
HORIZON21

„Verbriefung von Lebensversicherungsrisiken – Beispiele und Möglichkeiten“

Table of contents

Why securitize insurance risks?

Examples for actual securitization of life insurance risks

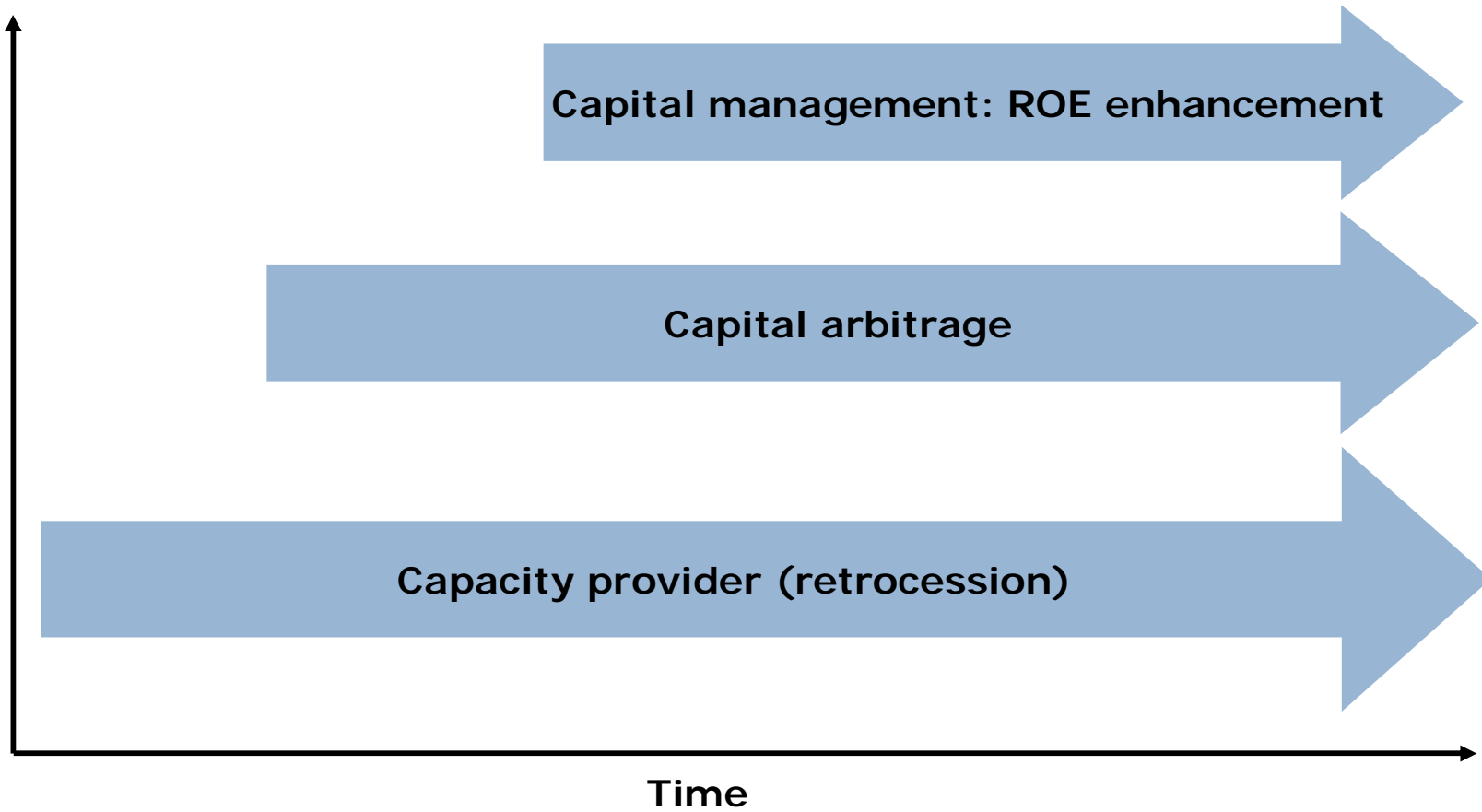
Potential securitizations of life insurance risks

Q&A

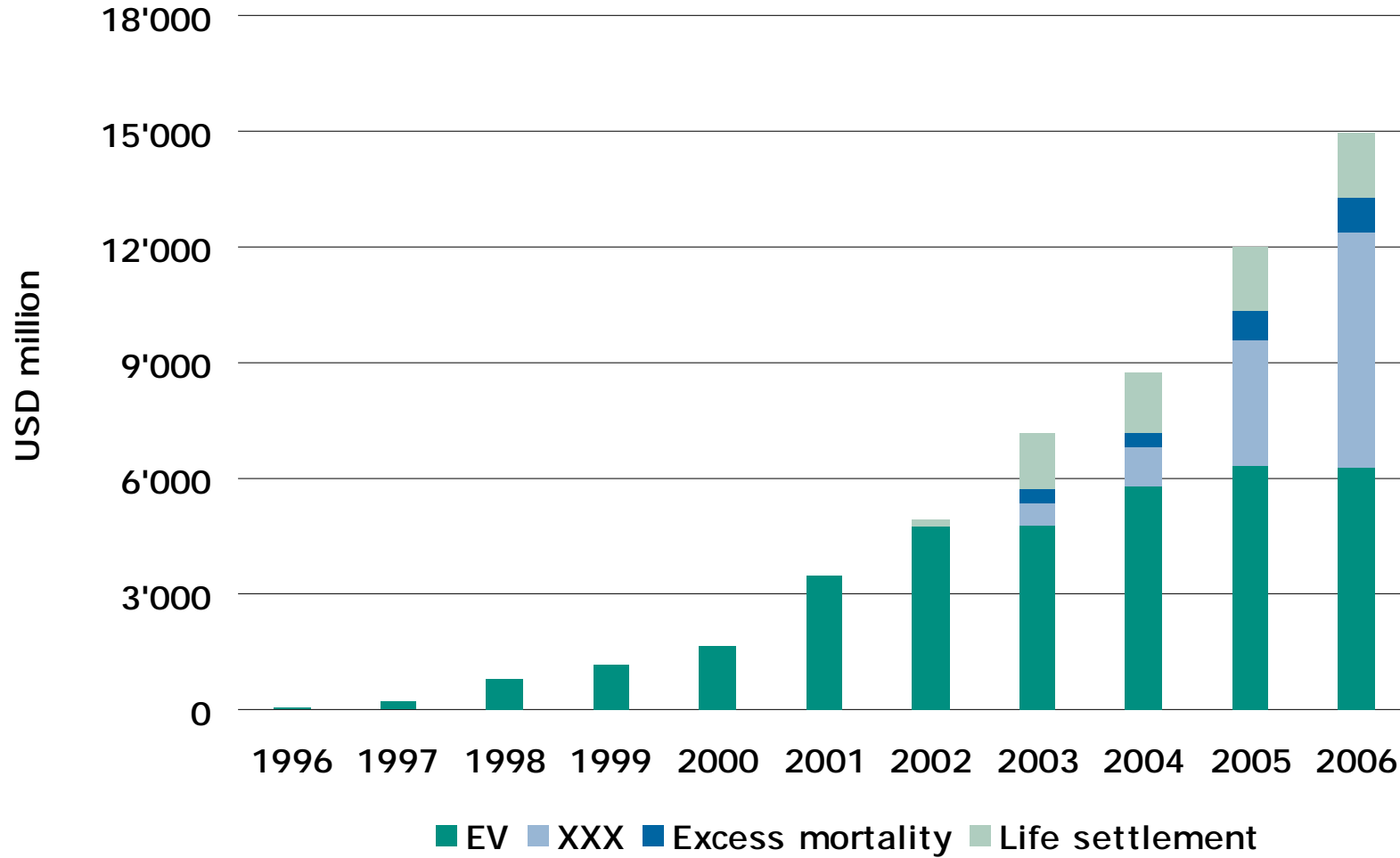
Appendix: about us

Why securitize insurance risks?

The development of insurance securitization



As of 2006 outstanding life bonds amounted to USD 15 billion



Source: Swiss Re

Examples for actual securitization of life insurance risks

Extreme mortality bonds

- Protection for life companies against extreme mortality events, e.g. pandemic
- Technically, the insurer (“sponsor”) issues a “principal at risk floating rate note”, i.e.
 - issues a bond (and investor money is deposited into collateral)
 - pays premium to investor
 - retains part of the bond notional if certain mortality levels are reached
- All of the above implies that there is no reinsurer credit risk for the insurer
- “Extreme mortality event” if in a covered period population mortality (as reported by official agency such as Bundesamt für Statistik) is exceeding a reference rate by a specified rate
- Transaction specific weighting for countries, gender and age
- Most modern solvency regimes require capital for pandemic scenario

Extreme mortality bond example – “OSIRIS”

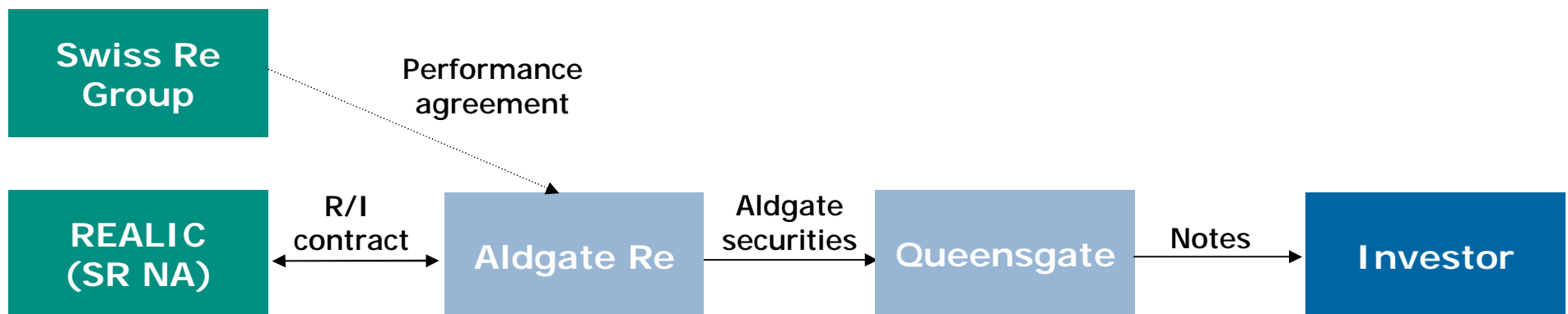
- Sponsored by AXA, total outstanding amount of USD 250m and EUR 150m
- Portfolio weights per country: France (60%), Japan (25%) and US (15%)
- 4 year risk period (January 1, 2006 to December 31, 2009)
 - 3 overlapping risk periods of 2 years each
 - Cumulative attachment of principal
- Attachment levels, rating and pricing at issuance for tranches without credit insurance
 - Class B2: 114% - 119%, A-, Euribor +120
 - Class C: 110% - 114%, BBB, Libor +285
 - Class D: 106% - 110%, BB+, Libor +500

Embedded value securitization

- Monetizes future profits from insurance portfolios (“Value in force”)
- Used by life insurers for
 - financing of new business or operations
 - RoE increase through improvement of capital structure
 - “rating agency arbitrage”
 - possibly optimization of tax burden, B/S structure etc.
- Wide range of potential designs
 - Entire portfolio vs. selected contracts/risk
 - Diversity of possible risks, e.g. mortality/longevity, disability, financial, lapse,...
- Requires sound administration system and controls

Embedded value securitization example – “Queensgate”

- Business
 - 5 blocks of traditional US life and “interest-sensitive life” insurance policies
 - Principal risks: mortality, lapses, asset quality, reinvestment, Swiss Re credit risk
- Swiss Re North America (“REALIC”) cedes 90% of underlying portfolio to Aldgate Re
 - REALIC bears administration expense risk
 - Swiss Re Group will guarantee REALIC’s payments to Aldgate
- Aldgate Re issues securities to Queensgate (USD 245m) to finance ceding commission, expenses and capital of Aldgate Re and Queensgate is ultimately issuing notes to investors for (USD 245m)



XXX Securitization

- US life insurance business only
 - Level term business (where subject to regulation XXX)
 - Related to significant difference between statutorily required and economic reserves
 - Overall volume expected to be up to USD 120bn
- Investors finance “excess reserves”
 - Pure capital arbitrage, i.e. investor capital cheaper than equity (or policyholder premium!)
 - Investor takes mortality, lapse and certain investment risk
 - Release of capital in line with release of excess reserve (run-off of business)
- Example: “Ballantyne Re” (sponsor: Scottish Re)
 - SPV raised USD 1.7bn investor capital
 - Additional USD 400m capital contributed by Scottish Re Group

Secondary life insurance market

- Transaction between investor and policyholder rather than between investor and insurer
- Investor is usually taking over all rights and obligations resulting from contract
- In exchange, he is paying the policyholder the fair value which is higher than the surrender value
- Risk results factors determining difference between fair value and surrender value
 - US policies (whole of life): life expectancy
 - German policies: bonus declaration
- US transactions commonly referred to as “life settlement”

Potential securitizations of life insurance risks

General considerations in insurance risk securitization

- Risk/motivation
 - Insurance protection
 - Capital management
- Trigger
 - Parametric vs. indemnity
 - Basis risk
 - Moral hazard, complexity, costs
- Structure
 - Bond, (ISDA) swap, reinsurance SPV
 - Collateral definition and release
- Price
 - “Expected loss”
 - Margin for model uncertainty
 - Fixed or floating rate

Extreme mortality solutions (1/2)

- (A) Issuance of new public bond similar to those in place
 - Parametric deal
 - With full control over structure
 - “Infinite” volume available, but
 - High structuring costs

- (B) Entering into a credit default swap based on existing bond
 - Cheap and quick implementation
 - Based on ISDA agreement
 - Scalable to any size and thus suitable for any company, however
 - Introducing more basis risk

Extreme mortality solutions (2/2)

- (C) Issuance of private bond
 - Few investors (e.g. only one)
 - Again cheap and quick and on ISDA basis
 - Saves involvement of investment bank, credit insurer
 - Parametric transaction

- Example: insurer with mortality exposure in Switzerland, Japan and Germany only
 - identify weight per gender and age (band) per country
 - identify weight per country
 - define reference year and calculate base mortality rate
 - define trigger level(s) and period with cover
 - once cover is in place check actual mortality each year on the homepage of the relevant statistical offices

- This could serve as an excellent test case!

Embedded value securitization – Considerations

- Cash deal vs. capital optimization
- New business vs. existing block of business
- Full VIF vs. certain margin only (e.g. mortality and/or lapse)
- Entire annual surplus vs. components up to or above certain threshold
- High or medium share of VIF sold
- Term
- Legal structure

Embedded value securitization – Opportunities

- There are investors that are willing to finance small to medium volumes entirely
- i.e. volumes up to USD 50m can be done at reasonable transactions costs
- Especially for small and mutual companies relevant source of capital
- Appropriate design can even help to strengthen rating
- There are significant potential tax benefits
- Overall, excellent and flexible tool stabilization of returns and increase of ROE

Longevity risk securitization – Status quo

- Longevity risk will gain further weight for most life insurers
 - Growing market of pension business
 - Increasing capital requirements
 - Public/shareholder interest
 - Supply constraints in reinsurance market?!
- So far, however, no pure (capital market) longevity transaction, and thus no price
- Historically, significant gap between insurance industry view and investor view
- Ongoing scientific discussion about longevity development
 - Overall trend
 - Short-term variation
- Development of external data sources, e.g. LifeMetrics Index by JP Morgan

Longevity risk securitization – Considerations

- Specified portfolio vs. population index
- Age band covered
- Trigger level
- Structure
- Price
- Collateral

Longevity protection – Example

- Age band 85+
- Actual in-force (ring-fenced for run-off)
- Swap structure (ISDA)
 - Fixed payment by protection buyer
 - Variable payment by protection seller based on actual benefits
 - Fixed payment in excess of best estimate variable payment
- Collateral rules
 - 2 way requirement
 - Value of cash-flows
 - Capital requirement
 - Shock buffer
- Termination clause and cut-off basis

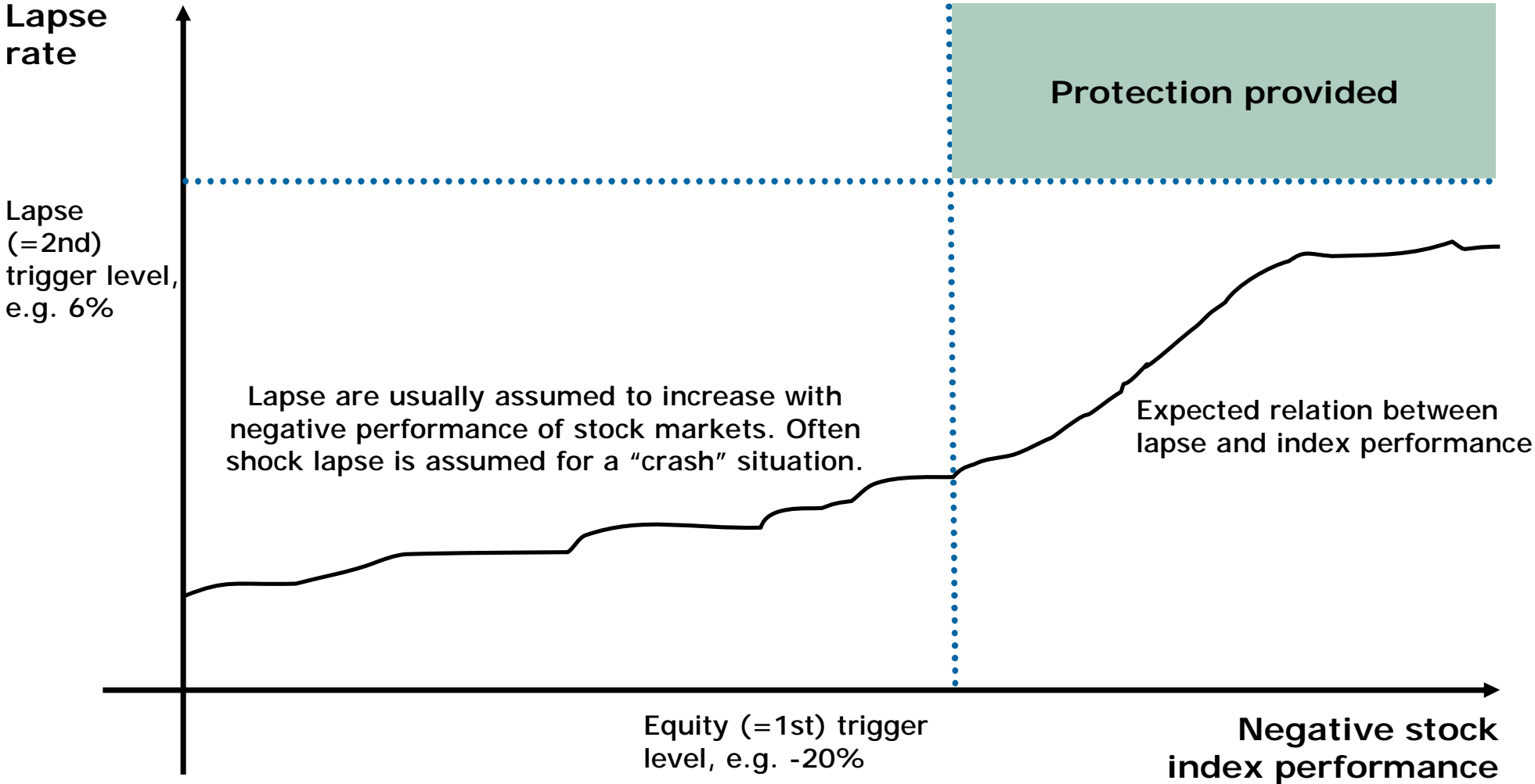
Lapse risk – A key non-financial risk

- Policyholders hold a put option in many traditional products
 - Surrender value may not account for a market value adjustment
 - Lapse could lead to result strain
 - Lapse could lead liquidity strain
- “Market Consistent Embedded Value” and other modern valuation techniques recognize the resulting embedded option
- Surrender of unit linked contracts jeopardizes recovery of acquisition expense
- Asset/Liability duration mismatch is main source of required capital and is strengthened by lapse risk
- As a result, intelligent lapse protection can help to address many relevant economic and accounting problems at once

Lapse sample transaction

- Coverage for e.g. one year against high lapse after market crash
 - Interest rate rise for traditional business
 - Equity market drop for unit linked type business
- Double trigger coverage
- First trigger: capital markets event
 - Significant change of relevant parameter during specified period within protection period, e.g. crash in stock index by 20%+ within 3 months
- Second trigger: lapse behavior
 - Lapse rates for affected business during specified period, e.g. lapse rate of more than 10% during the following 6 calendar months (which may overlap the original protection period)
- Contractual payment can be aligned with actual severity of trigger factors
- Fully collateralized

Example unit linked – Stock market/Lapse relation



Disability and health expense risk securitization

- Disability incidence rates and health insurance costs are subject to various drivers
 - Economic environment
 - General inflation level
 - Medical expense development, medical progress
- Split of general development and policyholder “behavior”
- Investor can protect insurer from behavioral component
 - Deviation of actual from assumed trend
 - Alignment of interest requirement

Life insurance securitization – Conclusion

- It is much easier than you might think! – Size doesn't matter...
- It can be much cheaper than you might think!
- There is hardly any risk that cannot be securitized in some form
- There are investors who are willing to take these risks!

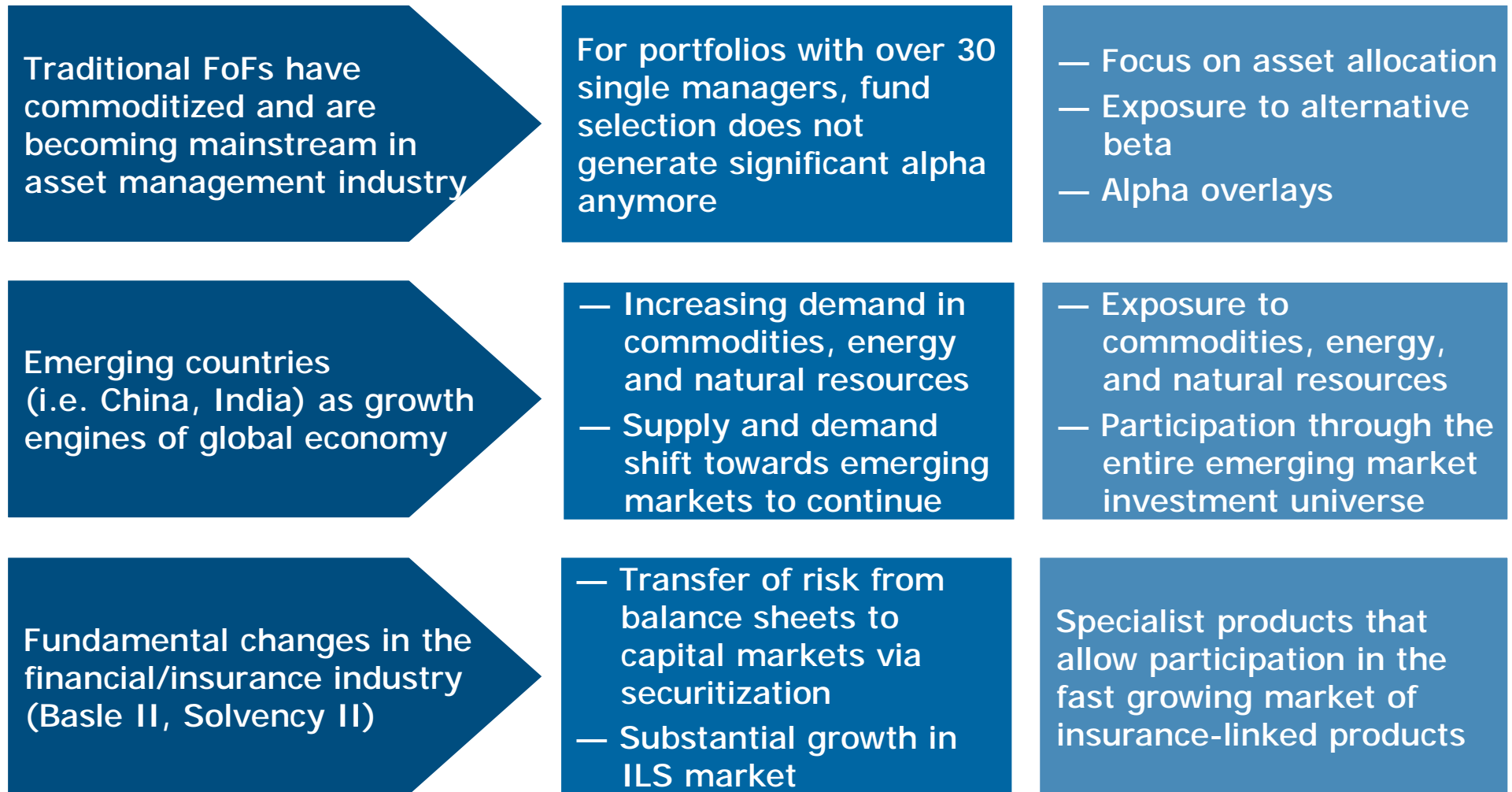
Q&A

27/38

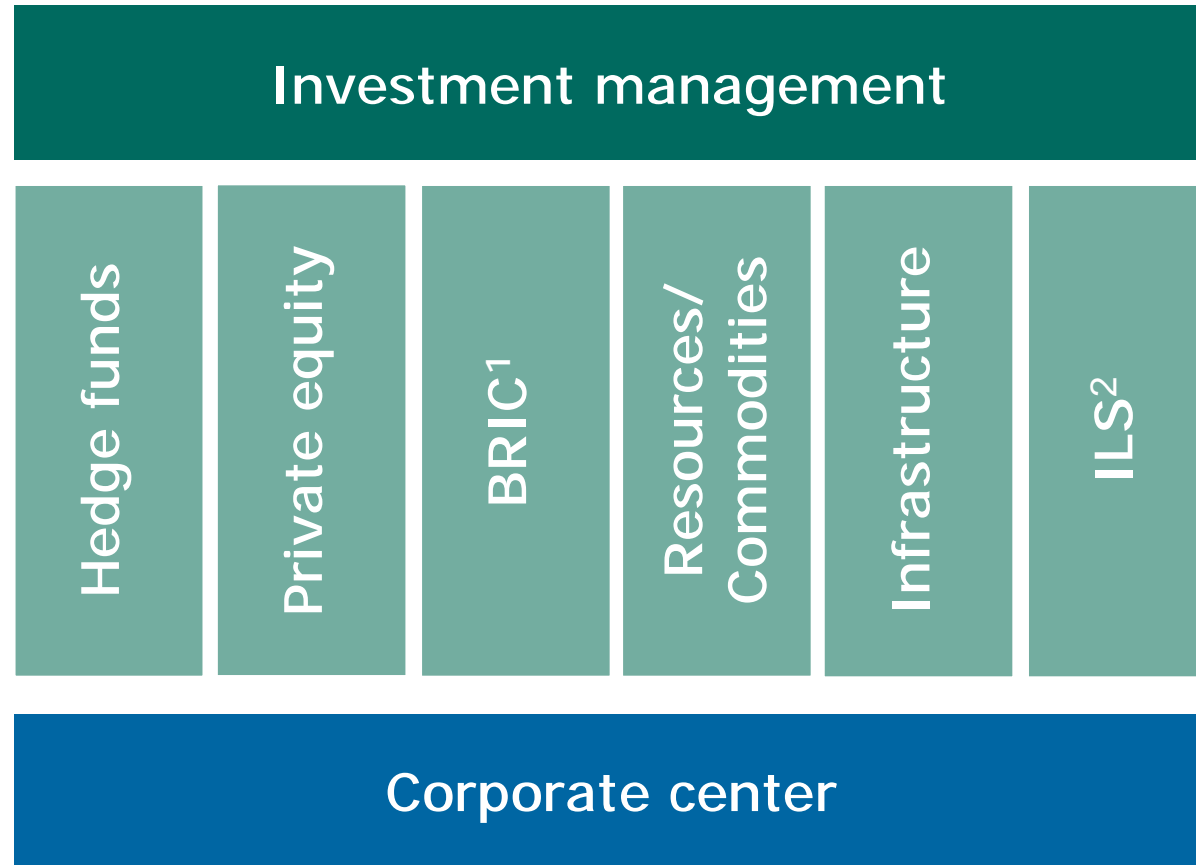
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Appendix: about us

Definition of three fundamental megatrends



Business model overview



¹The BRIC concept, which was first introduced by a Goldman Sachs research paper in 2003, describes the potential for Brazil, Russia, India and China to become a much bigger share of the world economy over the coming decades. ²Insurance-linked securities

Facts & figures by end of 2007 (1/2)

- Combined assets under management of USD 11.5bn¹
- Innovative investment portfolios covering traditional and non-traditional asset classes
- Focused range of products and solutions in the alternative investments universe taking into account the megatrends of our industry
- Completion of the management team across all business fields
 - Development of the senior management team by hiring several key professionals from Goldman Sachs, McKinsey, Swiss Re, UBS and RMF
 - 140 employees
- Strategic partnership with Swiss Re within the alternative investments (since 2005) and private equity (since end of 2006) universe

¹Including advisory mandates of USD 3.3bn

Facts & figures by end of 2007 (2/2)

- Premium client base
 - Institutions such as insurance companies, pension funds and banks
 - Family offices and ultra HNWI on the private client side

- Development of an international network with six locations
 - Pfaeffikon SZ
 - Zurich
 - London
 - Hong Kong
 - Bratislava
 - Cayman Islands

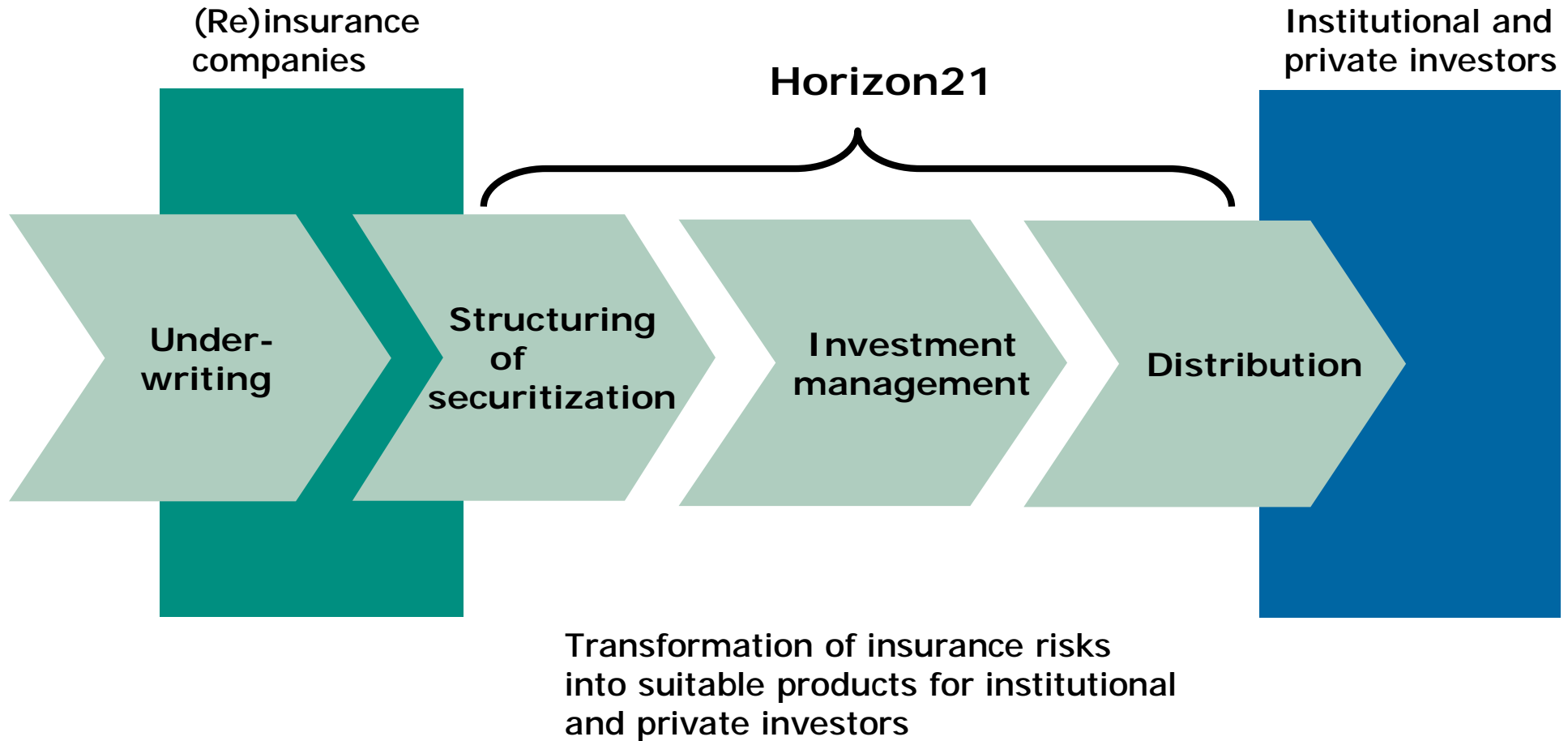
Members of the ILS team

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Jon Bardola Life Consultant	Life actuary, more than 25 years of experience, former Chief Life Actuary Zurich Financial Services
Gion Cavegn Risk Manager	More than 10 years of experience, former Head of Investment Strategy at the Swiss National Bank
Daniel Grieger ILS Investment Solutions	8 years of experience at Swiss Re and in consulting
Andres Hefti PM Liquid	Mathematician, 6 years of experience at RMF and Horizon21
Oliver Horbelt Non Life Consultant	More than 15 years of insurance experience/former CEO of Centre Solutions
Stephan Otzen PM Life illiquid	Life actuary, 8 years of experience at Pricewaterhouse Coopers
Michal Polak Quantitative Analyst	Mathematician, 3 years of experience within financial services industry
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The ILS value chain



Broad investment horizon — Focus as an investment manager



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Thank you!

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