



## EUROPEAN EMBEDDED VALUE

# Table of contents

Introduction	1
European Embedded Value Principles	1
Independent review	2
Embedded Value of the Insurance activities of SNS REAAL	3
Highlights	3
Capital	6
Results	7
Sensitivity analysis	12
Disclamer	14
Appendix I Economic assumptions	15
Investment return assumptions	15
Risk-discount rate	16
Economic scenarios	17
Taxes	17
Appendix II Operational assumptions	18
Expenses, synergy and expense inflation	18
Mortality, disability and lapses	18
	Introduction European Embedded Value Principles Independent review Embedded Value of the Insurance activities of SNS REAAL Highlights Capital Results Sensitivity analysis Disclamer Appendix I Economic assumptions Nestment return assumptions Risk-discount rate Economic scenarios Taxes Appendix II Operational assumptions Expenses, synergy and expense inflation Mortality, disability and lapses



## **1** Introduction

## **1.1** European Embedded Value Principles

The European Embedded Value ('EEV') Principles were published in May 2004 by the CFO Forum. The principles and the additional guidance on EEV disclosures published in October 2005, provide a framework for calculating and reporting supplementary embedded value ('EV') information.

The EV results of the Insurance activities of SNS REAAL presented in this report comply with the EEV Principles.



## **2** Independent review

Towers Watson has reviewed the calculation of the embedded value of the life insurance activities of SNS REAAL as at 31 December 2011, the value of its new business written during 2011 and the movement analysis over 2011.

Towers Watson has concluded that the methodology and assumptions used comply with the European Embedded Value Principles and Guidance noting the disclosed treatment of expense synergies.

The directors are responsible for the Embedded Value calculations. However, Towers Watson has performed high-level checks on the results of the calculations and has discovered no material issues. Towers Watson has not, however, performed detailed checks on the models and processes used.

In arriving at these conclusions, Towers Watson has relied on the accuracy and completeness of data and information supplied by SNS REAAL and that the directors know of no other information or data which ought to have been made available to Towers Watson that would materially affect the conclusion set out herein.

This opinion is made solely to SNS REAAL N.V. in accordance with the terms of Towers Watson's engagement letter. To the fullest extent permitted by applicable law, Towers Watson does not accept or assume any responsibility, duty of care or liability to anyone other than SNS REAAL for or in connection with its review work, the opinions it has formed, or for any statement set forth in this opinion.

Towers Watson drs. H. Blaak AAG



## **3** Embedded Value of the Insurance activities of SNS REAAL

## 3.1 Highlights

#### 3.1.1 Definition of embedded value

This part of the report contains the figures and analysis of the embedded value ('EV') of the Insurance activities of SNS REAAL.

The EV for the life insurance business comprises two components:

- Adjusted net asset value ('ANAV'), being the sum of the
  - Required capital, plus
  - Free surplus.
- Value of in-force business ('VIF'), being the after-tax sum of the
  - Present value of future profits (earnings), minus
  - Cost of options and guarantees, minus
  - Cost of holding required capital

Together, these two components make up the life insurance economic value. The value of holding activities is included in the life insurance EV, as a part of the ANAV. The ANAV of SNS REAAL's non-life insurance and the value of other activities have been added to this value to determine the total EV of the Insurance activities. The VIF of SNS REAAL's non-life insurance and other activities is considered nil under this framework.

Profits arising in SNS Asset Management ('SAM') relating to managing the assets of the life insurance business have been fully taken into account in the present value of future profits in accordance with the EEV Principles (look through).

In addition to the margin on top of the risk-free rate contained in the risk-discount rate and the cost of holding required capital, risk is also allowed for under EEV through an explicit reduction in the EV for the (time) value of options and guarantees.

All material blocks of life insurance business are included in the results presented in this report. The following product groups have been valued:

- Life products and their associated disability rider benefits;
- Deferred and immediate annuity products;
- Pension products.

As per 2011 disability non-life business is included in the value of new business ('VNB').

The assumptions used in calculating the EV (e.g. expenses), are based on a going-concern principle. The inflow of new members in existing group pension contracts is included in the life new business.

Future new business is not reflected in the figures in this report.

Future after-tax earnings are estimated by means of actuarial projection methods. Future operating and economic assumptions are based upon current best estimates. These assumptions are reviewed annually in line with EEV Guidance. The distribution of these earnings reflects the restrictions from regulatory requirements. The estimated timing of future after-tax distributable earnings allows for these restrictions.



In the calculation allowance has been made for the deferral and amortisation of value of business acquired ('VOBA') and intangibles resulting from several acquisitions over the past few years (Zwitserleven, AXA NL, Zurich, etc.).

The paid-up pension rights at acquisition date of our most recent acquisitions classify as defined benefit plans. For these plans, SNS REAAL holds a provision on the balance sheet in line with IAS19. In the calculations for IAS19, SNS REAAL follows the corridor option under IFRS. The net asset value has been adjusted for this corridor. The remainder of the pension rights of SNS REAAL's employees is covered under defined contribution plans. These are insured with parties that do not belong to SNS REAAL, and as a result there are no adjustments to EV required with respect to these employee benefit plans. The costs to SNS REAAL of all of these plans have been included in the expenses allowed for in the EV calculations.

SNS REAAL uses EV as an internal management tool for its life insurance operations. Within the Insurance activities of SNS REAAL, EV plays an important role in:

- New business pricing;
- · Analysis of operating performance;
- Product line management;
- Distribution channel management.

The economic assumptions can be found in appendix I, and appendix II gives an overview of the operational assumptions in calculating the EV.

#### 3.1.2 Embedded value results

All figures in this document are presented on an after-tax basis except where stated otherwise. The table below provides a high-level overview of the EV results.

#### Table 1: Total embedded value

In € millions	2011	2010	% change
Life Insurance Adjusted Net Asset Value	1,896.0	2,527.3	(25.0%)
Adjusted Net Asset Value of Non-Life and other activities	632.2	504.2	25.4%
Adjusted Net Asset Value	2,528.2	3,031.5	(16.6%)
Life Insurance Value In Force	1,335.2	864.0	54.5%
Total EV	3,863.4	3,895.5	(0.8%)

The EV decreased by  $\in$  32.1 million in 2011 from  $\in$  3,895.5 to  $\in$  3,863.4, of which  $\in$  503.3 million is a decrease in the ANAV. The VIF increased by  $\notin$  471.2 million.

The main reason for the shift between ANAV and VIF were lower interest rates. Due to the low interest rates, mathematical provisions based on the regulations set by the regulator (DNB) have to be higher than the IFRS reserves as reported in the annual accounts. Consequently, in the EEV, part of the net asset value is not distributable at the moment. This difference has, therefore, been transported from the ANAV to the VIF. Low interest rates also caused an increase in the shadow account, and thereby a shift from ANAV to VIF.

## SNS REAAL

The analysis of the change in the EV is shown in the figure below. The breakdown of the decrease in the EV is further explained in section 3.3.4.



#### **EV ANALYSIS OF CHANGE**

#### 3.1.3 New business results

The value of the 2011 and 2010 new life insurance business and new AOV (disability) non-life business is summarised in the table below.

#### Table 2: New business results

In € millions	2011	2010	% change
Value New Business ('VNB')	44.0	32.1	37.0%
New Annualised Premium Equivalent ('NAPE')	384.1	332.3	15.6%
Present Value New Business Premium ('PVNBP')	1,830.3	1,471.5	24.4%

The value of new business from life insurance sales increased in 2011, however the Dutch market for life insurance products remained very competitive and the market conditions remain challenging. The Dutch market for individual life insurance is shifting away from savings insurance products towards mortality coverage insurance, in which segment SNS REAAL has strengthened its position. SNS REAAL continued to focus on growth in the most value creating segments, term life and offset mortgage products, where VNB margins are sound. The focus on the product mix together with the impact of cost-control measures led to a sharp improvement of the VNB for the individual life business. For the group pension business the VNB was lower compared to 2010 due to the low interest environment and pressure on margins. To increase profitability, a number of products with a negative margin was classified as non-selling during 2011. From mid-November 2011 proposals for new clients and renewals of contracts use a reduced technical interest of 2.5% and unit-linked guarantees are limited to 2%. Due to the increased sales volumes the costs per insurance policy dropped, for both the individual life and group pension products. This resulted in a higher NAPE and VNB.

As per 2011 disability non-life is included in the value of new business. In 2011 nearly 80% of the new business is written in medical and white-collar occupations. In these niches, SNS REAAL is a top three player in the Dutch market. In 2011 the production of new policies also increased in the more general (individual) disability market. Overall, due to a sales action at the end of 2010, there is a significant increase in new policies (+75%) in 2011.



## 3.2 Capital

In addition to policyholder regulatory reserves, solvency capital is required to support the life insurance business. This 'required capital' is an allocation of surplus that cannot be distributed until it is no longer needed to support the business in-force. There are costs for setting aside capital to protect policyholders, which are commonly referred to as the cost of capital ('CoC'). The CoC is included within the EV and VNB calculations.

SNS REAAL has set the required capital level of the Insurance activities at 150% (2010: 150%) of the EU regulatory minimum requirement, based on Solvency I. This reflects the level of capital SNS REAAL considers appropriate to manage the business, allowing for the company's assessment of the level of market, insurance and operating risk inherent in the underlying portfolio.

#### 3.2.1 Adjusted net asset value

The table below illustrates the derivation of the ANAV figures for life Insurance business and non-life Insurance activities that are part of the total EV.

#### Table 3: Adjusted Net Asset Value

In € millions	2011	2010
Net Asset Value Life Insurance activities	3,662.4	3,117.6
Net Asset Value Non-Life Insurance activities	731.2	622.6
Minority interests	1.6	2.9
Total reported shareholders' equity	4,395.2	3,743.1
Net Asset Value Life Insurance activities	3,662.4	3,117.6
Restricted capital	_	18.6
Goodwill Life Insurance	(293.6)	(444.3)
Other adjustments Life	(128.8)	(164.6)
Adjustments regulatory reserves	(1,343.9)	-
Adjusted Net Asset Value Life Insurance activities	1,896.0	2,527.3
Net Asset Value Non-Life Insurance activities	731.2	622.6
Goodwill Non-Life	(110.1)	(110.1)
Other adjustments Non-Life	_	(0.9)
Adjusted Net Asset Value Non-Life Insurance	621.1	511.6
Adjusted Net Asset Value Insurance activities	2,517.1	3,038.9
Other activities	11.1	(7.4)
Total Adjusted Net Asset Value	2,528.2	3,031.5

'Restricted capital' relates to individual profit-sharing activities. Due to the introduction of shadow accounting in 2011 this adjustment is no longer applicable in 2011.

The goodwill shown in the table above has arisen as a result of the acquisition of Zurich, AXA NL and Zwitserleven. As illustrated above, goodwill has been excluded for EEV purposes. The 2011 total amount of goodwill (after tax) is  $\in$  403.7 million (2010:  $\in$  554.4 million) of which  $\in$  110.1 million is addressed to the non-life net asset value. The reduction is caused by a goodwill impairment. This is related to the difficult circumstances in the pensions market, as evidenced by the continued low interest environment, the longer life expectancy and the expected higher future capital requirements.

'Other adjustments Life' presented in the table above refers mainly to the intangibles assigned to the "brand name" Zwitserleven (- $\in$  98.3 million), and to software (- $\in$  24.3 million) and to IAS19 corridor (- $\in$  11.1 million). 'Other adjustments Non-Life' also refers to IAS19 corridor.

According to the EEV Principles the technical provisions need to comply with local regulatory requirements (Wft) instead of IFRS, when local regulatory requirements are leading. The IFRS technical provisions therefore, have to be increased



with the capital deficit based on the regulatory liability adequacy test, which is €1,343.9 million (after tax). The ANAV has been decreased by the same amount.

'Other activities' presented in the table above consists mainly of expenses made for administration activities (e.g. the employee benefit plans of SNS REAAL's employees), the value of our brokerage activities in the mortgage market and asset management activities.

#### 3.2.2 Deferred acquisition costs and Value of business acquired

The amortisation of DAC and VOBA has been included in the projection of future after-tax distributable earnings. As a result the net present value of these earnings has been deducted from the VIF.

At the end of 2011, DAC for life totalled € 436.7 million (2010: € 474.0 million) and VOBA € 863.1 million (2010: € 939.4 million).

As of 2012 SNS REAAL changed the accounting treatment of the internal and external deferred acquisition costs ('DAC'). As a result the book value of the DAC will be charged directly to shareholders' equity.

## 3.3 Results

#### 3.3.1 Embedded value

The table below provides details of the embedded value ('EV') at year-end 2011 and year-end 2010. Non-life insurance and other activities are included on the basis of their net asset value.

#### Table 4: Embedded Value

In € millions	2011	2010
Required capital (Life)	1,931.5	1,879.3
Free surplus (Life)	(35.5)	648.0
Total Adjusted Net Asset Value (Life)	1,896.0	2,527.3
Present value of future profits	2,313.4	1,659.2
Cost of options and guarantees	(152.0)	(137.2)
Cost of capital	(826.2)	(657.9)
Value of in-force business	1,335.2	864.0
Life Insurance EV	3,231.2	3,391.3
Adjusted net asset value of Non-Life and other activities	632.2	504.2
Total EV	3,863.4	3,895.5

All material portfolios of life insurance activities are included in the reported EV results. Some minor portfolios are not included in SNS REAAL's projection models and are taken into account by calculating a pro rata estimated value of representative business that is modelled.

The required capital presented is 150% of the EU minimum solvency I requirement. The cost of capital increased in 2011, mainly due to:

- an increase in the risk-discount rate;
- a decrease in investment returns;
- an increase in reserves related to Wft IFRS differences and shadow accounting, driven by reduced interest rates.



#### 3.3.2 Options and guarantees

Options and guarantees result from a minimum guarantee within a specified profit-sharing formula. Minimum guarantees are either 3% or 4% depending on the issue date of the policy, with more recent issues having lower guaranteed rates. In traditional business the technical provisions can relate to business with some form of profit-sharing (discretionary or otherwise). In individual unit-linked business there are forms of minimum maturity guarantees. Group separate account business provides the policyholder with the right to leave paid-up benefits with SNS REAAL irrespective of whether the underlying assets are sufficient to meet the contract's liabilities.

REAAL and Zwitserleven use different methods in calculating the value of options and guarantees. REAAL applies Monte Carlo simulation and Zwitserleven mostly uses a closed-form method.

The cost of financial options and guarantees changed from € 137.2 million at year-end 2010, to € 152.0 million at year-end 2011. This is mainly the result of lower risk-free rates.

#### 3.3.3 Value of new business

An important element in the change in EV from one year to the next is the value added by new business. The value of new business is the present value of after-tax distributable earnings associated with sales during the reporting period. The value is determined by using the average of economic assumptions over each quarter during the year, as well as year-end operational assumptions. The cost of capital associated with the new business is included in the value of new business.

New business sales are expressed based on the following:

- The New Annual Premium Equivalent ('NAPE'), which equals the regular premium plus one tenth of single premium; and
- The Present Value of future New Business Premiums ('PVNBP') which equals the single premiums received in the year plus the present value of regular premiums projected to be received over the term of the new contracts, allowing for expected levels of lapse and mortality.

New business volumes include premiums derived from the sales of new individual and group pension contracts including new members in existing group pension contracts. Renewals of existing group contracts are included in new business volumes. For new contracts and renewals only premiums received in the contract period are in scope. Projected contractual increases in premiums are reflected in the in-force value and deviations from these projections are treated as variations in experience rather than new sales. For individual policies, non-contractual increases to the benefits under these contracts are in principle included in new business.

The table below provides for an overview of the value created by the new business written in 2011.

#### Table 5: Value new business

In € millions	2011	2010
Value of new business	44.0	32.1
NAPE	384.1	332.3
VNB as % of NAPE	11.4%	9.7%
PVNBP	1,830.3	1,471.5
VNB as % of PVNBP	2.4%	2.2%



For 2011, the VNB of individual life products, pension life products and AOV non-life amounted to  $\in$  44.0 million (2010:  $\in$  32.1 million). The impact on value of expected synergy and integration costs have been allowed for in determining the VNB.

The internal rate of return ('IRR') is the discount rate at which the present value of distributable earnings projected to be earned by new business is equal to the total capital invested to write the business. New business generally requires capital to be invested to meet acquisition costs, to set up statutory reserves in excess of premiums received and to meet required capital levels in excess of statutory reserves. This investment is then recovered over the remaining lifetime of the policies. The IRR of the life insurance activities of SNS REAAL is 10.2% in 2011 (2010: 10.0%).

#### 3.3.4 Analysis of the change in embedded value

The EV decreased by  $\in$  32.1 million during 2011, from  $\in$  3,895.5 million to  $\in$  3,863.4 million. The ANAV before Wft IFRS differences and shadow accounting adjustments, increased due to lower interest rates. The VIF before Wft IFRS differences, shadow accounting and SAM profits adjustments, decreased as a result of this, but also because of a more conservative strategic asset mix.

The change in the EV in 2011 is explained by the movement analysis shown in the table below. The analysis is shown separately for the ANAV and the VIF, including amounts transferred between these two categories.

#### Table 6: Movement analysis

	Adjusted net asset value	Value of in-force business	Total
In € millions			2011
EV from preceding period	3,031.5	864.0	3,895.5
Adjustments to EV from preceding period	80.1	7.2	87.3
Revised starting EV	3,111.6	871.2	3,982.8
Value New Life Business	1.1	29.0	30.1
Expected return / unwinding	111.6	205.8	317.3
Transfer net result	165.6	(165.6)	-
Operational experience	-	(163.1)	(163.1)
Operating return	278.2	(93.9)	184.3
Economic experience variances	(887.2)	1,128.1	240.8
Economic assumption changes	-	(643.0)	(643.0)
New capital Life business minus dividend paid	-	-	-
Miscellaneous impacts	(102.4)	72.8	(29.6)
Change in value of Non-Life and other activities	128.0	-	128.0
Closing EV	2,528.2	1,335.2	3,863.4

#### Adjustments to Embedded Value from preceding period

The adjustments (€ 87.3 million) to EV from preceding period represent the impact on EV of refinements to financial projection models. The most important adjustments are adjustments for goodwill and the Zwitserleven "brand name" in the ANAV.

#### **Revised starting Embedded Value**

This is the EV at year-end 2010 including the 'Adjustments to EV from preceding period'.



#### Value New Life Business

This value represents the VNB ( $\in$  30.1 million) of the life insurance activities of SNS REAAL of 2011. The ANAV contains the new business strain of  $\in$  1.1 million and the VIF contains the VNB minus the new business strain ( $\in$  29.0 million). The VNB of the AOV non-life insurance activities is not included in the analysis of change ('AoC') as the non-life business is reflected through the ANAV of non-life and other activities.

#### Expected return / unwinding

This consists of:

- the expected return on the ANAV (€ 111.6 million);
- the unwinding of the discount rate on the VIF at the beginning of the year and of new business written during the year (€ 205.8 million).

#### Transfer net result

The transfer net result represents the expected profits over 2011 as included in the present value of future profits at year-end 2011. It includes expected profits from the opening of in-force business ( $\in$  165.6 million). This is transferred from the VIF to the free surplus, part of the ANAV.

#### **Operational experience**

Operational experience (-€ 163.1 million) in the VIF represents the operational variance of 2011 and the change in operational assumptions.

The operational variance which is the difference between actual and modelled operational experience, decreased the VIF by  $\in$  38.7 million.

The operational assumptions have been adjusted based on new studies concerning asset mix, expenses, mortality, lapses and disability. These adjustments have resulted in a decrease in the VIF of € 124.4 million. This amount can be split into the following categories:

- changes in the asset mix (-€ 112.0 million): due to a more conservative strategic asset mix;
- changes in mortality frequencies, lapses and disability (-€ 58.6 million): the mortality rates are lower;
- changes in costs and synergy (€ 46.2 million). (For synergy effects see II.1)

#### **Operating Return**

This is the sum of the effect within management control: 'Value New Business', 'Expected return / unwinding', 'Transfer net result' and 'Operational experience'.

The following changes are outside management control:

#### **Economic experience variances**

Economic experience variances consist of a change in the ANAV (-€ 887.2 million) and a change in the VIF (€ 1,128.1 million).

Part of the economic experience variances consists of the adjustments for regulatory reserves: due to the low interest rates, mathematical provisions based on the regulations set by the regulator (DNB) have to be higher than the IFRS reserves as reported in the annual accounts. Consequently, in the EEV, part of the net asset value is not distributable at the moment. This difference has, therefore, been transported from the ANAV to the VIF.

Economic experience variances in the ANAV consist of:

• the difference between the change in the actual market value of bonds and the value of equities (€ 905.2 million) and the expected investment return (-€ 111.6 million);



- adjustments regulatory reserves (-€ 1,343.9 million);
- shadow accounting (-€ 336.9 million)

Economic experience variances in the VIF consist of:

- the period and portfolio variance of investment results (-€ 252.5 million). This is compensated by the 'Expected return / unwinding' in the VIF (€ 205.8 million);
- adjustments regulatory reserves (€ 1,102.7 million);
- shadow accounting (€ 277.9 million).

#### **Economic assumption changes**

Economic assumptions changes have decreased the VIF by € 643.0 million. These changes can be split into:

- decrease in investment returns over 2011 (-€ 487.9 million);
- a change in risk-discount rate compared to 2010: from 8.3% (2010) tot 9.0% (2011) (-€ 147.7 million);
- changes in inflation assumptions (-€ 7.3 million).

#### New capital life business minus dividend paid

Shareholder's equity of the Insurance activities remained unchanged due to capital injections or withdrawals, and no dividend has been paid out.

#### **Miscellaneous impacts**

The VIF impact (€ 72.8 million) mainly consists of fully taking account of SAM profits, which were not previously taken into account in the year-end 2010 EV.

#### Change in value of non-life and other activities

This figure ( $\leq$  128.0 million) consists of the change in shareholder's equity of the non-life activities ( $\leq$  49.5 million) and the change in value of other activities ( $\leq$  78.5 million), such as the value of off-balance mortgages business and employee benefit administration for SNS REAAL's employees, who are insured with parties that are not part of SNS REAAL.

#### **Closing Embedded Value**

This is the EV at year-end 2011.



## 3.4 Sensitivity analysis

Embedded Value ('EV') calculations rely upon several best-estimate assumptions with respect to future investment income, mortality rates, lapse rates and other variables. Sensitivity results for the life insurance EV and new business are provided in the tables below.

The following sensitivities have been performed:

- 100 basis point lower discount rate;
- 100 basis point higher discount rate;
- 100 basis point reduction in interest rates, including subsequent changes to assumed investment returns for all asset classes, market value of fixed-interest assets and risk-discount rates;
- 100 basis point increase in interest rates, including subsequent changes to assumed investment returns for all asset classes, market value of fixed-interest assets and risk-discount rates;
- 10% decrease in lapse rates;
- 5% decrease in mortality and disability rates: the result for the life and annuity products is shown separately;
- 10% increase in losses AOV non-life (only new business);
- 10% decrease in losses AOV non-life (only new business);
- 10% decrease in maintenance expenses;
- 10% decrease in initial costs (only new business);
- Value excluding expected synergy;
- Instant 10% downward change in equity value (only EV);
- Required capital equal to 100% of EU minimum solvency requirement rather than 150%.

#### 3.4.1 Life insurance embedded value sensitivities

The table below summarises the results of the sensitivity analysis of the life insurance EV as at 31 December 2011.

#### Table 7: Life Insurance embedded value sensitivities

In € millions	Adjusted net asset value	Value of in-force business	Total
As reported	2,528.2	1,335.2	3,863.4
Impact of sensitivity on reported value:			
100 basis point reduction in the risk discount rate	-	255.9	255.9
100 basis point increase in the risk discount rate	-	(202.0)	(202.0)
100 basis point reduction in asset return and discount rate simultaneously	(678.1)	598.9	(79.2)
100 basis point increase in asset return and discount rate simultaneously	165.3	(434.9)	(269.6)
10% decrease in lapse rates	-	35.1	35.1
5% decrease in mortality and disability rates (Life)	-	35.2	35.2
5% decrease in mortality and disability rates (Annuity)	-	(33.4)	(33.4)
10% decrease in maintenance expenses	-	71.8	71.8
No synergy	-	(122.3)	(122.3)
Instant 10% downward change equity value	(36.4)	(71.1)	(107.5)
Required capital 100% of EU minimum	_	264.9	264.9



Changes in fixed-interest returns generally coincide with changes in returns on other investment types and changes in risk-discount rates. For this reason, we believe it is more appropriate to consider the changes in value resulting from simultaneous changes in fixed-interest returns (new money and existing business), equity and property yields and discount rates, than to consider these items independently. The equity value in the downward change in equity value represents all shares in total assets.

Reductions in mortality and disability rates have a positive effect on the value, due to the mix of in-force business (i.e. offsetting positions in mortality and longevity risk). In reality the impact of reductions in mortality and disability can be different, because the reductions will be different for different ages of insured.

#### 3.4.2 New Business sensitivities

The table provides a summary of the impact of the previously described sensitivities on the value of new business written in 2011.

#### Table 8: New business sensitivities

In € millions	
As reported	44.0
Impact of sensitivity on reported value:	
100 basis point reduction in the risk discount rate	20.3
100 basis point increase in the risk discount rate	(17.6)
100 basis point reduction in interest rates*	(26.5)
100 basis point increase in interest rates*	13.5
10% decrease in lapse rates	2.7
5% decrease in mortality and disability rates (Life)	3.8
5% decrease in mortality and disability rates (Annuity)	0.0
10% increase in losses AOV Non-Life	(4.1)
10% decrease in losses AOV Non-Life	4.1
10% decrease in maintenance expenses	8.0
10% decrease in initial costs	4.6
No synergy	(10.8)
Required capital 100% of EU minimum	17.2

\*100 basis point change in interest rates, including subsequent changes to assumed investment returns for all asset classes and the risk-discount rate.

The sensitivity to changes in interest rates is based on the premise that capital markets move in line with the rise and fall of interest rates. It is assumed that premiums received from policyholders, policyholder benefits, and guarantees provided to policyholders will not change with market movements. The sensitivity also assumes that new money rates are applied to 2011 cash flows available for investment. This could explain the movement in the downward interest rate sensitivity in relation to the reported value.



## **4** Disclamer

#### Cautionary note regarding forward-looking statements

The statements contained herein may include statements of future expectations and other forward-looking statements that are based on SNS REAAL's current views and assumptions and financial targets and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in such statements due to, without limitation, general economic conditions and events. In addition to statements which are forward-looking by reason of context, the words "may", "will", "should", "expects", "plans", "intends", "anticipates", "believes", "estimates", "predicts", "potential", or "continue" and similar expressions identify forward-looking statements.

The company assumes no obligation to update any forward-looking statement, except to the extent required by legislative and regulatory requirements.

Forward-looking statements involve inherent risks and uncertainties and only apply to the valuation date. SNS REAAL undertakes no duty to and will not necessarily update any of the forward-looking statements in light of any new information or future events, except to the extent required by applicable law. SNS REAAL cautions investors that a number of important factors could cause actual results or outcomes to differ materially from those expressed in any forward-looking statements.



## **5** Appendix I Economic assumptions

Economic assumptions have been approved by SNS REAAL's Executive Board and are based on input from the SNS REAAL Asset Liability Committee.

#### 5.1 Investment return assumptions

New money investment return assumptions include the risk-free interest rates, credit spreads, equity and property returns. The rates used for the life insurance embedded value ('EV') at both year-end 2010 and 2011 are outlined in the tables below.

For life, the risk-free rate is defined as the 10-year ECB AAA rate. For the first five years of the projections the assumed risk-free rates on new money have been derived from the implied 10-year forward rates and are assumed to remain constant thereafter.

The net credit spread on fixed-interest investments has been based upon the underlying credit ratings within the asset portfolio. The assumed net credit spread on fixed-income assets is 0.99% for year-end 2011.

Existing fixed-income assets backing the general account business are assumed to earn the year-end risk-free rate plus net credit spread until maturity.

Equity returns are set by reference to the risk-free rate and assume an equity risk premium of 300 basis points. The property returns assume a premium above risk-free rates of 200 basis points. The returns for the asset class alternatives are set to the risk-free rate plus 133 basis points. These risk premiums reflect SNS REAAL's current view of prospective returns concerning these asset classes.

#### Table 9: New money investment return assumptions 2011

	2012	2013	2014	2015	2016	2017+
Risk free fixed income returns*	2.87%	3.22%	3.49%	3.67%	3.78%	3.82%
Net credit spread on fixed income REAAL	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%
Equity returns	5.87%	6.22%	6.49%	6.67%	6.78%	6.82%
Property returns	4.87%	5.22%	5.49%	5.67%	5.78%	5.82%
Alternatives returns	4.20%	4.56%	4.83%	5.01%	5.11%	5.15%

#### Table 10: New money investment return assumptions 2010

	2011	2012	2013	2014	2015	2016+
Risk free fixed income returns*	3.63%	4.01%	4.30%	4.48%	4.57%	4.60%
Net credit spread on fixed income REAAL	0.65%	0.65%	0.65%	0.65%	0.65%	0.65%
Equity returns	6.63%	7.01%	7.30%	7.48%	7.57%	7.60%
Property returns	5.63%	6.01%	6.30%	6.48%	6.57%	6.60%
Alternatives returns	4.96%	5.34%	5.63%	5.82%	5.91%	5.93%

\*The risk free fixed income returns for AOV non-life in 2011 are: 0.75%, 1.64%, 2.41%, 3.01%, 3.42%, 3.70% and in 2010: 1.26%, 2.18%, 3.06%, 3.78%, 4.29%, 4.29%.



## 5.2 Risk-discount rate

The risk-discount rate (RDR) is a combination of the risk-free rate (in this case, the ultimate rate shown in the tables above) to reflect the time value of money and a risk margin to reflect market and non-market risk due to experience variance in future years. A risk margin is added in particular to allow for the risk that projected additional returns on, for example, equities are not achieved.

SNS REAAL follows the principle that in determining the discount rate, an appropriate risk margin should be applied, using a weighted average cost of capital ('WACC') approach. The WACC is calculated by using a risk-free interest rate, an equity risk premium, a risk factor (ß) and an allowance for the impact of debt financing (based on the market value of this debt).

#### Table 11: Derivation of Risk Discount Rate Life

	2011	2010
Risk free rate	3.82%	4.60%
Equity risk premium	3.00%	3.00%
Risk factor	1.19	1.33

		2011		2010	
	weight after-tax cost of capital		weight	after-tax cost of capital	
Equity	58.6%	7.40%	66.9%	8.60%	
Debt capital	23.4%	14.31%	18.7%	7.83%	
Core Tier 1 capital securities not owned by the Dutch State	8.1%	5.37%	6.5%	5.59%	
Core Tier 1 capital securities owned by the Dutch State	10.0%	9.66%	7.9%	9.95%	
Risk discount rate	100.0%	9.00%	100.0%	8.30%	

The risk-free rate is the ultimate forward rate (see table 9). The assumed risk factor (ß) is the correlation between returns of the equity portfolio of the Insurance activities and European stock market returns. For 2/3 this has been estimated based on the basis of a comparison between the MSCI Index and the MSCI Insurance Index. For 1/3 ß is equal to 1, because a certain mean reversion in the ß is assumed.

At the end of 2011 the WACC computation produced a discount rate of 9.0% for life, an increase of 70 basis points compared to the end of 2010. The credit spreads for debt financing have increased (2011: 14.31% - 3.82% = 10.49% and 2010: 7.83% - 4.60% = 3.23%) but the risk-free rate dropped 77 basis points, on balance resulting in a higher risk margin (risk-discount rate minus ultimate risk-free rate) in 2011 (2011: 5.18% and 2010: 3.70%). The credit spreads reflect the market circumstances at year-end 2011 with a high impact on subordinated paper of financial institutions.

The WACC computation for AOV non-life is similar to life. However, for non-life there is no debt financing.

The RDR for the value new business is calculated on the basis of the average level for the WACC during the year. This RDR for new business calculations for life is 8.3% for 2011 (2010: 8.0%). This RDR for new business calculations for AOV non-life is 7.4% for 2011 (2010: 7.6%).

No other adjustments for risk are reflected in the discount rate. Differences in risk by product line are reflected through the capital allocation and through deductions due to the time value of financial options and guarantees.



## 5.3 Economic scenarios

A series of economic scenarios has been generated for use in determining the cost of options and guarantees. This affects real-world scenarios. The economic scenarios for REAAL products are based on Monte Carlo simulation and the economic scenarios for Zwitserleven products are based on an analytical method. The way in which these scenarios have been derived is described below.

#### Scenarios for traditional profit-sharing business

Where profit-sharing is based on an external index (e.g., u-yield), the u-yield is, based on historic realisations, approximated as the projected return on the 10-year ultimate ECB AAA forward rate minus 20 basis points (2010: 20 basis points). Where management has some discretion over the amount of profit-sharing, the level of profit-sharing is estimated as a moving average of projected returns on fixed-interest investments with an average maturity of 10 years.

In the calculation principles used for the profit sharing in the Zwitserleven products, the u-rate is determined at the so called partial u-rate at valuation date. During the projection period the u-rate is defined as the current risk-free rate increased by the difference between partial u-rate and risk-free rate at valuation date.

#### Scenarios for unit-linked and group separate account business

Economic scenarios are generated using expected returns on each of the different investment categories, based upon the correlation between returns in each of the investment categories and the volatility of return per category.

#### Volatility and correlation

The following volatility and correlation parameters were used to determine the time value of financial options and guarantees. These are based on historical levels. The fixed-interest volatility represents the assumed average standard deviation of the risk free rate.

#### Table 12: Volatility 2010 and 2011

	Fixed interest	Equities
2010	0.65%	24.5%
2011	0.64%	22.2%

#### Table 13: Correlation matrix 2010 and 2011

	Fixed interest	Equities
Fixed interest	100%	0%
Equities	0%	100%

## 5.4 Taxes

In calculating after-tax earnings, an allowance has been made for tax-exempt income and expenses. The effective rate of tax used in projecting future after-tax profits is 22.0% (2010: 22.5%).



## **6** Appendix II Operational assumptions

All expenses of the Insurance activities, including corporate overhead expenses, have been allocated to the various business units within the Insurance activities. Accept for certain non-recurrent expenses, as specified below, expenses attributable to the life insurance businesses have been allocated to acquisition or maintenance expenses and are included in the embedded value ('EV') projections.

#### 6.1 Expenses, synergy and expense inflation

As a result of the acquisition of several insurance activities in the Netherlands, cost reductions are expected to be higher than envisaged once integration of these activities had been realised.

For the European embedded value ('EEV') calculations, SNS REAAL feels it is appropriate to take 100% of the expected synergy on non-acquisition expenses for the life business of acquired Insurance activities (AXA NL, Zwitserleven) into account. These incremental synergy effects and efficiency gains are included in the figures of 2010 and recalculated in 2011.

#### Table 14: Synergy and efficiency gains

In € millions	2011	2012	2013	2014	2015	2016	2017	2018
Year-end 2010	15.6	9.5	7.0	4.8	8.1			
Year-end 2011		12.0	6.9	(0.7)	0.6	7.7	7.7	2.2

In the first years synergy will be realised by integrations in the life activities. The implementation of a new administration system for group pension activities will realise efficiency gains after 2014. The table above does not include the impact of expense inflation. Expense inflation assumptions are as follows.

#### Table 15: Increase in renewal expenses

	2011	2012	2013	2014	2015	2016	2017	2018+
Year-end 2010	1.10%	1.30%	1.30%	2.10%	2.10%	2.10%	2.10%	2.10%
Year-end 2011		1.60%	1.70%	1.70%	2.20%	2.20%	2.20%	2.20%

In 2011 expenses exclude integration costs for AXA NL and Zwitserleven and exclude non-recurrent costs (2011: € 34.8 million, 2010: € 60.6 million).

## 6.2 Mortality, disability and lapses

Mortality assumptions have been updated to reflect improvements in life expectancy for the population in general and also to reflect a more detailed analysis of recent historical mortality experience for the various products sold by SNS REAAL. Disability and lapse assumptions have been investigated and validated in 2011.

The SNS REAAL Asset Liability Committee has provided a sign-off that the assumptions represent their best estimates for 2010 and 2011.