

# **GROUPAMA**

## **Presentation of 2007 Embedded Value**

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## Introduction

Groupama calculates Embedded Value (EV) on the basis of Groupama SA's "Life and Health Insurance" in France and internationally, in keeping with CFO Forum guidelines over most of its territory.

EV includes the following two components:

- ANAV

Adjusted net asset value corresponds, under CFO guidelines, to the market value of assets representing net assets and other reserves belonging to Groupama shareholders. As at 31 December 2007, ANAV includes net assets, certain reserve provisions, unrealised capital gains from net assets, the share of unrealised capital gains representing uncalculated non-participating policies net of holding costs. These correspond to the present value of that part of Groupama SA's holding expenses attributable to the group's Life business.

- Portfolio value

This corresponds to the present value of projected future profits for the life of the policies in the portfolio, net of the cost of options and financial guarantees, of capital costs and non-financial risks.

The value of the portfolio includes the following:

- The value of the portfolio without risk premium, the certainty equivalent (CE) corresponding to the present value of future profits generated by current policies on the valuation date and calculated using the following method:
  - Use of non-economic best estimate assumptions for most of the statistical studies done on Groupama policy portfolios;
  - Determination of the projected rates of return without consideration of any risk premium on assets;
  - Discounting all future cash flows on the basis of the swap rate curve as at 31 December 2007.
- The time value of options and financial guarantees corresponding to the "risk cost" of financial deviation compared to the scenario used to calculate the intrinsic value, calculated by the difference between:
  - the stochastic value of future policy profits ("Portfolio Market Value"), and
  - the Certainty Equivalent or portfolio value without risk premiums (CE)
- Cost of capital

Groupama has kept its cost of capital at 100% of the minimum solvency margin required by European regulations currently in force (solvency I). This capital requirement entails a friction cost for the shareholders to the degree that this cost of capital may require the enterprise to pay financial management costs and corporate taxes.
- Cost of non-financial risks

Under operational risks, a supplemental risk premium has been included in the cost of capital of the solvency margin.

In addition, policy portfolios carrying technical risks are also exposed to risk factors not taken into account elsewhere. These risk factors consist of, among other things, assumptions of adverse changes in claims (mortality, morbidity, longevity, ...). An additional risk premium has thus been added to the total of these policies.

The total of these two risk premiums (for operational technical risks and technical risks) make up the complementary risk premium included in the cost of capital and used to evaluate the cost of non-financial risks.

## **1. Scope included in the calculation of the portfolio value**

Groupama calculates EV on its "Life and Health Insurance" activities in France and abroad, including its Life business.

### **France**

The scope calculated represents 91% of the technical reserves of the French Life business.

The "Health" portfolio has also been included, as it was last year, in the scope of the EV calculation.

### **International**

In 2007 the values for all the international subsidiaries' Life business have been calculated using the CFO Forum guidelines, with the exception of Turkey (calculated the traditional way) and the newly acquired subsidiaries Groupama Phoenix and Nuova Tirrena (not calculated).

With regards to the Turkish subsidiary, values for the Life portfolio have been calculated with the traditional approach of using financial return assumptions based on the risk-free rate as at 31 December 2007 and including a risk premium for both financial and non-financial risks in the discount rate.

The scope of the EV calculation covers 91% of the technical reserves of the Life business abroad, and excludes the subsidiaries Groupama Phoenix and Nuova Tirrena.

In 2007, the whole "Health" portfolio (collective and individual) abroad was also calculated (except for Groupama Phoenix and Nuova Tirrena).

## **2. Principal changes compared to the 2006 EV**

### **Assumptions**

In accounting doctrine regarding the risk-free rate, the swap rate curve has replaced the French government bond rate curve.

### **Scope**

Increase in the scope of EV calculation (see previous paragraph).

### **Additional calculations**

In terms of sensitivity, two additional calculations have been made: +25% in interest rate volatility and +25% in equity and property values volatility.

### **3. Consolidated Results (France and International)**

<i>Million euros</i>	<b>France</b>	<b>International</b>	<b>Total</b>
<b>Adjusted Net Asset Value</b>	<b>2,377.5</b>	<b>226.2</b>	<b>2,603.7</b>
Value of the portfolio without risk premium (CE)	3,260.6	180.8	3 441.4
Time value of financial options	-494.5	-36.1	-530.6
Cost of Capital (100% of solvency margin)	-397.1	-11.6	-408.7
Cost of non-financial risks	-93.1	-3.7	-96.8
<b>Portfolio value</b>	<b>2,275.9</b>	<b>129.3</b>	<b>2,405.2</b>
<b>Embedded Value</b>	<b>4,653.4</b>	<b>355.6</b>	<b>5,009.0</b>

<i>Million euros</i>	<b>France</b>	<b>International</b>	<b>Total</b>
New business value without risk premium (CE)	102.0	14.6	116.6
Time value of financial options	-22.2	-0.9	-23.1
Cost of Capital (100% of solvency margin)	-23.9	-2.1	-26.0
Cost of non-financial risks	-4.2	-0.5	-4.7
<b>New Business value (NBV)</b>	<b>51.7</b>	<b>11.2</b>	<b>62.9</b>

APE	403.1	129.8	532.9
<b>NBV / APE</b>	<b>12.8%</b>	<b>8.6%</b>	<b>11.8%</b>
PVNBP	3,519.6	560.4	4,080.0
<b>NBV/PVNBP</b>	<b>1.5%</b>	<b>2.0%</b>	<b>1.5%</b>

APE premiums: 10% of single premiums and 100% of the regular premiums

APE Ratio: New business value divided by APE premiums. This is the currently used profitability indicator for new businesses.

PVNBP: NBV premiums correspond to the present value of future premiums generated by new business.

## **4. Results for France**

### **▪ Value creation analysis for the French business**

<i>Million euros</i>	ANAV	Portfolio value	EV
<b>Value as at 31 Dec. 2006</b>	<b>2,528.2</b>	<b>1,933.3</b>	<b>4,461.5</b>
<i>Changes of scope and method</i>	4.9	227.2	232.1
<b>Adjusted value as at 31 Dec. 2006</b>	<b>2,533.2</b>	<b>2,160.4</b>	<b>4,693.6</b>
<i>Timing difference</i>	218.3	(73.0)	145.4
<i>Non-economic adjustments</i>	(131.0)	138.1	7.1
<i>Changes in non-economic assumptions</i>	0.0	(136.4)	(136.4)
<i>New business contributions</i>	(45.2)	96.9	51.7
<b>Contribution from operating businesses</b>	<b>42.1</b>	<b>25.6</b>	<b>67.7</b>
<b>Contribution arising from the economic environment</b>	<b>74.7</b>	<b>89.6</b>	<b>164.3</b>
<i>Dividend pay-out for Financial Year 2006</i>	(272.4)	0.0	(272.4)
<b>Value as at 31 Dec. 2007</b>	<b>2,377.5</b>	<b>2,275.9</b>	<b>4,653.4</b>

The total return on EV was 5% before dividend payments in 2007.

Changes of scope and method relate essentially to the use of the Swap Rate (on 31 Dec. 2006): the 10-year French government bond (OAT) of 4.02%, the 10-year Swap Rate of 4.25%).

Non-economic adjustments are largely due to the following two factors:

- New mortality statistics per generation and gender for some group policies have been fully applied to the 2007 accounts. The negative effect on the net asset value of introducing these statistics is largely compensated for by the positive effect on the portfolio value.
- Exceptional costs are not included in the EV calculation model.

A project to overhaul the various management tools used in Life group is currently in progress. This project will incur costs of implementation and transfer of portfolios over the course of the next few years that will be compensated for by productivity gains for each of the entities.

Since CFO Forum guidelines do not allow one to take into account productivity gains, we are taking the approach of not taking into account either the costs related to this project nor the productivity gains resulting from its implementation.

Changes in non-economic assumptions relate to a reappraisal of certain technical assumptions in the calculation of 2007 EV.

The impact of the economic environment on ANAV is 74.7 million euros. Approximately 50 million euros arises from using a risk-free rate in the certainty equivalent that is lower than the actual return of the portfolio, and the balance is due to income tax adjustments. The impact of the economic environment on the value of the policy portfolio is 89.6 million euros.

Changes in economic assumptions have an impact of approximately 231 million euros on the Certainty Equivalent. However, an increase in equity volatility led to an increase in the cost of options.

▪ **Embedded Value – France**

<i>Million euros</i>	<b>31 December 2007</b>	<b>31 December 2006</b>	<b>Change (euros)</b>	<b>% Change</b>
<b>Adjusted Net Asset Value</b>	<b>2,377.5</b>	<b>2,528.3</b>	<b>-150.8</b>	<b>-6.0%</b>
Value of the portfolio without risk premium (CE)	3,260.6	2,791.3	469.3	16.8%
Time value of financial options	-494.5	-415.7	-78.8	19.0%
Cost of Capital (100% of solvency margin)	-397.1	-343.6	-53.5	15.6%
Cost of non-financial risks	-93.1	-98.8	5.7	-5.8%
<b>Portfolio value</b>	<b>2,275.9</b>	<b>1,933.3</b>	<b>342.6</b>	<b>17.7%</b>
<b>Embedded Value</b>	<b>4,653.4</b>	<b>4,461.6</b>	<b>191.8</b>	<b>4.3%</b>

The EV grew from 4,461.6 million euro to 4,653.4 million euro between 31 December 2006, and 31 December 2007.

ANAV decreased by 6%. This change is explained by the payment of the 2006 dividend and the decrease in obligatory unrealised capital gains (following an increase in interest rates).

The portfolio value increased by 342.6 million euro (+17.7%) between 2006 and 2007:

- The certainty equivalent increased by 16.8% resulting essentially from the change in accounting doctrine use of risk-free rate and the increase in the interest rates;
- the cost of capital solvency margin, corresponding to tax changes, increased by 15.6% following the interest rate increase;
- the cost of options increased by 19%, essentially following the increase in equity volatility observed in the markets.

## ▪ *New Business value – France*

<i>Million euros</i>	<b>31 Dec. 2007</b>	<b>31 Dec. 2006</b>	<b>Change (M€)</b>	<b>% Change</b>
New business value without risk premium (CE)	102.0	82.7	19.3	23.3%
Time value of financial options	-22.2	-15.1	-7.1	47.0%
Cost of Capital (100% of solvency margin)	-23.9	-20.5	-3.4	16.6%
Cost of non-financial risks	-4.2	-4.3	0.1	-2.3%
<b>New Business value (NBV)</b>	<b>51.7</b>	<b>42.9</b>	<b>8.8</b>	<b>20.5%</b>

APE	403.1	417.4	-14.3	-3.4%
<b>NBV / APE</b>	<b>12.8%</b>	<b>10.3%</b>	<b>2.5 points</b>	
PVNBP	3.519.6	3.631.3	-111.7	-3.1%
<b>NBV/PVNBP</b>	<b>1.5%</b>	<b>1.2%</b>	<b>0.3 points</b>	

New business value increased by 20.5% between 2006 and 2007 essentially following a change to higher margin products.

## ▪ *Sensitivities*

### **Definition of sensitivities**

For new business, sensitivity to financial markets should be applied just before the policy sales. Sensitivity gives 2007 New Business Value if market conditions at the moment of sale had been those corresponding to the sensitivity scenario studied.

The sensitivities carried out throughout the entire area are as follows:

### **Financial Sensitivities**

- Yield curve of +/- 100 bp:

This sensitivity corresponds to a parallel increase/decrease of the yield curve of 100 basis points at the beginning of the projection. This sensitivity implies a recalculation of the market value of bonds, re-investment rates of all asset classes of 100 basis points and, in accordance with CFO Forum guidelines, adjustment of the discount rate.

- Decline in equity and property values of 10%:

This sensitivity corresponds to a sudden decrease in the projected level of equity and property value indices of 10%.

- Increase in the volatility of equity and property yields of 25%

This sensitivity corresponds to a sudden increase at the start of the projected level of equity and property values volatility of 25%.

- Increase in the interest rate volatility of 25%

This sensitivity corresponds to a sudden increase at the start of the projected level of swaption volatility.

### **Non-financial sensitivities**

- Mortality rate - 5%

Mortality sensitivity is presented by separating mortality sensitivity annuities and other policies (funeral, temporary).

- Other claim ratios - 5%

This sensitivity shows the changes in value under a scenario in which the ratio of claims to premiums on providence (other than temporary, funeral) and health decline by 5%.

- Rate of decline - 10%

This sensitivity corresponds to a decline in the policy surrender rate of 10%.

- Costs + 10%

This sensitivity corresponds to a decrease in administrative and management costs (other than commissions and acquisition costs).

#### *EV financial sensitivities- France*

<i>Million euros</i>	<b>ANAV</b>	<b>Portfolio value</b>	<b>EV</b>	<b>EV</b>
<b>Median value</b>	<b>2,377.5</b>	<b>2,275.9</b>	<b>4,653.4</b>	<b>4,653.4</b>
	<b>(A) Δ ANR</b>	<b>(B) Δ Portfolio value</b>	<b>(A+B) Δ EV</b>	<b>Δ EV (%)</b>
Impact of a 100bp increase in the interest rate curve	-106.8	118.5	11.6	0.2%
Impact of a 100bp decrease in the interest rate curve	113.7	-385.9	-272.2	-5.8%
Impact of a 10% decline in equity and property values	-173.2	-317.3	-490.5	-10.5%
Impact of a 25% increase in interest rate volatility	0	-19.8	-19.8	-0.4%
Impact of a 25% increase in equity and property values volatility	0	-281.6	-281.6	-6.1%

#### *EV non-financial sensitivities - France*

<i>Million euros</i>	<b>Portfolio value</b>	<b>Portfolio value</b>
<b>Median value</b>	<b>2,275.9</b>	<b>2,275.9</b>
	<b>Δ Portfolio value</b>	<b>Δ Portfolio value</b>
Administrative expenses + 10%	- 157.8	- 6.9%
Lapse rates -10%	28.7	1.3%
Mortality (annuities) - 5%	-24.3	- 1.1%
Mortality (other products) - 5%	28.9	1.3%
Other claim ratios - 5%	125.7	5.5%

## New Business Value (NBV) Sensitivity–France

<i>Million euros</i>	<b>NBV:</b>
<b>Median value</b>	<b>51.7</b>
	<b>Δ NBV</b>
Risk-free rate +100 bp	-0.8
Risk-free rate -100 bp	-5.2
Decline in equity and property values of 10%	-1.5
Interest rate volatility + 25%	-4.8
Equity and property value yield volatility+25%	0
Administrative expenses +10%	-11.1
Lapse rates -10%	5.2
Mortality (annuities) -5%	-0.5
Mortality (other products) -5%	1.8
Other claim ratios -5%	13.2

A decline of interest rates creates a decline in the EV of the holdings. An increase in unrealised bond gains on assets in net assets is not compensated by a decline in margins with the reduction of equity yield.

An increase in interest rates has little impact on the value, the decrease in unrealised bond gains in the ANAV compensates for the increase in margins.

The sensitivity to the equity market level (yield and volatility) shows Groupama's exposure to the equity markets. Desensitizing policies for the equity portfolio were carried out in 2007 to reduce this exposure.

ANAV sensitivity to different market shocks studied arises from the sensitivity of the equity unrealised capital gains regarding net assets.

New Business Value declines noticeably with the lowering of interest rates (decrease in margins on policies in euros) and slightly with the increasing of interest rates (increase in margins on euro policies but decrease in margins on unit linked policies with a bond component).

## **5. International Results**

### **▪ Embedded Value – International<sup>(1)</sup>**

<i>Million euros</i>	<b>Total</b>
<b>Adjusted Net Asset Value</b>	<b>226.2</b>
Value of the portfolio without risk premium (CE)	180.8
Time value of financial options	-36.1
Cost of Capital (100% of solvency margin)	-11.6
Cost of non-financial risks	-3.7
<b>Portfolio value</b>	<b>129.3</b>
<b>Embedded Value</b>	<b>355.6</b>

<sup>(1)</sup> Italy, Spain, Portugal, Turkey, UK

▪ **New Business value – International<sup>(1)</sup>**

<i>Million euros</i>	<b>Total</b>
New business value without risk premium (CE)	14.6
Time value of financial options	-0.9
Cost of Capital (100% of solvency margin)	-2.1
Cost of non-financial risks	-0.5
<b>New Business value (NBV)</b>	<b>11.2</b>

APE	129.8
<b>NBV / APE</b>	<b>8.6%</b>
PVNBP	560.4
<b>NBV/PVNBP</b>	<b>2.0%</b>

▪ **Sensitivities – International<sup>(1)</sup>**

EV financial sensitivities

<i>Million euros</i>	<b>ANAV</b>	<b>Portfolio value</b>	<b>EV</b>
<b>Median value</b>	<b>226.2</b>	<b>129.4</b>	<b>355.6</b>
	<b>(A) Δ ANR</b>	<b>(B) Δ Portfolio value</b>	<b>(A+B) Δ EV</b>
Impact of a 100bp increase in the interest rate curve	- 4.4	- 9.6	-14.0
Impact of a 100bp decrease in the interest rate curve	4.9	2.4	7.3
Impact of a 10% decline in equity and property values	- 3.6	-6.4	- 10.0
Impact of a 25% increase in interest rate volatility	0	- 3.0	- 3.0
Impact of a 25% increase in equity and property values volatility	0	- 3.2	- 3.2

EV non-financial sensitivities

<i>Million euros</i>	<b>EV</b>
<b>Median value</b>	<b>355.6</b>
	<b>EV</b>
Administrative expenses + 10%	- 11.8
Lapse rates -10%	4.5
Mortality (annuities) - 5%	- 0.1
Mortality (other products) - 5%	5.9
Other claim ratios - 5%	19.9

<sup>(1)</sup> Italy, Spain, Portugal, Turkey, UK

## New Business Sensitivities

<i>Million euros</i>	<b>NBV:</b>	<b>NBV:</b>
<b>Median value</b>	<b>11.2</b>	<b>11.2</b>
	<b>ΔNBV</b>	<b>ΔNBV</b>
Risk-free rate +100 bp	1.0	- 15.2%
Risk-free rate -100 bp	-1.7	8.9%
Decrease in equity and property values of 10%	0.0	0.0%
Interest rate volatility + 25%	- 0.3	- 2.7%
Administrative expenses +10%	-2.4	-21.4%
Lapse rates -10%	1.1	9.8%
Mortality (annuities) -5%	0	0.0%
Mortality (other products) -5%	2.7	24.1%
Other claim ratios - 5%	4.6	41.1%

## **6. EV Adjustment / consolidated net equity**

The table below restates the portfolio value to establish the additional value not entered on the books in consolidated capital and reserves.

<i>Million euros</i>	2007			2006	2006/2007 spread
	<b>International</b>	<b>France</b>	<b>TOTAL</b>	<b>TOTAL</b>	
Portfolio value	134	2,276	2,410	2,029	381
AFA	-6	-37	-43	-50	7
Unrealised capital gains entered in consolidated net assets	-6	-1,061	-1,067	-1,390	323
Unrealised capital gains entered in ANAV	19	373	392	401	-9
VOBA	-27		-27	-33	6
Other adjustments	7	346	353	26	327
Holding costs		-161	-161	-105	-56
<b>Additional value not taken into account in the IFRS net assets</b>	<b>121</b>	<b>1,736</b>	<b>1,857</b>	<b>878</b>	<b>979</b>

Except for unrealised property value gains (besides real estate partnerships classified as AFS), the share income of unrealised capital gains returning to the shareholder is entered in consolidated net assets and in the portfolio value. Thus the unrealised gains entered on the books in the net consolidated PB/IS accounts are cancelled out.

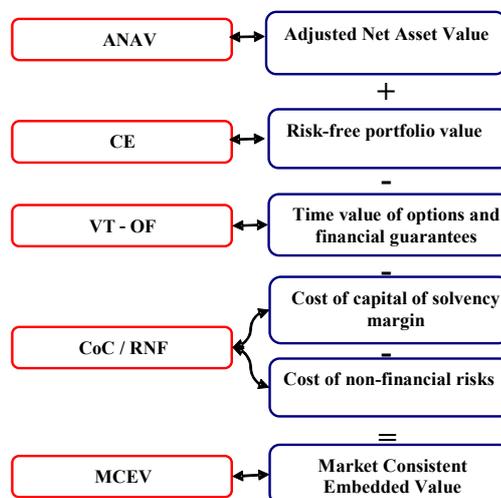
The share income of unrealised gains in equity is entered in the ANAV and not in the portfolio value. The latter must therefore be included in the adjustments.

Other adjustments arise from differences between the net book value of the company (EV view) and the consolidated net book value, specifically in the class of property assets.

The difference between the additional value in 2006 and 2007 is explained by the differences between the company un-recovered costs and the consolidated un-recovered costs of property assets, that had not been identified during 2006, by the increase in the portfolio value and the decrease of the bond unrealised gains created by the increase in interest rates.

## **7. Methodology and Assumptions**

Groupama presents the following Embedded Value:



### ***ANAV***

Adjusted net asset value (ANAV), in keeping with CFO Forum, corresponds to the market value of the assets represented by capital and reserves and other reserves due to shareholders. The Group's ANAV was calculated by consolidating restated company net assets for each entity.

In summary, the ANAV as at 31 Dec. 2007 is comprised of the following individual elements:

- retained net assets before dividends distributed in 2008 for fiscal year 2007. The capitalisation reserve was calculated for the shareholder without any tax adjustments
- overall provisions whose risks and/or future costs have been taken into account in the portfolio value
- the amount of the unrealised gains represented by net and absorbed assets and mathematical provisions not having undergone any profit sharing distribution (from a contractual or regulatory point of view)
- Holding costs

These costs correspond to the share of holding costs attributed to the Group Life insurance business (France and international)

### ***Certainty equivalent***

The portfolio value without risk premium (CE) corresponds to the present value of future profits generated by policies in force at the date when it was calculated and is calculated using the following methods:

The result is defined as being:

- Under credit:
  - collected premiums
  - financial products
- Under debit:
  - claims,

- commissions,
  - costs: acquisition, administrative and other costs,
  - appropriations/writebacks of technical provisions (including profit sharing and general provisions),
  - and corporate taxes.
- Non-economic best estimate assumptions arising from statistical studies carried out on Groupama's policy portfolios.
  - Determination of the projected yield rates on the basis of the following principles:
    - **for debt securities on hand at the date of calculation:** projection of real actuarial yields, after eliminating spreads rewarding default risk by assuming each security will be held until expiration,
    - **for all other assets and new investments:** use of the forward risk-free curve rate arising from the swap rate at 31 Dec. 2007,
  - All future cash flow discounted on the basis of the swap rate curve as at Dec. 31, 2007.

The result of this approach is that the unrealised gains of assets represented by the mathematical provisions are taken into account in the projected future yields.

The Certainty Equivalent includes the intrinsic value of options and financial guarantees, that is the cost generated by these options and financial guarantees in the estimated economic scenario.

### ***Cost of options and financial guarantees***

French policies in euro include for the most part options and/or financial guarantees: The Minimum Guaranteed Rate (MGR) together with profit sharing (PS option), guaranteed buyback amount taking into account the dynamic behaviour of the insured (buyback option). These policies are characterised by an asymmetry of sharing in profits and losses between the shareholders and the insured following changes in financial markets.

The unit linked policies on the other hand do not include any option or financial guarantee except for certain minimum guarantees that are part of a mathematical provision under French regulations of company accounts. No special treatment was made for these guarantees, considering that the commitment is already covered under this provision.

Provident policies also do not include any material financial option (no asymmetry between shareholders and insured).

Insurance liabilities are not in principle traded in an organised market; the Portfolio Market Value can therefore only be theoretical. Groupama's approach assumes that the only source of risk that would influence the Portfolio Market Value is market risk, that is the risk linked to changes in the principal macro-economic variables. Specifically, any impact of the following sources of risk have not been taken into account: credit risk, liquidity risk, or risk linked to adverse changes in Best Estimate assumptions used to calculate the results of the policies. The risk linked to these Best Estimate assumptions has been taken into account elsewhere in the cost of non-financial risks.

The principal options and financial guarantees calculated are the following:

- the rules of profit sharing (contractual or regulatory), that combined with guaranteed rates, create an asymmetry between assured return and the insurer return,
- sudden buybacks that may occur during unfavourable market conditions for the insurer.

Groupama's option calculations cover the profit sharing option (arising from the asymmetric distribution of financial returns between the insurer and the insured) and the buyback option of the following policies:

- individual savings policies in euro,
- individual retirement pension policies in euro,
- industry wide policies where the insured's capacity for profit sharing and buyback are considered significant,
- policies covered by Article 83 of the General Tax Code,
- policies covered by Article L.441 of the Insurance Code.

### ***Neutral risk approach***

Since market risk is the only risk influencing the Portfolio Market Value, we naturally use calculation techniques currently used in financial theory, and specifically the neutral-risk approach. According to this approach, the Portfolio Market Value is equal to the current probable value of flows attributable to the shareholder during the entire projection period. These cash flows are projected in a neutral risk probability universe, which means that the projected returns do not include any risk premium and that the flows are discounted using an instantaneous risk-free rate of each economic scenario (integrated with the one year rate).

Probable current values are calculated using the Monte-Carlo simulations technique. Future cash flows are projected for 5,000 scenarios generated by the Barrie & Hibbert economic model; the expected value of an element is estimated by the arithmetic average of the values of this element observed in the 5,000 simulations.

The Portfolio Market Value calculated in this way corresponds to a "Market Consistent" valuation, that is estimated using a financial model that allows a valuation of the assets of reference in keeping with the prices observed on the actual financial markets. In the traditional Embedded Value, the discount rate is estimated as the sum of the risk-free rate and a risk premium representing the totality of risk factors potentially influencing the profitability of the enterprise. CFO Forum guidelines require adjusting this risk premium depending on the level of exposure to risk and especially to make the discount rate fit with the other economic assumptions made.

The time value of options and financial guarantees is calculated as the difference between the following amounts:

- the stochastic value of the future yields of policies ("Portfolio Market Value"), and
- the Certainty Equivalent or risk-free portfolio value (CE).

The Portfolio Market Value is equal to the sum, through the duration of the projection, of present value of the following items:

- dividends paid to the shareholder net of corporate taxes
- the shareholder's share of the capitalisation reserve after estimation of the gross taxes and in a coherent fashion with the adjustment to the ANAV,
- the shareholder's share of the residual provision for contingent payment risk after projection net of corporate taxes,

- the shareholder's share in the unrealised capital gains or losses after projection net of corporate taxes,

### **Cost of Capital (CoC) / Taking into account non-financial risks**

Groupama kept its Cost of Capital at the level of 100% of the minimum solvency margin required by current European regulations (solvency I). This capital requirement has generated a friction cost for the shareholders in that its freezing causes the enterprise to pay financial management costs and especially taxes (corporate taxes on financial revenues generated).

Under operational risks, a supplementary risk premium of 25 bp has been included in the Cost of Capital of the solvency margin.

Furthermore, the policy portfolios having technical risks are exposed to risk factors that are not taken into account elsewhere. These consist in, among others, adverse changes in claims assumptions (mortality, morbidity, longevity...). A supplementary risk premium of 50bp has therefore been added to all these policies.

The cumulative value of these two risk premiums (25bp for operational risks and 50 bp for technical risks) constitute the supplemental risk premium included in the cost of capital and used to calculate the cost of non-financial risks.

### **New Business value (NBV)**

The value of a year of New Business is considered to be an indicator of the probable change in Embedded Value. Its purpose is to evaluate the contribution of a year of business to the enrichment of the company. Generally it is analyzed as the difference between the two following items:

- New Business Value commercialised the year preceding the calculation date
- carrying costs of the regulatory solvency margin relative to the portfolio of new policies underwritten during this year
- Cost of non-financial risks

With the exception of future returns, the methodology and assumptions used are the same as those used to calculate the policy inventory in the portfolio.

It should be noted that New Business Value was calculated using the assets consisting of new investments (the so-called "stand alone" approach), that is without use:

- of the inventory of initial unrealised capital gains (whatever their nature),
- of the profit-sharing at the time of the calculation date.

The profit-sharing strategy was adapted to this financial environment (lack of initial underlying wealth). The underlying assumption is that Groupama's competitive environment would experience the same constraint of lack of initial underlying wealth.

The projections used to estimate the value of a year of New Business correspond to the business profile underwritten during 2007 with premium volumes achieved for 2007 business.

Regarding the allocation of payments between new business and policy inventory, the following guidelines were applied:

- For savings policies in euro and unit linked policies, only the periodic premiums were included in the inventory (all later payments on existing policies are considered as new business).
- For provident policies (covering individual providence, health and policies such as the "industry wide" ones) the insurance policies of lenders, periodic premiums were included in the value of the inventory. Thus only the new policies (or insured for lenders insurance) are considered in new business.

- For collective retirement policies, Article 83, and policies of the L.441 type, periodic premiums have been included in the value of the inventory (i.e. only new collective policies are considered as new business).
- For collective retirement policies, Article 39 standard, no future premium has been projected for the inventory (i.e. all later payments on existing policies are considered as new business).

### ***Value creation analysis***

Following guideline 12 of the CFO Forum, Groupama has created an account to analyze creation of value to explain the change in Embedded Value between two fiscal years.

The main posts to this account are described below.

The first post (changes in scope and method) include all the initial adjustments corresponding to changes in method. This year the most noticeable effect is the use of the swap rate curve instead of the zero-coupon curve rate.

#### Contribution from operating businesses

The post "Contribution from operating businesses" measures the impact:

- of the effect of a one-year delay of the EV of the previous year,  
This post measures the effect of passage of time on the EV. The discount rate used for calculating the effect of a year's time lag on the risk-free portfolio value in force (or Certainty Equivalent) and on the cost of capital corresponds to the assumption of a risk-free rate used on 31 Dec. 2006. Since it is an analysis of the creation of value from the time value of options and financial guarantees, the Portfolio Market Value given a year later was not derived from an implicit discount rate but in considering the probable present value of cash flows to be distributed to the shareholder a year later.
- of the difference between the assumptions used on 31 Dec. 2006 for changes in non-economic risk factors (such as costs, morality, morbidity, falls,... ) for fiscal 2007 and the actual change in these factors over the same period,
- of the change in assumptions related to all non-economic risk factors,
- the contribution of 2007 new business.

#### Result linked to the change in the economic environment

The post "Result linked to the change in the economic environment" measures the impact on EV of:

- the change experienced between projected financial returns for the past year and the actual returns received,
- and the change in each variation of the projected assumptions of change in economic risk factors (projected future returns, economic stochastic scenarios).

### ***Assumptions***

#### **Assumption of discount rate and rate of return**

Guideline 10 of the CFO Forum requires enterprises to retain coherent economic assumptions for the value of future returns and the time value of options and financial guarantees. Groupama applied this guideline in the following manner:

- for calculating the Certainty Equivalent, no risk premium was applied to financial returns of the projected futures market (equal to the one year forward rates deduced from the swap rate curve as at 31 Dec. 2007),
  - For calculating the time value of options and financial guarantees, the swap rate curve as at 31 Dec. 2007 was used to calibrate an economic model.

The following table presents the rate curve used for stochastic calculations:

Maturity	Swap yield curve at 31.12.07
1	4.44%
2	4.49%
3	4.53%
5	4.61%
7	4.67%
10	4.75%
15	4.84%
20	4.88%
25	4.90%
30	4.90%

The stochastic simulations were based on the 5,000 scenarios provided by the Barrie & Hibbert economic generator.

The economic generator used to produce these simulations allows production over 40 years:

- changes in a stock index and dividend rate: the return of this index is described using a log-normal model with a determinant volatility structure,
- the consumer price index,
- the risk-free swap rate curve for whole life from 1 to 30 years: this curve is described using the Black-Karasinski model with two factors
- the actual risk-free swap rate curves for whole life between 1 and 30 years: this curve is described using the Vasicek model with two factors,
- the change in the real estate index and in the associated rental rate: the return on this index is described using a constant volatility log-normal model.

- **Calibration of the rate model**

The initial curve used to calibrate the nominal rate model is the swap rate curve as at 31 Dec. 2007. The initial curve used for calibrating the model of actual rates was extrapolated from the prices, as at 31 Dec. 2007, of a basket of Treasury bonds indexed on inflation.

Volatility parameters were estimated using the structure of implicit volatility observable in the financial markets on 31 Dec. 2007, beginning with "forward at-the-money" swaption prices (that is whose exercise price corresponds to the forward rate for the corresponding maturity). The swaptions basket used for calibration is composed of options expiring from 1 to 30 years based on swaps of 5, 10, and 20 years.

- **Calibration of the securities model**

The volatility parameters for the securities model were calibrated using the average observable volatility structure implicit in the financial markets in 2007 beginning with the price of puts on the Eurostoxx index.

The assumptions of volatility of securities and rates considered for calibrating economic scenarios are the following:

target volatilities					
securities			Swaptions 20 years		
1yr	2yr	30yr	5yr	10yr	20yr
18.80%	19.20%	29.50%	11.30%	10.80%	9.75%

- **Calibration of the property model**

In the absence of liquid markets of derivative products having property as the underlying asset, the volatility parameters used to calibrate the property model were based on the historical volatility of the IPD of a number of European countries. Property volatility is considered constant at 15%.

- **Profit sharing and financial margin policies**

Profit sharing policies are in keeping with the objectives and practices of each of the entities. Thus, the distributed financial returns correspond to the share of financial profits historically distributed to the insured without this amount being less than the technical interest and amounts of contractual or regulatory appropriation.

In the model for calculating the options, a profit sharing sales target is defined for each product. This profit sharing target reflects the rate expected by the insured in the different market environments and when the target is not reached compensating buybacks are allowed. This compensatory component takes into account the ability that the insured have to buy back their policies if the payments received do not seem satisfactory.

- **Asset allocation**

The initial allocation corresponds to the allocation as at 31 Dec. 2007 of each of the calculated asset portfolios.

In the model of costs of options and financial guarantees, the allocation of non obligatory assets decreases with the duration of the liabilities.

The initial market value allocation of the portfolios is 75%/20%/5% in France and 92%/6%/1% abroad respectively for returns of rates/securities/property.

- **Costs**

Following CFO Forum guidelines, no productivity gain has been taken into account in the portfolio values. Consequently, costs linked to exceptional projects that will achieve productivity gains have not been projected.

Changes created by not taking these costs into account in the EV appear under non-economic adjustments in the analysis of the creation of value.

- **Holding costs**

A portion of these costs is attributed to Group Life Insurance business (France and international). Allocation rules are based on the gross margin generated by the different businesses.

- **Tax Treatment**

For total projections of profits from inventory and new business, Groupama applied a tax rate of 34.43% for France and country rates for Italy of 32.3%, Turkey of 20%, Portugal of 26.5%, Spain of 30%, and England of 28%.

Adjustments were made in order to take into account the specific tax rates not taken into account elsewhere in EV calculations. These adjustments are of two orders:

- Accounting for the tax system allowing for strategic interests:

A significant part of the R.332-20 unrealised gains arises from a specific tax treatment for strategic participations. This system allows a reduction of the tax rate to 1.72%. The tax savings created this way has been included in the EV.

- Other tax adjustments:

Since certain provisions and other unrealised capital gains (stability funds, overall management provisions, revaluation funds) have already been taxed, they were included in EV and taxed at the rate of 34.43%. In order to avoid counting taxes twice, an adjustment was made.

## **8. B&W Deloitte Opinion**

"B&W Deloitte have certified the Embedded Value figures of Groupama as at 31 December 2007. In the course of our work, we have reviewed the value in force of Groupama policies as at 31 December 2007, as calculated internally according to management directives and under its responsibility. Our review has included the methodology adopted, the assumptions made and the calculations carried out.

Our review was carried out in accordance with generally accepted practices and actuarial procedures. We have relied especially on the information provided by Groupama without attempting to check it thoroughly.

In light of the preceding remarks, we consider that the methodology adopted is in keeping with market practices and CFO Forum guidelines (with the exception of the Turkish subsidiary for which a traditional calculation of Embedded Value was carried out), that the assumptions made by Groupama management are by and large reasonable and coherent, and that the results of the Embedded Value calculations are in keeping with the methodology adopted by Groupama management and the assumptions made.

The calculations of Embedded Value are based on numerous assumptions relating to the state of the financial markets, operations management, tax implications, and other factors most of which are not directly under Groupama's control. Although the assumptions made are estimates that Groupama and B&W Deloitte deem reasonable, one usually notes a deviation between these projected assumptions and their realisation in the future. Such deviations can significantly change the value."