GuyCarpenter

CAPITAL MARKETS & LONGEVITY

The past and (more importantly) … the future

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A business of Marsh McLennan

The Background

Global pension industry & insurance annuity writers:

Fast growing liabilities
New market opening (NA, EM)

~1.3tn risk stock in the UK alone

Traditional risk takers:

Reinsurance industry (with lion's share going to North American reinsurers)

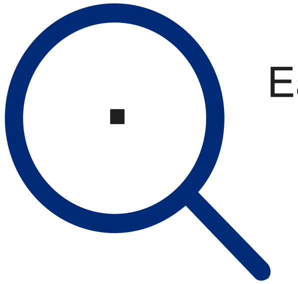
~ 40-60bn annual capacity

Getting worse…

Growing volume of European pension derisking transactions
Growing longevity de-risking market outside Europe
Growing hedging needs by (re)insurers because of capital and rating

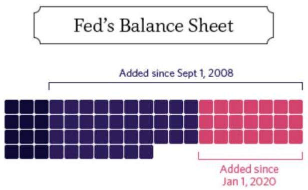
Longevity and Capital Markets:

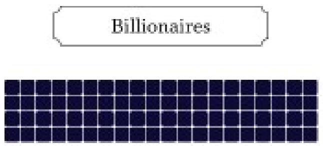
Putting things in context…

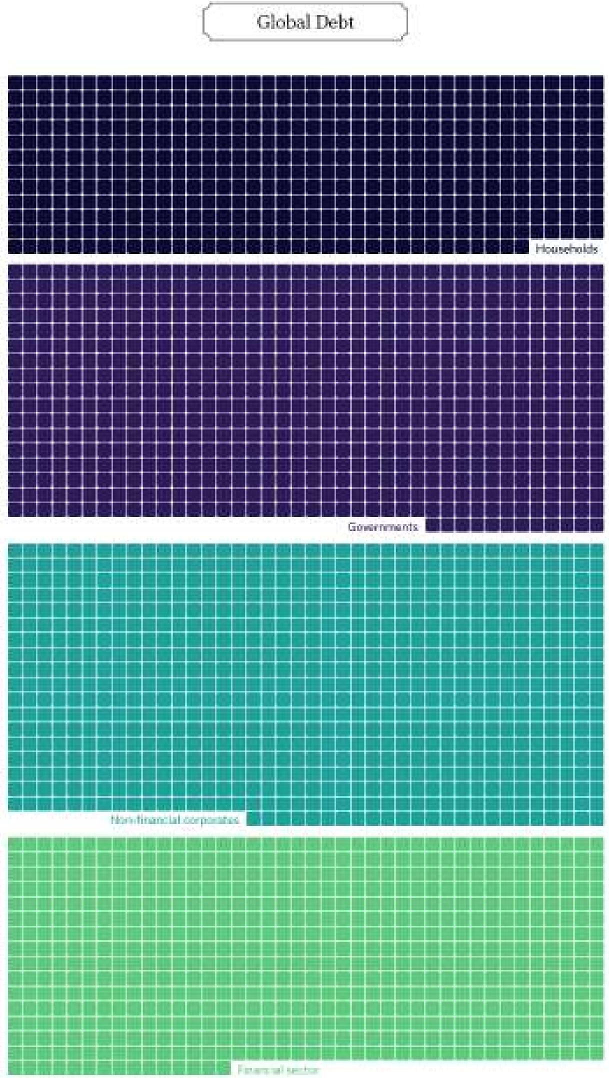


Each square is worth
USD 100bn

… if we can move a very small part of the global capital markets, we can still make a massive difference to our industry…

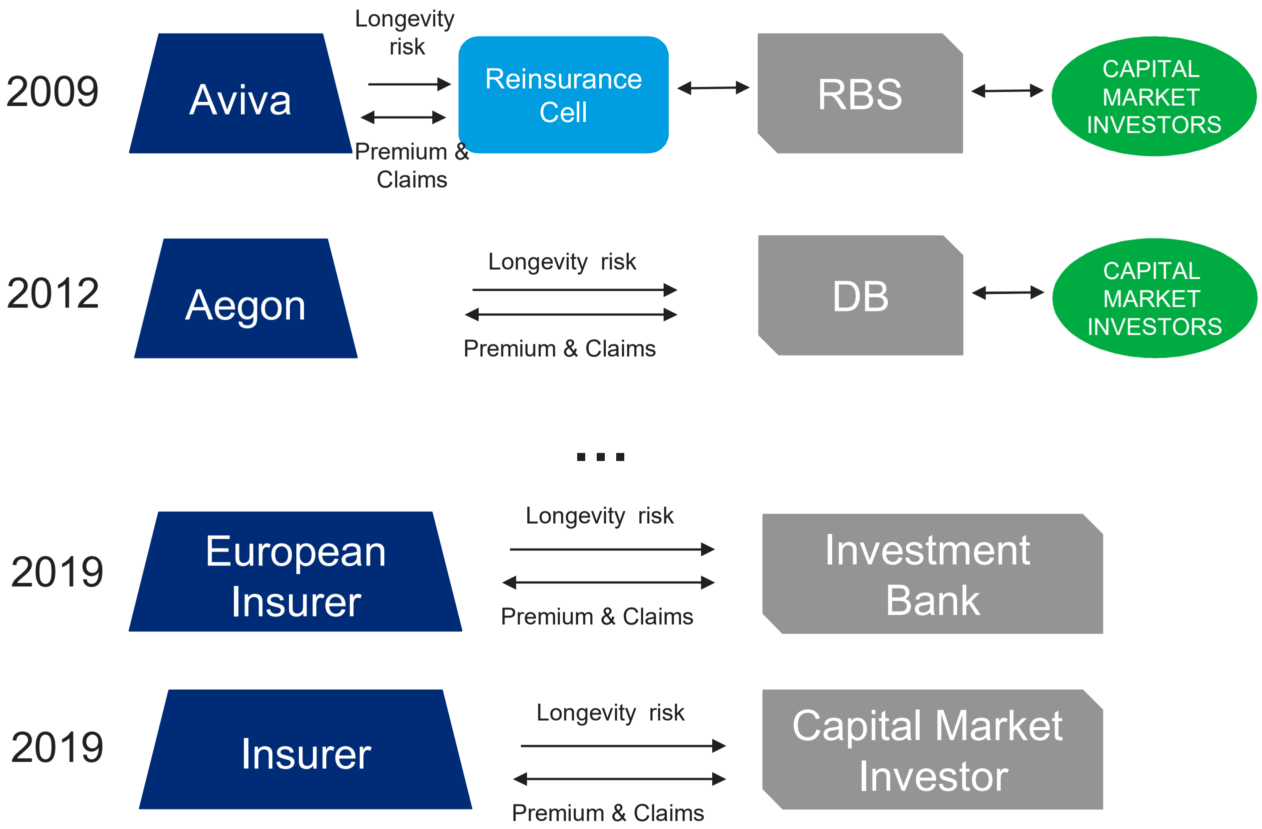






Capital Markets Investors and Longevity:

Selected examples



GBP 50m risk notional
(475m reserves)
10-year transaction

EUR 12bn reserves
20NC10year transaction
Population and out-of-the-money
Regulatory capital driven

GBP 150m risk notional
30 year loan format – 10 year expected
Regulatory capital and rating driven

Short dated longevity hedge
Indemnity and out-of-the-money
Regulatory capital and rating driven

Capital Markets Investors and Longevity:

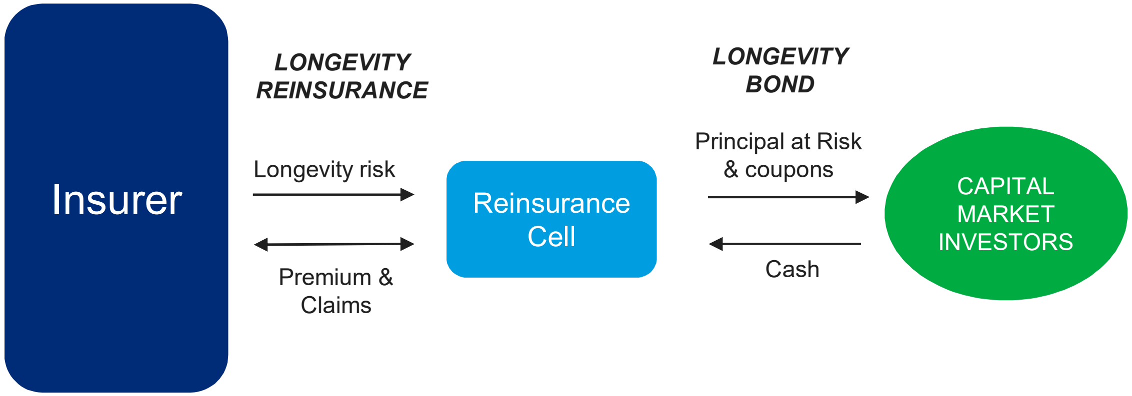
Old myths and realities

The duration cannot be longer than 10 years	Only ***partially*** true	• Most of the recent structures have long final maturities and a much shorter expected one, ie. the focus has partially shifted to the expected maturity • Still most capital market investors cannot take transactions with a final maturity of 20+ years
It needs to be remote risk	Only ***partially*** true	• The out-of-the-money structuring has been mostly driven by Solvency II on the cedant's side • Still, it is true that capital markets investors tend to have a preference for remote risk hedges
It needs to be population index based	***NOT*** true	• Most of the recent transactions have been indemnity based. Sophisticated investors do not have a strong preference and index transaction are suboptimal for cedants (basis risk) • Population index transactions might make sense for new entrants and can be relevant to expand the potential investor universe

Options today

Possible Structure and Risk Taker:

Longevity bonds



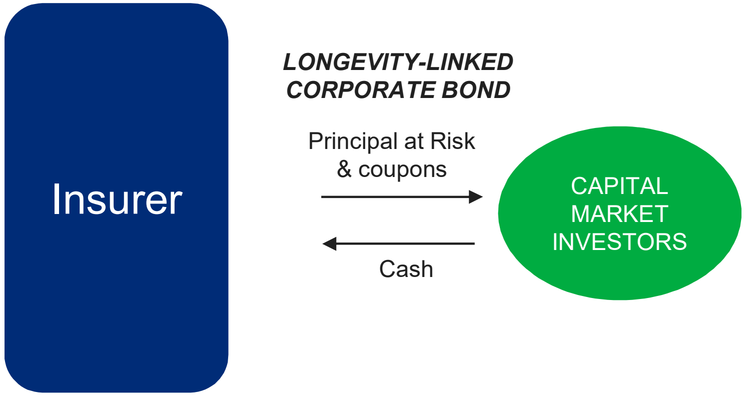
1. Insurer enters into a longevity reinsurance transaction with a reinsurance cell (a.k.a. PCC or ICC)
2. The reinsurance cell issues a contingent loan, ie. a longevity-linked instrument with principal and coupon at risk (principal is the risk notional of the longevity hedge)
3. Only if the reinsurance contract does not trigger, principal will be returned and interest will be paid in full, if not principal and interest might be impacted
4. ***Capital market investors bear ONLY longevity risk***

Probability of success:

Pros	Cons
• Relatively straighforward to execute • No counterparty risk as the reinsurance cell is fully funded *in cash or high quality assets*	• Pricing: 100% cash-funded structure are not economically sustainable for the majority of investors. Their liquidity cost is too high. Some banks might have a chance of success • Financial leverage (to resolve the return challenge) is not as easy as it used to be in the past • It still requires setting a detachment point to cap the maxium liablity (and therefore the cell collateral amount)

Possible Structure and Risk Taker:

Longevity-linked corporate credit



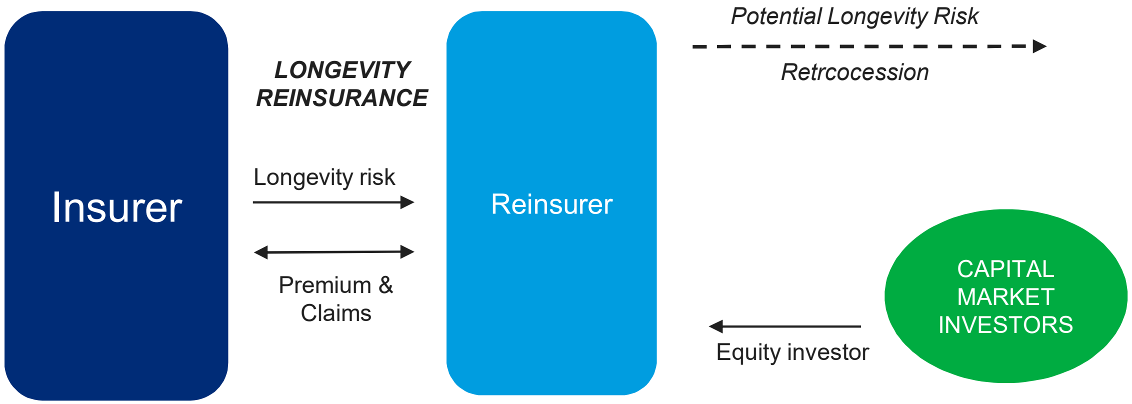
1. Insurer issues a corporate bond whose principal is longevity risk linked. The bond principal amount is equal to the longevity hedge risk notional (detachment – attachment points)
2. **Capital market investors** pay cash to the insurer in exchange for the bond and **bear:**
   - **Longevity risk**
   - **Insurer credit risk**

Probability of success: ✗ ✗

Pros	Cons
• No counterparty risk • *Funding benefit for the insurer*	• Extremely limited set of investor interested in both credit and longevity risk • Very high complexity • Needs to include an attachment and detachment point • Similar difficulties as in the longevity bond case

Possible Structure and Risk Taker:

“Hedge Fund Re” model (1)



1. Insurer enters into a standard longevity reinsurance contract with a reinsurance vehicle. The vehicle is typically owened by PE, HF or more generally capital market investors
2. The only difference compared to the traditional structure is the mindset of the reinsurer. Unlike most traditional reinsurers, the reinsurer will strongly focus on the asset return as its key source of return on equity
3. Since this type of reinsurer(s) are mostly focused on the asset management component, they often want to hedge out longevity risk themselves…

Probability of success: ✓ ✗

Pros	Cons
• Simple reinsurance structure • Flexible structuring • Different DNA	• Complexity in finding the asset mix that complies with local regulation plus gives the insurer comfort on counterparty risk and gives the reinsurer the intended expected return • Counterparty risk and collateral considerations • High regulatory complexity in Europe • Different DNA

Possible Structure and Risk Taker:

“Hedge Fund Re” model – *key considerations*

Asset Mix Challenge

- Most of reinsurer’s return comes from asset optimization, switching into less liquid (or less conservative) assets
- This brings up counterparty risk considerations for the insurer, from a regulatory stand point and from an economic standpoint
- Asset switching can also have negative economic and tax implication depending on the product structure and local jurisdiction

Jurisdiction and Regulatory Challenges

- A number of players active in the space operate from a balance sheet outside Solvency II (often Bermuda)
- It highly depends on the specific structure and asset mix, but generally moving long dated risks outside Europe might often find pushback from the European regulators

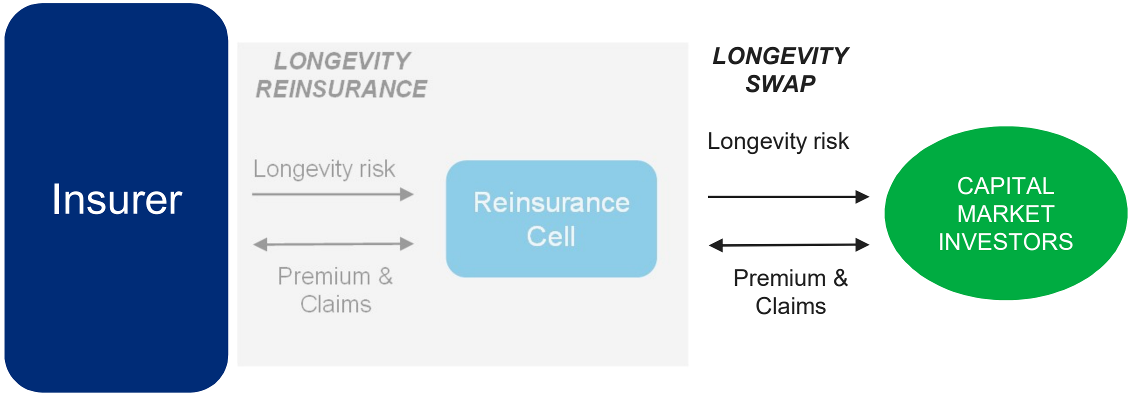
Rating Challenges

- A number of players in these areas has weaker rating levels compared to most of the “traditional” reinsurers. This is not necessarily linked to their financial strength but simply to the shorter track record

A longer (and strong) track record helping on the regulatory front,
the hedge fund re model is expected to play a major role in the future longevity

Possible Structure and Risk Taker:

Capital market investors longevity swap (typically ILS)



Probability of success: ✓ ✗

1. Insurer enters into a longevity reinsurance contract with a reinsurance cell. Typically done with an attachment and detachment point to cap the maximum counterparty exposure
2. The reinsurance cell passes all the risk to a capital market investor with a longevity swap.
3. If the insurer does not require a reinsurance treaty from a legal standpoint, the same result can be achieved with capital market investors transacting a longevity swap directly with the insurer

Pros	Cons
+ • Flexible structuring • Quick(er) execution • Different DNA	− • Counterparty risk/collateral structuring required • Higher regulatory scrutiny as more innovative • It requires an attachment and detachment point to set a maximum counterparty risk limit • Different DNA

Possible Structure and Risk Taker:

Capital market investors longevity swap –*key considerations*

Counterparty Risk

- Almost all capital market investors are unrated, therefore additional structuring is required to tackle this challenge
- Investment banks were intermediating these transactions providing a rated counterparty to insurers (see the Aegon and Aviva longevity swaps). The changing regulatory landscape has made this intermediation expensive (often irrespectively of the longevity out-of-the-moneyness)
- Reinsurers are sometimes acting as fronter. Their more sophisticated internal credit system can apply an internal rating to the counterparty risk.
- Alternative structuring solutions could be considered: large asset managers could pledge available assets. Because of investors right to redeem, this might be an option only for a minority of the funds

Regulatory Challenges

- Being less familiar to regulators, this can bring more in depth scrutiny when looking for regulatory approval
- As it is typically structured with an attachment and detachment point to cap the potential counterparty exposure, the out-of-the-moneyness brings additional regulatory checkpoints

Size

- Typical capital markets investors engaging in longevity swaps are life ILS funds: they have all the necessary skills to structure and price this risk
- Different definitions of “life ILS” are used, however if we were to use a reasonably wide one, “life ILS” assets under management globally are less than USD 10-15bn. They are too small to move the needle

More and more capital market investors are looking at rated solutions, either directly or through a fronter. This format is expected to play a key role in longevity derisking in the future

The Ideal Investor? The Need For New Additional Players

So far we have mentioned: Private Equity, Hedge Fund, Life ILS
But should there be someone else as well?

Appetite for UNCORRELATED RISKS

LARGE to be able to move the needle

Appetite for LONG DATED TRANSACTIONS

SOPHISTICATED

SOVEREIGN WEALTH FUNDS:

Various transactions have been tested, with limited success so far

Still, their role is expected to be more central as time goes by

VERY LARGE ASSET MANAGERS:

Most of them have limited actuarial resources

They still can play a central role in the future, because of their sophistication and size

«The journey of a thousand miles begins with one step»

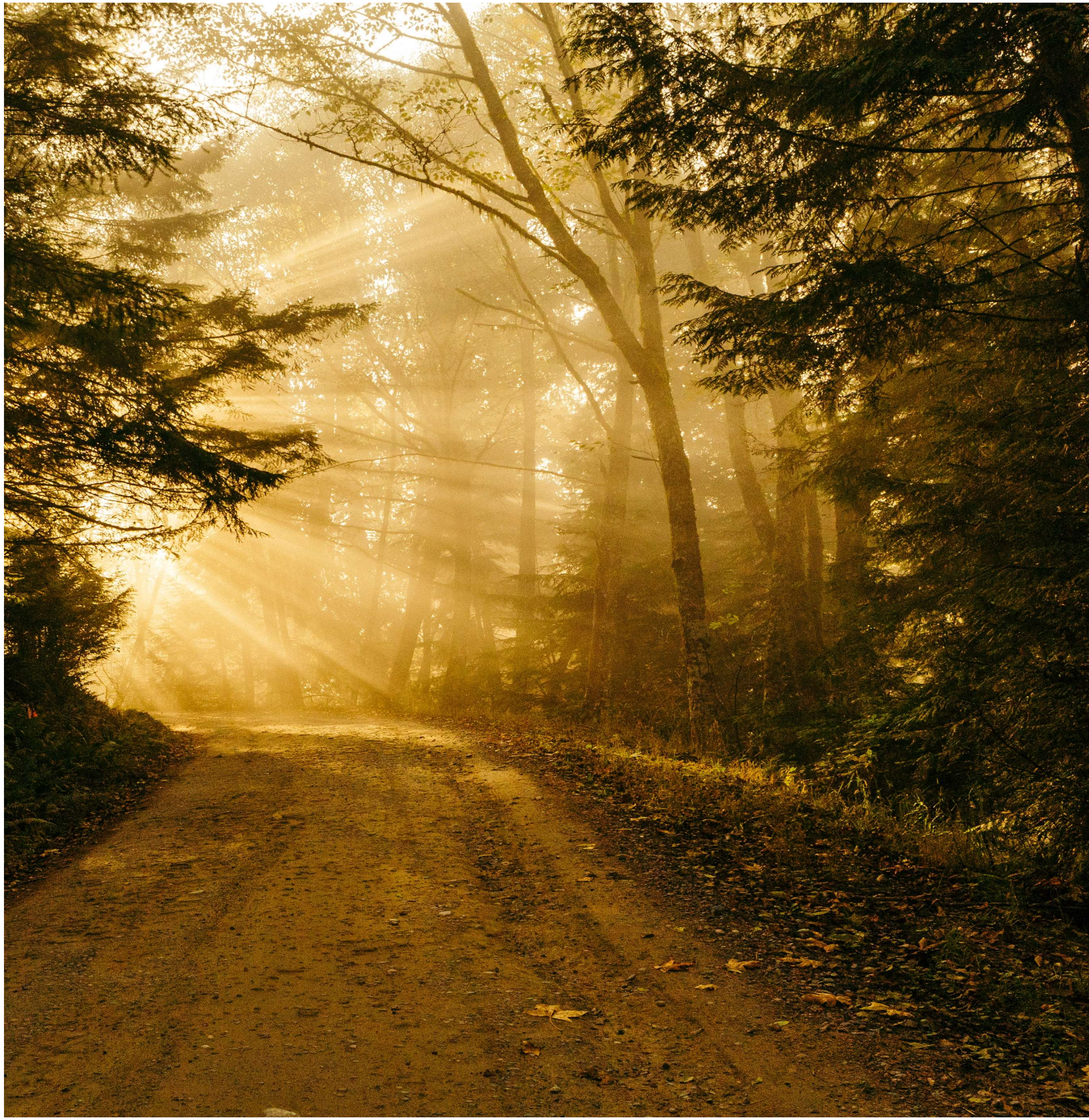
(Lao Tzu)

Many steps have already been taken in the right direction…

But still, additional are required

We want to make longevity a sustainable risk for our financial industry and our society

IF NOT NOW, WHEN?



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