When is diversification a benefit?

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Goal of presentation

- Highlight when diversification of insurance portfolios leads to a tangible economic benefit
- Mention some unresolved issues relevant to diversification
What is diversification in the context of this presentation?

- **Diversification** as a concept: “sufficiently independent” insurance portfolios (or contracts) will not tend to generate losses at the same time
  - nobody questions the concept of diversification!

- **Diversification effect** as a number: sum of the “risk” of the individual sub-portfolios less the “risk” of the pool
  - requires modeling of risks and their dependencies and is
  - context dependent as it requires specification of a risk measure and the granularity of disaggregation

- **Issue 1**: how to model risks and their often complex dependencies?
When is diversification a benefit?

- Insurers hold (risk) capital to absorb unexpected losses up to a given level of security
  - holding capital to support insurance risks generates costs

- Diversification is an economic benefit if it allows insurers to hold less capital than if would need to hold to support each of the individual risks separately
  - less capital results in lower cost of holding capital

Issue 2: when does diversification lead to less required capital?

Issue 3: is there a cost of holding capital and, if so, what is it (frictional costs vs risk premium)?
How is the economic value of diversification measured? (simplified)

- Value of an insurance contract
  - value of replicating future expected claims plus
  - value of “reserving” for future cost of holding capital

- Impact of diversification on value of individual contracts
  - total amount of required capital (and, thus, allocated future costs of holding capital) will be lower when allowing for diversification

- Issue 4: should the overall cost of holding capital be allocated to contracts, and if so, how?
Issue 1: how to model risks and their often complex dependencies?

- Two approaches to modelling
  - "Causal" modelling: model relevant risk factors and their dependencies and specify exposures to them
  - "Loss" modelling: model directly sub-portfolios losses and make assumptions about dependency across sub-portfolios

- Causal modelling is generally better because it is based on a careful understanding of the mechanisms leading to losses and is ultimately more flexible, but also more complex
  - understanding dependences is difficult, especially tail-dependencies

- Action point 1: more effort to be spent in modelling of dependencies and calibration/specification of dependency models
Issue 2: when does diversification lead to lower required capital?

- Diversification is not always an economic benefit for groups
  - if capital is spread across various legal entities there may be regulatory barriers to moving funds around (transferability)
  - diversification at a consolidated level may not constitute a benefit because capital is trapped in individual legal entities

- Action point 2: investigate how insurers can best realise diversification through intra-group transactions

- Action point 3: establish societal costs of regulatory barriers to diversification and identify regulatory environments minimising them (eg equal treatment of all policyholders)

- Action point 4: investigate how the adequacy of transferability of funds should be measured and ensured (eg liquidity test, etc)
Issue 3: is there a cost of holding capital and, if so, what is it? (simplified)

Total required return by shareholders = base cost of capital + frictional costs + “risk premium”* + expected economic profit

- Base cost of capital represents the return expected from (leveraged) investment of capital in financial assets
- Frictional costs erode return from investments due to frictions in operating environment (double taxation, agency, etc)
- “Risk premium” represents a potential additional return because capital is being subjected to insurance risks*)

- Action point 5: investigate evidence for existence of risk premium for insurance risks
- Action point 6: investigate how to quantify frictional costs and what the drivers of frictional costs are

*) Thus, not the classical actuarial risk premium
Issue 4: should the overall cost of holding capital be allocated to contracts, and if so, how?

- Capital is a common resource used simultaneously by all “contracts”
  - there is no unique way to allocate cost of holding capital to the various activities (is it contribution to total risk? But then: by what measure? Etc.)
  - from a centralised decision making perspective there seems to be little use for allocating capital costs

- Action point 7: investigate how allocation of capital costs can serve decentralisation

- Action point 8: investigate incentive created by different allocation methods
Concluding remarks

- Diversification is a key driver of insurance industry
  - failing to give credit for it (e.g. by not giving credit for intragroup transactions when calculating required capital) will increase the cost of managing risk for societies at large

- Taking diversification into account poses a variety of challenges
  - need to address them from a theoretical and practical perspective (action points 1 – 8)