed from significant to moderate. Just like earlier, we identified significant financial and operational risks, which can be mainly attributed to the low yield environment and the risks associated with the functioning of IT systems.

In its 2016 stress test, EIOPA examined the impact of the persistently low yield environment and a scenario entailing market turbulence ("double-hit") on insurers' capital position. The Hungarian insurers that participated in the survey represented 87 per cent of the whole Hungarian non-unit-linked technical provisions, and therefore coverage can be considered high. The preliminary results do not point to systemic risks: the effect of the persistently low yield environment is negligible, while in the case of the "double-hit" scenario, there is still a substantial aggregate capital surplus despite the 13 per cent decline in the capital adequacy ratio. The resilience of the individual insurers to shocks varies widely: in some cases, the impact of the scenarios is marginal, while in the case of one insurer, the capital adequacy ratio drops below the statutory limit.

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