Own Funds Under Solvency Regime

Pavel Wünsch[*]

Abstract:

European legislation for the prudential regulation of insurance and reinsurance sector has existed since the 1970s, gradually materialized in Directive 92/49/EEC and Directive 2002/83/EC, both known as Solvency I. Due to economic and political development the regime become insufficient and therefore in 2009 was adopted the Directive 2009/138/EC known as Solvency II, which represents a crucial modernization of European insurance regulation. Each of these regimes prescribes its own rules for the valuation of assets, liabilities and available capital to cover regulatory solvency requirement. This paper is focused on detection of conditions set up for valuation of assets and liabilities under each of the regime and to outline the calculation of available capital under each of the model.

Key words: Insurance; Regulation; Solvency I; Solvency II; Available solvency margin; Available own funds; Eligible own funds.

JEL classification: G220, G280, K230.

1 Introduction

Insurance and reinsurance undertakings play a key role in a local as well as global economy, they allowing enterprises and individuals to exchange the risk of an uncertain and costly financial outcome for a fixed premium. Therefore, these undertakings need to be sufficiently well-capitalized and prudently managed so that they can withstand its obligations as they become due.

Prudential regulation had been in effect since 1970 in major European insurance markets and was completed by promulgating so-called Solvency I regime, covered by the text of the Directive 92/49/EEC concerning insurance segment other than life insurance, e.g. non-life insurance segment and the Directive 2002/83/EC concerning life insurance segment. Despite the effort to implement the unified regulation in the EU existed twenty-seven individually regulated countries bound together with some common purpose but with widely differing regulatory agendas and challenges. Moreover Solvency I requirements are recognized as being a simple formula that is not sufficiently sensitive to risk and which is being calibrated at a too low level of capital.

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Because of requirements on effective allocation of capital across the European Union, protection of policy holders and beneficiaries and market developments, the metric became gradually no longer adequate. The economic situation required more robust and more risk sensitive solvency system evaluating insurers' risk profiles, quality of their risk management and governance systems, giving the supervisors the appropriate tools and powers to assess the conditions of undertakings. Therefore was introduced a new regime set by the Directive 2009/138/EC, so-called Solvency II, that came into force on the 1st January 2016.

Solvency II is the new and the sole legally binding pan-European solvency framework having the global impact. It applies to all EU insurers and reinsurers[1], including undertakings in run-off, with some exceptions on smaller undertakings. However, new solvency regime has an impact far beyond the borders of the EU, because any undertaking that is headquartered in Europe and has subsidiaries that operates or competes in non-EU markets need to conform to its provisions or adapt to them.

Solvency II is the new risk-based insurance financial regulatory regime, prescribing the adequacy of the quantitative requirements as the economic capital to be held by undertakings in order to ensure that those undertakings are in a position with a probability of at least 99.5% to meet their obligations over the following twelve months. The new framework is not fundamentally changing only the calculation of capital requirements but also the determination of available (eligible) elements to cover these requirements, irrespective of whether they are on or off the balance-sheet items.

2 Review of the Literature and Background of the Paper

The principal sources are the First Council Directive 73/239/EEC, Second Council Directive 88/357/EEC, Council Directive 90/618/EEC, Council Directive 92/49/EEC, Directive 2002/83/EC, followed by text of five Quantitative Impact Studies leading to the release of the current text of Directive 2009/138/EC, further specified by its implementing measures Delegated Regulation 2015/35 and other public consultation and guidelines, e.g. EIOPA-BoS-14/168, EIOPA-BoS-14/168 and CEIOPS-DOC-24/09. Among the researchers are available papers dealing with impact of regulation on the insurance market in connection with the incoming Solvency II, e.g. Eling et. al. (2007) focused on to outline the quantitative specifics of Solvency II, especially on capital requirement models, as well as did Doff (2008) or Zweifel (2014) in his feasibility study related to assumptions and calculation of capital requirements. A frequent topic is also the comparison of

[1] The European Commission estimates the total one-off net cost of implementing Solvency II for the whole EU insurance industry to be around €3 to €4 billion (European Commission, 2015).

Solvency II with existing regime Basel III designed for banks, as did Gatzert et. al. (2012) or Al-Darwish et. al. (2011), who in addition to the comparison of both systems, also deals with the topic of available capital and its categorization within Solvency II in a deeper level. Nevertheless, researches and discussion on the topic of available capital are rarely available, e.g. Schubert et. al. (2007) focusing on total balance sheet approach and aiming at harmonization of accounting and Solvency II as well as did EY (2015). And there is also few studies focused on the comparison of the rules related to the valuation of assets and liabilities under International accounting standards and Solvency II principles, e.g. Cipra (2015) or Klumpes and Morgan (2007), who opened the topic of differences in measurement among statutory accounting principles in the UK, IFRS proposed in fair value and Solvency II, but most of their work is dedicated to research the estimation of the cost of capital for different types of economic activities. A next researcher, who was engaged in the interaction of IFRS and Solvency II is Flamée (2008), whose paper is aimed to „analyse a number of fundamental elements for the valuation of technical provision".

The purpose of this paper is to (a) present the specifics of valuation of assets and liabilities under past regime Solvency I and current model Solvency II. And as the second step, to outline (b) the empirical study focused on the question: how much would have been the amount of solvency margin if calculated according to the former Solvency I approach compared to current Solvency II approach, when applied on the same undertakings data[2]?

This shall be demonstrated by hypothetical simulation under the conditions, where the asset data is available in the annual report, that as the additional disclosure the undertaking declares, that to determine the fair value of many financial assets that are not traded in active markets, undertaking uses present value methods based on appropriate interest rate models[3]. The liability side, particularly the amount of the technical provisions was estimated on the basis of expert judgment, based on long-term monitoring of Quantitative Impact Studies and preliminary results presented by individual undertakings on the CEE insurance market. The approximate level of prudence in statutory technical reserves was estimated on 12% on total technical provision[4]. Cipra (2015), based on Quantitative Impact Studies 4, declares a difference between technical provision under Solvency I and technical provision under Solvency II lower by 15%, Courchene (2008) estimates average reduction of technical provisions close to 17% on main European markets.

[2] Presented on the year-end 2015 data, i.e. one year before the first Solvency and financial condition report shall be publicly disclosed.

[3] VIG (2015, p. 47, 161).

[4] 46% Non-life, 51% Health similar to non-life, 1% Life and 34% unit-linked and index-linked life insurance.

The remainder of the paper is organized as follows, chapter three and four are dedicated to presentation of the requirements for the valuation of assets and liabilities and as research output of the simulation of calculation of available assets to cover regulatory capital requirement, respectively for Solvency I and Solvency II regime. A summary of the paper and recommendations is presented in chapter five and six.

3 Solvency I

The rules of Solvency I, in order to achieve facilitate pursuit of insurance business and at the same time ensure adequate protection for beneficiaries, requires undertakings to hold supplementary reserve, kind of additional margin in order to provide themselves against business fluctuations. This adequate solvency margin, is based on the basis of the statutory balance sheet, as specified by the Directive 92/49/EEC in Article 24 as „The solvency margin shall correspond to the assets of the undertaking free of any foreseeable liabilities less any intangible items".

3.1. Rules relating to valuation of assets, liabilities, and technical provisions

The directives neither for assets nor for liabilities lay down any specific rules for valuation. With respect to assets Directive 92/49/EEC in its Article 21 requires that „All assets must be valued on a prudent basis, allowing for the risk of any amounts not being realizable", especially „Tangible fixed assets other than land and buildings may be accepted as cover for technical provisions only if they are valued on the basis of prudent amortization".

Regarding to valuation of the underwriting provisions Solvency I directives lay down the rules for its valuation in the amount that underwriting provisions are adequate in respect of undertakings entire business, where undertakings are expected to establish adequate level of underwriting provisions and the covering of those provisions by matching assets.

3.2. Available solvency margin

The calculation of the available solvency margin for non-life segment shall consider: (a) the paid-up share capital, (b) one-half of the unpaid share capital (once the paid-up part amounts to 25 % of that share capital), (c) reserves not corresponding to underwriting liabilities, (d) any profits brought forward, (e) any hidden reserves arising out of the undervaluation of assets, (f) cumulative preferential share capital, (g) subordinated loan capital, (h) securities with no specified maturity date and (i) other instruments, up to limited extent.

In life segment the available solvency margin, according to Directive 2002/83, shall consider identical items as for the calculation of the non-life segment, plus

additional items such as profit reserves which may be used to cover any losses which may arise and which have not been made available for distribution to policy holders and the amount resulting from non-Zillmerised mathematical provision (up to 3.5% of risk capital). The available solvency margin shall be reduced by the amount of own shares directly held by the assurance undertaking.

3.3. Simulation of calculation Available solvency margin under Solvency I

According to the requirements of the Directive 2002/83, Article 19 the available solvency margin is calculated separately for life and non-life activities, where part A is dedicated to the available capital and part B relates to the auxiliary capital, which is subject to prior approval of the competent national authority.

The calculation is simulated on real data of insurance undertaking, as presented in Appendix 1 and based on the calculation requirements as described above. The performed calculation is presented in the Appendix 2.

4 Solvency II

Solvency II introduces a new basis of preparation of a balance sheet which is based on the principle of market-consistent valuations. Eligible own funds shall enable the insurance undertakings to absorb significant losses and give reasonable assurance to policy holders and beneficiaries that payments will be made as they fall due.

4.1. Rules relating to valuation of assets, liabilities, and technical provisions

The Directive 2009/138 in its Section 1 and Section 2 lay down the methods and assumptions to be used in the valuation of assets, technical provisions and other liabilities. By default the undertaking shall value assets and liabilities based on the assumption of going on concern and using quoted market prices in active markets and generally available data on underwriting risks.

Provisions of Section 1, Article 75 - Valuation of assets and liabilities, paragraph 1., point (a) defines that „Assets shall be valued at the amount for which they could be exchanged between knowledgeable willing parties in an arm's length transaction" and as well as in point (b) defines that „Liabilities shall be valued at the amount for which they could be transferred, or settled, between knowledgeable willing parties in an arm's length transaction", without taking into account any adjustment of the own credit standing of the insurance undertaking.

In order to ensure that valuation standards for calculation purposes are compatible with international accounting developments, undertakings should use market consistent valuation methods prescribed in the International accounting standards.

The IFRS Standard 13 (IASB, 2011) in its paragraph 9 defines the fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". Emphasizing phrases "transaction between market participants" it might be concluded, that this definition in its nature, scale and complexity meets the requirement of Article 75 of the Directive. This implies that any asset or liability measured in fair value under the International accounting standards shall be without any further revaluation adjustments account for solvency valuation purposes. Where international accounting standards are either temporarily or permanently inconsistent with the valuation approach or quoted market prices are not available, than alternative valuation methods are allowed to be used.

In Section 2, Article 76 and following is given particular attention to rules relating to technical provisions, which „Value shall correspond to the current amount that undertakings would have to pay if they were to transfer their insurance and reinsurance obligations immediately to another undertaking". Technical provisions in general are the distinct specialty to the insurance business and according to the rules lay down in the Directive shall be calculated as the sum of a best estimate and a risk margin. The amount of best estimate shall correspond to the probability-weighted average of future cash-flows (all the cash in- and out-flows required to settle the insurance obligations over the lifetime, within a contract boundary of insurance contract) taking account of the time value of money and using relevant actuarial and statistical methods. The amount of risk margin shall be such as to ensure that the value of the technical provisions is equivalent to the amount that insurance undertakings would be expected to require in order to take over and meet the insurance obligations, simply defined as the premium margin to compensate absence of an active market.

4.2. Eligible own funds

The Solvency II directive determine the eligible own funds as sum of basic own funds and ancillary own funds, less deductions for participations in financial and credit institutions. Basic own funds shall consist of the excess of assets over liabilities valued in fair value, reduced by the amount of own shares held by the undertaking and any subordinated liabilities. Ancillary own funds are items, other than basic own funds items, which can be called up to absorb the losses, for example unpaid share capital, letters of credit or any other legally binding commitments received by undertakings, nevertheless any amount of ancillary own-fund shall be subject to prior approval of the supervisory authority.

To prevent adverse business fluctuations on a going-concern basis the own-fund items should be classified into three tiers (Tier 1, Tier 2, Tier 3) in accordance with quality criteria to the extent to which they possess the characteristics a)

permanent availability-the item is available, or can be called up on demand, b) subordination-in the case of winding-up the total amount of the item is available to absorb losses and c) sufficient duration-consideration whether the relative duration of the item is comparable to the duration of the insurance obligations. The vast majority of the excess of assets over liabilities should be treated as high-quality capital in Tier 1 with the proportion in the eligible own funds to be higher than one third of the total amount of eligible own funds and Tier 3 as least appropriate capital, with the proportion of less than one third of the total amount of eligible own funds.

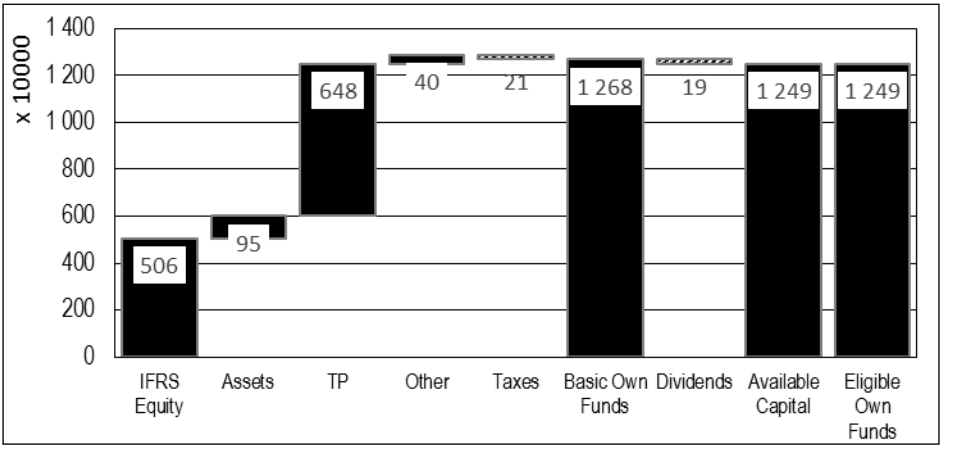
4.3. Simulation of calculation of Eligible own funds under Solvency II

As the first step in calculation it is needed that all the balance sheet items are revaluated into the fair value, this process produces quasi Economic balance sheet (EBS) or Market value balance sheet (MVBS) or Fair value balance sheet (FVBS)[5]. The undertaking prepares its financial statements for presentation in accordance with the provisions of the IFRS. Thereby the financial instruments available for sale, other certain financial assets and certain financial liabilities, including derivatives are measured at fair value. Other items were valuated using historical cost. Revaluation to fair value, as presented in Appendix 1, thus concerns in particular land and buildings, financial instruments held to maturity, reinsurance share (replaced by the value of the best estimate of reinsurance recoverables) and intangible assets, which Solvency II predominantly requires to be measured at nil, furthermore revaluation might concerns participations in associated undertakings and mortgage bonds.

On the liability side the crucial item for revaluation is the insurance reserves, which shall be revaluated by the value of the technical provisions, calculated based on the expected present value of future cash-flows, plus risk margin. And as the last step, the revaluation to fair value is reflected as an increase in deferred taxes liabilities. The impact of the revaluation as well as the development from a statutory shareholder´s equity to basic own funds, after deducting foreseeable dividends to eligible own funds, can be seen on graph below (Fig. 1).

[5] The particular terminology has not yet been defined neither widely settled.

Fig. 1 The development of the Eligible own funds



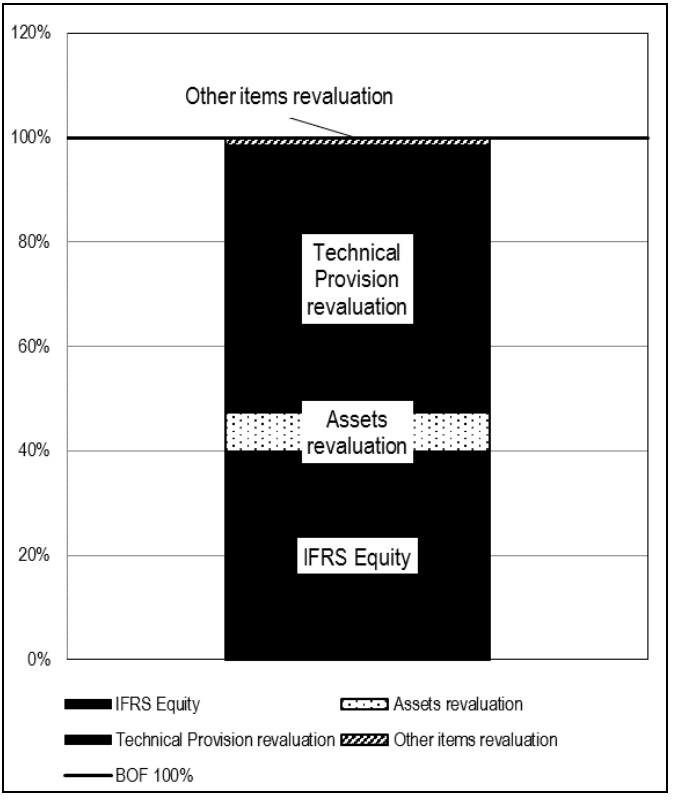
Source: Authorial illustration, based on VIG annual financial report 2015.

From the point of view of the proportions of revaluation, starting from the initial share capital and applying the revaluation of individual balance sheet items from book value to fair value, where applicable, is formed amount of own funds as defined by the rules of Solvency II. The impact of revaluation is shown on chart below (Fig. 2), where starting point is the shareholder´s equity (making 40% of own funds), followed by revaluation of assets (7%), particularly intangible assets that are required to be revalued to nil, and further financial instruments held to maturity, participation in related undertakings and property.

The technical provisions, shown as net of reinsurance, make up the biggest part of revaluation (51%), this is caused by prudency in statutory underwriting provisions and impact of discounting. The non-life segment might be characterized as a segment where the majority of insurance claims, excluding annuities and some other long tail claims are settled at once or do not extend over multiple accounting periods. Therefore in non-life segment the difference between statutory underwriting provisions and amount of technical provisions could be called „unrealized earned profits“, because it's de-facto part of the insurance underwriting provisions that exceeds the adequate amount to cover underwriting liabilities and as such surplus it should be subject to profit. Similar effect exist in life segment, where life underwriting provisions are also affected by prudency, due to its long duration, materially affected by discounting to present value and also by assumptions used in the model. In the life segment the difference between amount of statutory underwriting provisions and amount of technical provisions is formed by Present Value of Future Profits, which can be understood as „unrealized unearned future profits“.

The remaining part (2%) is made by revaluation of other liabilities and deferred taxes. Deferred tax item includes not only the original statutory deferred tax, but also the deferred tax arising from the revaluation to fair value.

Fig. 2 The impact of revaluation



Source: Authorial illustration, based on VIG annual financial report 2015.

5 Results and Discussion

On the basis of the statutory balance sheet and under the rules of directives for Solvency I regime was calculated the Available solvency margin in amount of 2 977 846 thousand EUR. If we break the prudence rule and recognize hidden reserves on asset valuation (for example using revaluation to fair value), the value of the Available solvency margin would increase.

On the basis of the revaluation the statutory balance sheet to fair value and under the rules of directives for Solvency II regime was calculated the eligible own funds in amount of 12 486 751 thousand EUR.

As the result of simulation of the amount of the own funds under each of the solvency regime it can be concluded that Solvency II provides higher value of available capital, which is influenced by the difference in requirements for fair value valuation - impact of revaluation (mainly involved by technical provision and assets), difference in the regulatory model used for calculation of eligible own funds and limits on the amount of tiers, that can be held to cover capital requirements with the aim of ensuring that the items are available if needed to absorb any losses that might arise.

The restatement of the calculation might be possible using hypothetical exercise presented by Meyers (2010) who demonstrate how publicly available data can be used to calculate the technical provisions in Solvency II. Another option is compare the estimated data with data presented in public disclosure - the Solvency and financial condition report, which shall be available not earlier than May 2017.

Although, initially Solvency II should be principle-based and over the time became more rule-based, there are still remaining questions to be discussed. For instance, the appropriateness of applying the fair value as the valuation basis, because of its volatility, especially now in the low yield interest rate environment or fragile real estate markets. And its availability, particularly for balance-sheet items for which does not exist active market. Further, there are some grey areas regarding the calculation of the technical provision as stressed by Courchene et. al. (2008). And last but not least, can be discussed the overall benefit of implementation the market value approach, especially if each concerned undertaking is challenged by the data and human resources demanding process and is forced to establish an additional system, besides current accounting system.

6 Conclusion

Insurance and reinsurance market and its supervision in the EU is undergoing significant change as the European Commission works toward harmonization across member countries as well as implementation of standards that are appropriate for a rapidly changing marketplace.

Solvency I regime, as the regulation of insurance and reinsurance undertakings, had been in effect since 1970´s in major European insurance markets.

Solvency I model both for available and required margin was built purely on accounting data and all calculations were simplified. The model was based on "prudent principles" and does not reflect any internal or external effects that influence both current and future value of assets and liabilities, disregards the quality of the assets and does not take into account hidden reserves coming from overstatement of liabilities. On the other hand, the advantage of the principle of

Solvency I was an easy understanding and application together with low administrative costs related to the reporting. A second advantage was the possibility to data mine all required variables from widely available sources within the undertaking´s current internal processes.

Current efforts are focused on Solvency II regulations, as set out in the Directive 2009/138/EC, which is in force since January 2016. Solvency II aims to establish an economic risk-based solvency framework for determination the eligible own funds to cover capital requirements.

The starting point for the calculation of the entire capital adequacy is the balance sheet at market price. In the matter of recognition and valuation of the assets and liabilities the Solvency II is heavily reliant on international accounting principles and use of the market consistent valuation methods prescribed by these standards. According to Solvency II, assets and the liabilities shall be valued at their market value, if no market value exists, they should be valued at a market consistent approach. The specific valuation method is then required to be used to calculate the value of technical provisions. According to the rules lay down in the Directive, it shall be calculated as the sum of a best estimate and a risk margin. The amount of best estimate shall correspond to the probability-weighted average of future cash-flows (all the cash in- and out-flows required to settle the insurance obligations over the lifetime within contract boundary), taking into account the time value of money and using relevant actuarial and statistical methods. The amount of risk margin shall be simply defined as the premium margin to compensate absence of an active market.

According to the total balance sheet approach the amount of own funds is calculated by subtracting the market (consistent) value of the liabilities from the market value of the assets, less any own shares, foreseeable dividends and other distributions and charges. The residual available capital shall be eligible to cover capital requirements.

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Appendix 1: Statutory balance sheet and Fair value balance sheet

As of 31.12.2015, Ths EUR	**IFRS**	**Fair Value**
A. Intangible assets	2 079 957	0
B. Investments	30 709 225	35 165 802
C. Investments for unit-linked and index-linked insurance	8 144 135	8 144 135
D. Reinsurers' share in underwriting provisions	1 030 740	488 677
E. Receivables	1 390 233	1 390 233
F. Taxes	340 538	340 538
G. Other assets	349 919	3 992
H. Cash and cash equivalents	1 103 234	1 103 234
Total ASSETS	**45 147 981**	**46 636 611**
As of 31.12.2015, Ths EUR	IFRS	Fair Value
A. Shareholders' equity	5 057 803	12 679 296
B. Subordinated liabilities	1 280 308	1 314 482
C. Underwriting provisions	28 145 123	24 823 595
D. Under. provisions for unit-linked and index-linked life insurance	7 776 602	5 158 094
E. Non-underwriting provisions	663 396	663 396
F. Liabilities	1 634 579	1 200 872
G. Taxes	416 696	623 401
H. Other liabilities	173 474	173 474
Total LIABILITIES AND SHAR. EQUITY / OWN FUNDS	**45 147 981**	**46 636 611**

Source: Authorial computation, based on Solvency II guidelines and VIG annual financial report 2015.[6]

[6] Revaluation of asset from book value to fair value obtained from the text of the annual report, the revaluation on liability side made based on expert judgment of the author (simulation).

Appendix 2: Available solvency margin (Ths. EUR)

Part	Item	Non-Life	Life
A	Paid up share capital	30 852	10 235
	Share premium	0	0
	Other capital reserves	534 585	1 768 037
	Reserve funds, exl. insurance obligations	33 461	110 664
	Other funds	552 282	
	Retained earnings from previous periods	552 282	18 265 67
	Retained profit of the current financial	-22 823	-75 517
	Other items	45 892	151 778
	Intangible assets as apart of share capital	- 482 890	-1 597 067
	Own shares	0	0
	Participations in financial and credit inst.	0	0
	Total per segment	691 347	2 286 499
B	Half the unpaid share capita	0	0
	Zillmerisation life insurance provision	0	0
	Unamortized acquisition costs	0	0
	Total Available Solvency Margin		**2 977 846**

Source: Authorial computation, based on Solvency II guidelines and VIG annual financial report 2015.

Appendix 3: Reconciliation reserve (Ths. EUR)

Reconciliation reserve	Total
Excess of assets over liabilities	12 679 296
Own shares (held directly and indirectly)	0
Foreseeable dividends, distributions and charges	192 545
Other basic own fund items	5 057 803
Reconciliation reserve	**7 428 948**

Source: Authorial computation, based on Solvency II guidelines and VIG annual financial report 2015.

Appendix 4: Eligible own funds (Ths. EUR)

Basic own	**Total**	**Tier 1**	**Tier 2**	**Tier 3**
Ordinary share capital (gross of own shares)	5 057 803	5 057 803	0	x
Share premium account related to ordinary share capital	0	0	0	x
Reconciliation reserve	7 428 948	7 428 948	x	x
Subordinated liabilities	0	0	0	0
An amount equal to the value of net deferred tax assets	0	x	x	0
Other own fund items approved by the supervisory authority as basic own funds	0	0	0	0
Deductions for participations in financial and credit institutions	0	0	0	0
Total basic own funds after deductions	**12 486 751**	**12 486 751**	**0**	**0**

Source: Authorial computation, based on Solvency II guidelines and VIG annual financial report 2015.