SUCCESSFUL HABITS
OF VISIONARY
COMPANIES

JAMES C. COLLINS and Jerry I. Porras

## Your Insurance Cy , since 19XX ... Still going strong



Strategy Control Professional Solid Well-thought-troughyision Proper Competitive-AdvantageFit DedicatedRisk-under-Control ExecutionProfitable

## CONTINUITEIL pérennité

#### Directive 2009/138/EC of 25 nov 2009

\* "On the taking up and pursuit of the business of Insurance and Reinsurance (Solvency 2)"



Solvabiliteit risico-management Geen-extra-last ORSA-Eigen-riscico-en-solvabiliteit-appreciatieRisk 4Functions<sub>Asset-Management</sub> Client-bescherming Publicatie Risico-meting Code-of-conduct SCR

### **Publication**

Marché-interne Solvabilité
Code-de-conduite Gestion-de-risque
pas-d'effort-supplementaire
ORSA: Appréciation-risque-et-solvabilité-propre
Gouvernance Protection-client
4Fonctions SCR Gestion-d'actif

# continuiteit

## Of bij niet-continuiteiteit Bescherming cliënt

## pérennité

### Ou en cas de dificulté Protection du client

#### What was wrong with Solvency 1?

#### Main features of Solvency 1

- Rudimentary « fixed ratios » model :
   The calculation of the required capital is based on objective factors ( premiums, provisions)
- Simple calculation and great transparency
- Result in inconsistent capital requirement
- Not taking into account the real risk profile (the real factor of insolvency).

Eiopa gelooft dat wat zij oplegt aan maatregelen en berekeningen , de maatschappij ook voor meer als 90% nodig heeft om goed bestuurd te kunnen zijn ... vandaar haar bewering dat de Solvency 2 geen "extra effort" betekent ....

#### Basisreglementering:

Europese directive 2009/138/EU – Solvency 2 directive Commission Delegated Regulation (EU) 2015/25 - Dedicated Acts

Belgische Reglementering

... Op komst

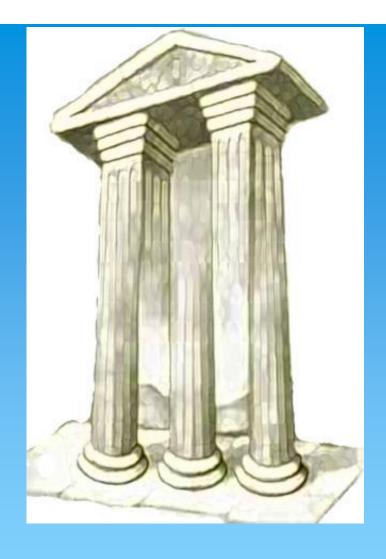
#### Belgische Reglementering

**Projet** 

Loi relative au statut et au contrôle des entreprises d'assurance ou de réassurance

Ontwerp

Wet op het statuut van en het toezicht op verzekerings- of herverzekeringsondernemingen



Solvency II

Applicable to every Insurer ?
No ....

Premium income (Gross) < 5 mEUR
& Techn. Reserves (Net) < 25 mEUR
& Groupsconditions
& not Liability, Credit nor Surety
& Accepted Reinsurance < 0,5 mEUR, < 2,5 mEUR Reserves
& Accepted Reinsurance < 10% business total

#### Pillar 1:

#### Quantitative capital requirements

- Technical provisions
- Minimum capital requirement (MCR)
- Solvency Capital Requirement (SCR)

Market-consistent valuation of assets and liabilities Economic Capital Validation of internal models

#### Pillar 2:

#### Qualitative supervisory review process

- Corporate Governance
- Principles for internal control and risk management
- ORSA
- · Capital add-ons?

New focus for supervisor Level of harmonisation Group supervision

#### Pillar 3:

#### Disclosures

- Enhance market discipline through public disclosures
- Annual FCR and Solvency reports
- Provide additional (non-public information to the supervisors

More pressure from capital markets, investors and shareholders



#### Market consistent evaluation of assets and liabilities

#### Investments -

Under Solvency II, there are no prohibitions on classes of assets, but, for all assets held, insurers need to be able to demonstrate that they comply with the **prudent person investment principles** (PPIP). The PPIP requirements start from the premise that an insurer should be **free to invest** in any assets it chooses, provided that it **fully understands the risks involved**, makes **proper provision** for these (via the SCR), and that investment decisions are made in the best **interests of the policyholders**.

These requirements will necessitate a change in the way assets are considered, both before acquisition and during the lifetime over which they are held.



#### Market Consistent evaluation of assets and liabilities

#### Assets:

- 1. Market Value
- 2. Discounted Cash Flow at risk adjusted discount rates

#### Techn. Liabilities:

- 1. Best Estimate of Techn. Reserves +
- Risk Margin (+- cost of capital of BE Reserves)

#### Other Liabilities:

Idem: see assets



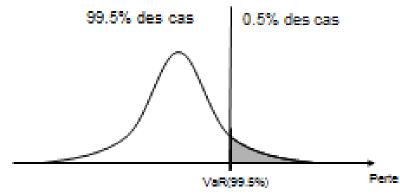
#### **Market Consistent Balance sheet**

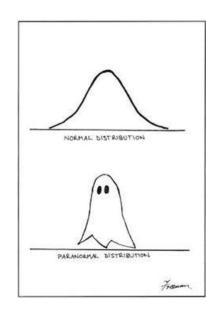
#### Own funds = Assets – Liabilities



#### Le concept de Solvency II Notion Risque

- Pour chaque risque lié à la Compagnie, une masse de capitaux est exigée pour couvrir le risque au seuil de confiance de 99.5%, à un horizon d'un an, en d'autres termes, couvrir la perte inattendue en espérance tous les 200 ans. (0.5/100 = 200)
- VaR(99.5%) = Perte probable avec un seuil de confiance de 99.5%





Hence, he notion of Black Swan....

Expect the unexpected ....

.... Once every 200 year





#### **Minimum Capital Requirement**

What simplified calculation:

25% à 45 % of SCR Life + Non-Life

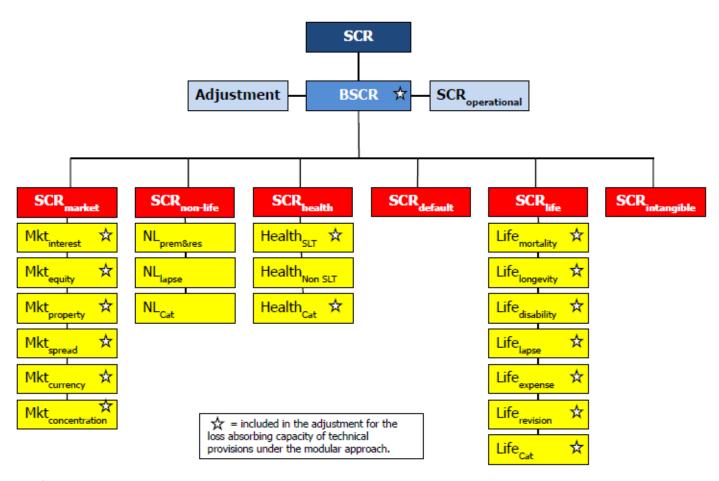
Factor based: % per LoB on Premiums and Reserves



## Pillar 1: Cuantitative capital requirements • Technical provisions • Minimum capital requirement (MCR) • Solvency Capital Requirement (GCR) • Capital add-cons? • Capital add-cons? • Capital add-cons? • Capital add-cons? • Provise additional inon-public information of assets and libitilities • Economic Capital • Capital add-cons? • Provise additional inon-public information to the supervisors • Leve of harmonic addon • Transmitter of the supervisors • Provise additional inon-public information to the supervisors • Provise additional inon-public information in the supervisors • Provise additional inon-public into supervisors • Provise additi

#### **Solvency Capital Requirement - SCR**

#### SCR & Standard Formula





#### SCR – België QIS 5 (cijfers 31.12.2009)

#### Main components of SCR: Aggregated figures

mio €	Standard Formula (BE)	Solvency Ratio (BE)
SCR market	17.610 (59% <sup>5</sup> )	
SCR counterparty default	1.170 (4%)	
SCR underwriting Life	3.810 (13%)	
SCR underwriting Non-Life	5.070 (17%)	
SCR underwriting Health	2.280 (8%)	
Diversification across modules	-11.000	
Basic SCR	19.000	132 %
Loss absorbing effect of profit sharing and deferred taxes	-7.590	
SCR operational	2.160	
SCR	14.000	179 %



#### **Solvency Capital Requirement - SCR**

Voor elke onderwerp:

1/200 jaar shock : toegepast op de Solv 2 balans

Individuele shocks worden op diverse niveaus geaggregeerd om totaal positie uit te komen

>>> voordeel van diversificatie

Impacten zijn zeer verschillend.

Opmerking: Buiten de "Standard Formula" zijn er ook nog:

- Intern model
- Partieel intern model
- Undertaking Specific Parameters (USP)



#### SCR – Aggregatie diverse risico's

#### Voor elke onderwerp:

1/200 jaar shock : toegepast op de Solv 2 balans

Individuele shocks worden op diverse niveaus geaggregeerd

om totaal positie uit te komen

#### BSCR Calculation

 $\mathsf{BSCR} = \sqrt{\sum_{ij} \mathsf{CorrSCR}_{i,j} \cdot \mathsf{SCR}_i \cdot \mathsf{SCR}_j} + \mathsf{SCR}_{\mathsf{Intangible}}$ 

>>> voordeel van diversificatie

Five modules for main BSCR calculation i & j plus intangible module, as follows:

- SCR<sub>mkt</sub> = Capital charge for market risk.
- SCR<sub>def</sub> = Capital charge for counterparty default risk.
- SCR<sub>life</sub> = Capital charge for life underwriting risk.
- SCR<sub>nl</sub> = Capital charge for non-life underwriting risk.
- SCR<sub>health</sub> = Capital charge for health underwriting risk.

plus SCR intangible = Capital charge for intangible asset risk

Impacten zijn zeer verschillend.

#### Correlations:

i / j	Market	Default	Life	Health	Non-Life
Market	1.00				
Default	0.25	1.00			
Life	0.25	0.25	1.00		
Health	0.25	0.25	0.25	1.00	
Non-Life	0.25	0.50	0.00	0.00	1.00

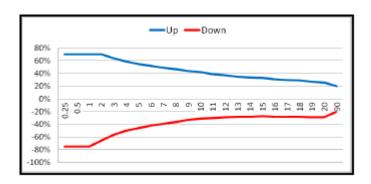


#### SCR – Market risk – Interest Rate Risk



#### $Mkt_{int} = interest rate risk^{*}$

 $Mkt_{int} = Max(Mkt_{int}^{Up}, Mkt_{int}^{Down})$ 



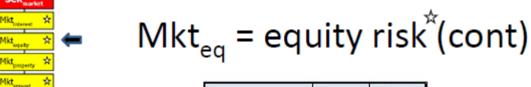
Shocks, up and down, toegepast op "open ALM posities"

Opgelet: Equity & Property: Duration **0** 

Term	Up	Down
0.25	70%	-75%
0.5	70%	-75%
1	70%	-75%
2	70%	-65%
3	64%	-56%
4	59%	-50%
5	55%	-46%
6	52%	-42%
7	49%	-39%
8	47%	-36%
9	44%	-33%
10	42%	-31%
11	39%	-30%
12	37%	-29%
13	35%	-28%
14	34%	-28%
15	33%	-27%
16	31%	-28%
17	30%	-28%
18	29%	-28%
19	27%	-29%
20	26%	-29%
90	20%	-20%



#### SCR – Market risk – Equity risk



Equity Shock;

Type 1

39 %

Type 2

49%

+ symmetric adjustment + 10% / - 10%

Dus max beursgenoteerde: 49% (type 1) min beursgenoteerde: 29% (type 1)

0.0

The symmetric adjustment is included due to the following objectives:

- To avoid (re)insurers being unduly forced to raise additional capital or sell their investments as a result of adverse movements in markets;
- To discourage or avoid fire sales which would further negatively impact the equity prices – i.e. prevent a pro-cyclical effect of the capital requirements which could have a potential destabilizing effect on the economy.



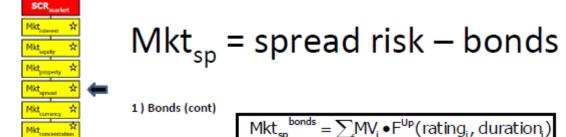
#### **SCR** – Market risk – Property



Property Shock = 25% for all property types

## Pillar 1: Cuantitative Capital requirements Technical provisions Minimum capital requirement Solvency, Capital Solvency, Capital ORSA Capital add-ons? Pillar 2: Cualitative supervisory review process Ocoporate Governance Principles for internal control of six management ORSA Capital add-ons? Privide additional (non-put homoston to the supervisor Economic Control Control

#### SCR – Market risk – Spread Risk



duration; (d; ) Rating AAA AA CCC or lower years 0.9% \* d; 1.1% \* d; 1.4% \* d; 2.5% \* d; 4.5% \* d; 7.5% \* d. Upto 5 7.5% \* d: >5 & =/< 10 4.5%+0.5%\*(d<sub>-</sub>5) 5.5%+0.6%\*(d-5) 7.0%+0.7%\*(d-5) 12.5%+1.5%\*(d-5) 22.5%+2.5%\*(d-5) 37.5%+4.2%\*(d-5) 37.5%+4.2%\*(di-5) > 10 & =/< 15 7.2%+0.5%\*(d-10) 8.4%+0.5%\*(d-10) 10.5%+0.5%\*(d<sub>1</sub>-10) 20%+1.0%\*(d<sub>-</sub>10) 35%+1.8%\*(d-10) 58.5%+0.5%\*(d<sub>-</sub>10) 58.5%+0.5%\*(di-10) > 15 & =/< 20 9.7%+0.5%\*(d<sub>i</sub>-15) 10.9%+0.5%\*(d<sub>1</sub>-15) 13%+0.5%\*(d<sub>i</sub>-15) 25%+1.0%\*(d;-15) 44%+0.5%\*(d;-15) 61%+0.5%\*(d;-15) 61%+0.5%\*(di-15) Over 20 12.2%+0.5%\*(d<sub>-20</sub>) 13.4%+0.5%\*(d<sub>-</sub>20) 15.5%+0.5%\*(d<sub>1</sub>-20) 30%+0.5%\*(d<sub>1</sub>-20) 46.6%+0.5%\*(d<sub>-</sub>20) 63.5%+0.5%\*(d<sub>-</sub>20) 63.5%+0.5%\*(di-20)

	AAA	AA	Α	BBB	BB	В
1 year	0.9%	1.1%	1.4%	2.5%	4.5%	7.5%
3 year	2.7%	3.3%	4.2%	7.5%	13.5%	22.5%
5 year	4.5%	5.5%	7.0%	12.5%	22.5%	37.5%
7 year	5.5%	6.7%	8.4%	15.5%	27.5%	45.9%
10 year	7.0%	8.5%	10.5%	20.0%	35.0%	58.5%
15 year	9.7%	10.9%	13.0%	25.0%	44.0%	61.0%



#### SCR – Market risk – Aggregation / Diversification



#### $SCR_{mkt} = Mkt Calculation$

$$SCR_{mkt} = \sqrt{\sum_{rxc} CorrMkt^{rxc} \bullet Mkt_r \bullet Mkt_c}$$

Six sub-modules for SCR<sub>Mit</sub>

- 1) Mkt<sub>int</sub> = interest rate risk
- 2) Mkt<sub>ea</sub> = equity risk
- 3) Mkt<sub>prop</sub> = property risk
- 4) Mkt<sub>sp</sub> = spread risk
- 5) Mkt<sub>fv</sub> = currency risk
- 6) Mkt<sub>conc</sub> = market concentration risk

CorrMktUp	Mktint	Mkteg	Mktprop	Mktsp	Mkt <sub>fx</sub>	Mktconc
Mktint	1					
Mkt <sub>eq</sub>	Α	1				
Mkt <sub>prop</sub>	Α	0.75	1			
Mkt <sub>sp</sub>	Α	0.75	0.5	1		
Mkt <sub>fx</sub>	0.25	0.25	0.25	0.25	1	
Mkt <sub>conc</sub>	0	0	0	0	0	1
	Mkt <sub>int</sub> Mkt <sub>eq</sub> Mkt <sub>prop</sub> Mkt <sub>sp</sub> Mkt <sub>fx</sub>	Mkt <sub>int</sub> 1           Mkt <sub>eq</sub> A           Mkt <sub>prop</sub> A           Mkt <sub>ep</sub> A           Mkt <sub>fx</sub> 0.25	Mkt <sub>int</sub> 1           Mkt <sub>eq</sub> A         1           Mkt <sub>prop</sub> A         0.75           Mkt <sub>sp</sub> A         0.75           Mkt <sub>fx</sub> 0.25         0.25	Mkt <sub>int</sub> 1           Mkt <sub>eq</sub> A         1           Mkt <sub>prop</sub> A         0.75         1           Mkt <sub>sp</sub> A         0.75         0.5           Mkt <sub>fx</sub> 0.25         0.25         0.25	Mkt <sub>int</sub> 1           Mkt <sub>eq</sub> A         1           Mkt <sub>prop</sub> A         0.75         1           Mkt <sub>sp</sub> A         0.75         0.5         1           Mkt <sub>fx</sub> 0.25         0.25         0.25         0.25	Mkt <sub>int</sub> 1           Mkt <sub>eq</sub> A         1           Mkt <sub>prop</sub> A         0.75         1           Mkt <sub>sp</sub> A         0.75         0.5         1           Mkt <sub>fx</sub> 0.25         0.25         0.25         0.25         1

A = 0 in interest rate up scenario, 0.5 in interest rate down scenario



#### **SCR – Market risk – Conclusions**



 $SCR_{mkt}$  = Mkt Calculation

- close ALM gaps

- Equity: very costly

- Property: not well treated

- Corporate Bond : Fair

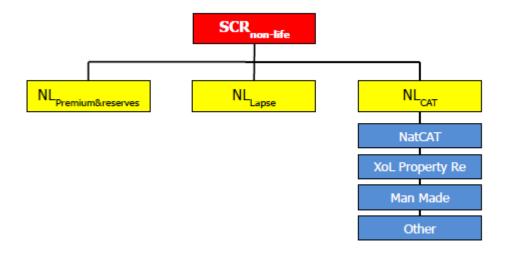
Govies: No SCR charge but returns ???



#### SCR – Non-Life risk

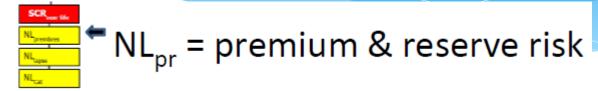


#### Non-Life Underwriting Risk Module



## Pillar 1: Pillar 2: Pillar 3: Disclosures • Technical proxisons • Technical proxisons • Technical proxisons • Technical proxisons • Minimum capital requirement (MCR) • Solvercy Capital • Solvercy Capital • Capital addons? • Capital addons? • Capital addons? • Provide additional (mon-public information to the appendixes) • Capital addons? • Capital addons? • Mew focus for supervisor. • Economic Capital Validation of internal models

#### SCR – Non-Life risk – Premium / Reserve Risk



$$NLpr = 3 * \sigma * V$$

**σ**: Standard Deviation = risk mesure

**V**: aggregated Volume of Premiums and Reserves

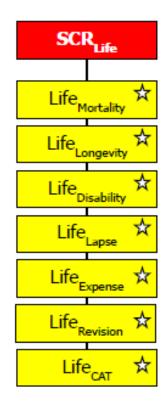
LoB	SD for premium risk (gross)
Motor vehicle liability	10%·NP <sub>lob</sub>
Other motor	8%· NP <sub>lob</sub>
MAT	15%· NP <sub>lab</sub>
Fire	8%· NP <sub>lob</sub>
3rd-party liability	14% NP <sub>lob</sub>
Credit	12%· NP <sub>lob</sub>
Legal expenses	7%· NP <sub>lob</sub>
Assistance	9%· NP <sub>lob</sub>
Miscellaneous	13%· NP <sub>lob</sub>
NP reins (prop)	17%
NP reins (casualty)	17%
NP reins (MAT)	17%

Standard derivation for (net) reserve risk, as per table:

LOB		$\sigma_{(res,lob)}$
1	Motor, third-party liability	9%
2	Motor, other classes	8%
3	Marine, aviation, transport (MAT	11%
4	Fire and other property damage	10%
5	Third-party liability	11%
6	Credit and suretyship	19%
7	Legal expenses	12%
8	Assistance	20%
9	Miscellaneous	20%
10	Non-prop reinsurance - property	20%
11	Non-prop reinsurance - casualty	20%
12	Non-prop reinsurance – MAT	20%

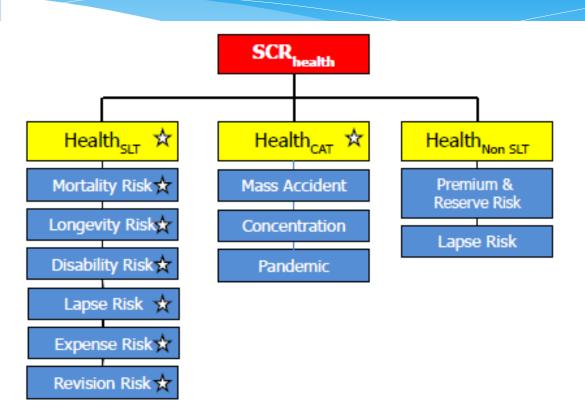
## Pillar 1: Pillar 2: Disclosures Catalitative capital requirements Technical proxisions Technical proxisions

#### SCR – Life





#### SCR – Health



#### Pillar 1:

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#### Pillar 2:

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The Board:

Fit & Proper Responsable

...

#### 4 Control Functions:

- Risk Management
- Compliance
- Audit
- Actuarial Function

#### **Calculations** Integration Reports SCR Op. Data QRTs Provider Market Intang Hullh Default Life Promises Reserve bleed Health (A) Morally Non-FLT Neuth 160 Longrafy Equity Markey Pyrough Ratable Ligina Customized: Display Buddey freety Langevily Lapse CAT **Onability Warbidity** Lapte Sprint Data Espenses Currency Ligte EACHER A FA Provider (100-00000000 firema Egenn sectory expects of

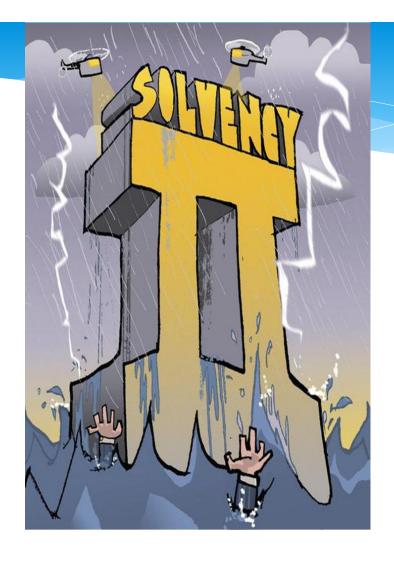
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Welcome in the Solvency II world ....

