

European Comparative Studies Spot-Light in 2021: Non-Life Underwriting Risk Comparative Study (NLCS) & interaction with Diversification Project Group (DivPG)

e-Jahrestagung von DAV und DGVFM, ASTIN

30 April 2021

EIOPA PUBLIC USE



DAV
DEUTSCHE
AKTUARVEREINIGUNG e.V.



DGVFM
DEUTSCHE GESELLSCHAFT
FÜR VERSICHERUNGS- UND
FINANZMATHEMATIK e.V.



eiopa

European Insurance and
Occupational Pensions Authority

Agenda

1. EIOPAs Internal Model Unit
2. European Comparative Studies
3. NLCS 2020
4. Diversification study
5. Q&A

1. EIOPAs Internal Model Unit Background

Common supervisory culture

EIOPA promotes a common supervisory culture and consistent supervisory practices across the European Union (EU) Member States and the European Economic Area (EEA) in order to ensure a high, effective and consistent level of supervision, safeguarding a similar level of protection to all European policyholders and beneficiaries.

Consistency projects

EIOPA addresses supervisory convergence from different perspectives depending on the issue and risks at stake. EIOPA reviews existing practices, both from NCAs and from the markets in order to support supervisory convergence and to protect policyholders.

1. EIOPAs Internal Model Unit (IMU) European comparative studies

Internal Model Comparative Studies contribute to EIOPA's objective of supervisory convergence regarding Solvency II internal models. EEA-wide studies are valuable tools complementing individual internal model analysis and studies at national level.



**INIGO LIBERAL
GOROSTIAGA**

**Head of Internal
Model Unit**



**HENRY
DAHA**

**Chair
DivPG**



**CHRISTOPH
HAMER**

**Chair
NLCS 2020**



**LOUIS DE
LOUVENCOURT**

**Chair
MCRCS**

2. European Comparative Studies

Solvency II, the European single market and Internal Models

With Solvency II the European single market uniquely provides a principle based prudential supervisory framework allowing undertakings to assess the undertaking specific risk profile with an internal model.

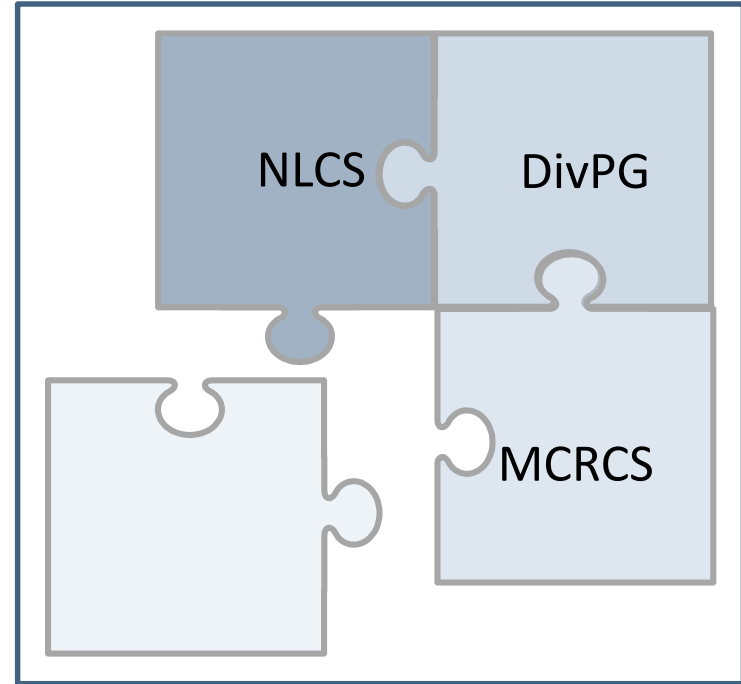
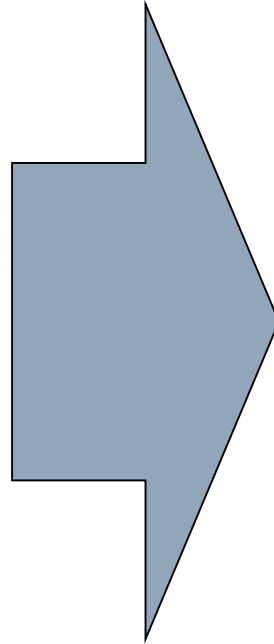
Comparative studies help fostering supervisory convergence on the supervision of internal models in order to protect consumers and the level playing field within the single market by:

- **Creating shared language across the single market supervision of internal models**
- **Providing perspective to individual risk profiles and overall market developments**
- **Identify Cherry-Picking and put capital intensity into perspective**
- **Pick up on trends in the domain of internal model and market developments**
- **Structured exchange with stakeholders**

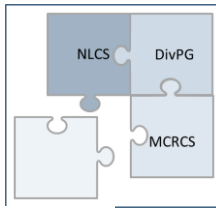
2. European Comparative Studies Coordination

Coordination between European comparative studies is an important aspect for EIOPA to supervisory convergence:

- **Data, tools and insights**
- **Organisation (timeline, planning & interaction)**
- **Communication & stakeholders engagement**
- **High levels of shared participation & coverage**



2. European Comparative Studies Looking at the engine (1/2)



NLCS 2020 and diversification study are designed to collect and understand actual outcomes of the respective calculation engines and not to stress the engine with predefined portfolio like in the MCRCs or scenario stress-tests.

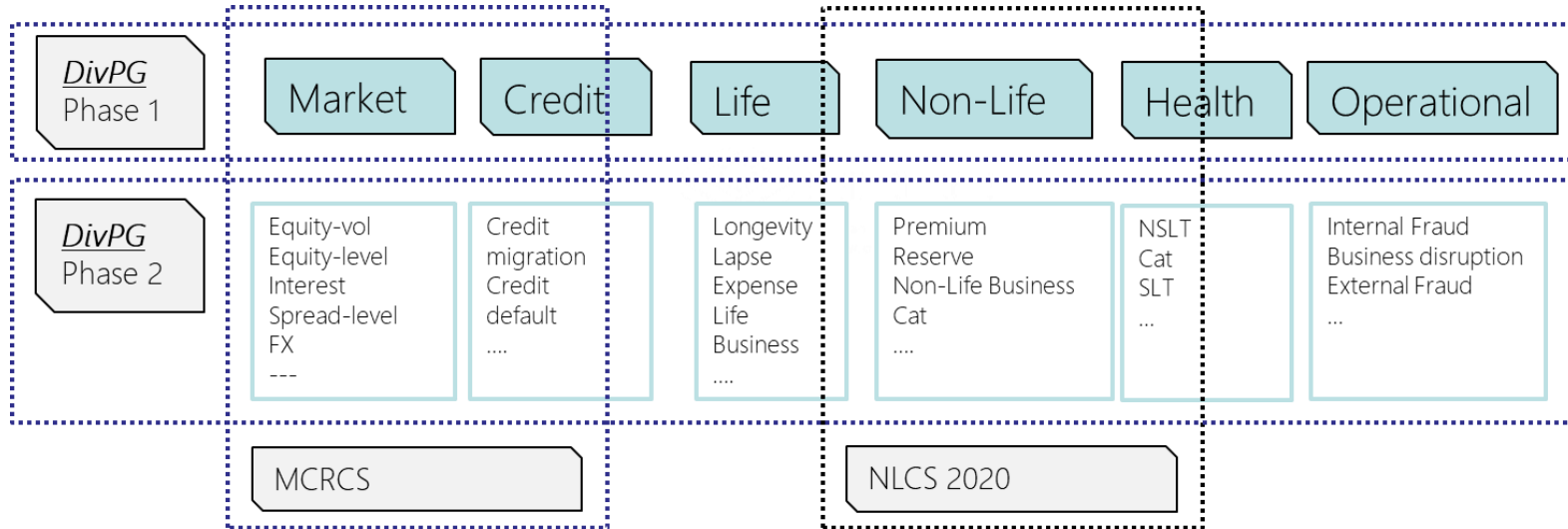
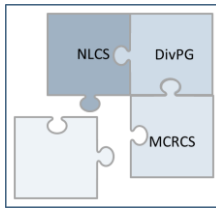
Please report, don't rewire

→→→→→→→→→→→→→

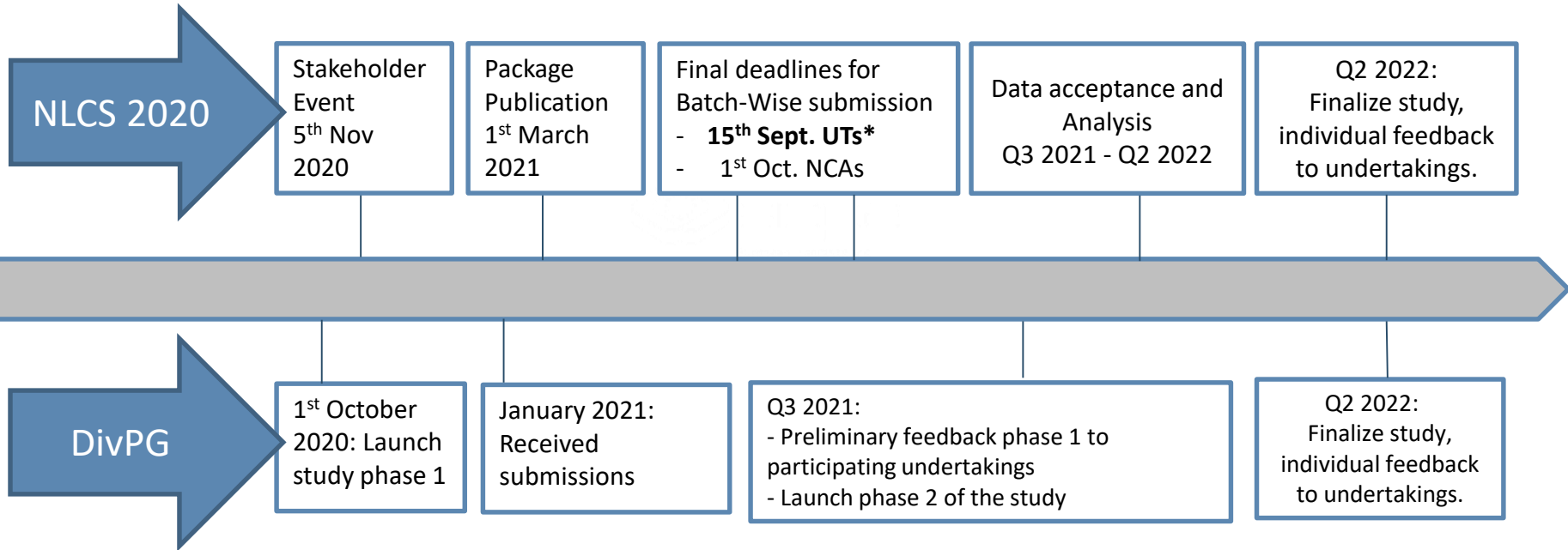
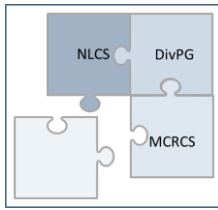


Audi 3.0 TDI 2014 V6-Dieselmotor Euro 6

2. European Comparative Studies Looking at the engine (2/2)

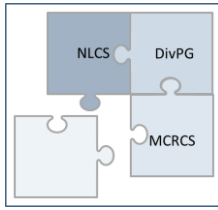


2. European Comparative Studies Simplified indicative timeline:



* Participants are recommended to submit batch-wise well before the deadline so that potential re-workings can take place

2. European Comparative Studies Stakeholder engagement

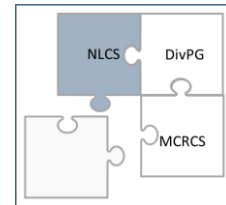


The IMU and EIOPA Comparative Study Project Groups will continue to reach out to relevant stakeholders such as:

- **Dedicated EIOPA stakeholder events on specific topics**
- **Speaking engagements**
- **Feedback and closing events**

3. NLCS 2020

Ambition and mandate:

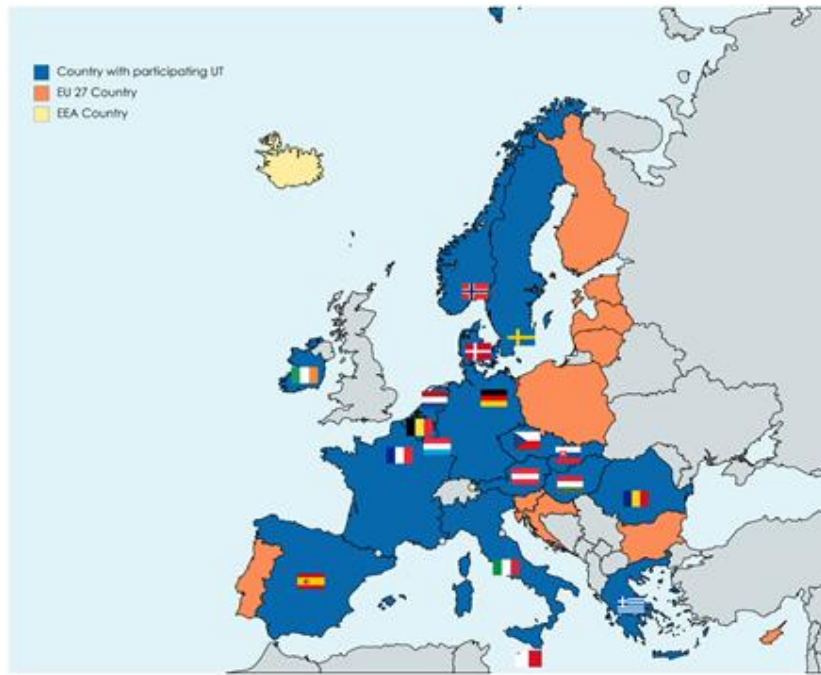
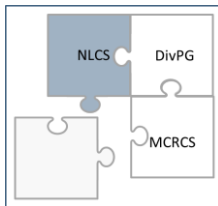


The Non-Life Underwriting Risk Comparative Study 2020 aims for a fair evaluation of Non-Life Underwriting Risk within Internal Models on a European Level:

- **Output/results focus:** Evaluation of internal model outputs/results with a technically sound framework independent of methodologies or modelling granularities.
- **Consistency:** Within and across NLCS submissions (log file compliance), IM (capital) information of actual annual submissions and the survey of the Diversification Project Group (DivPG) .
- **NLCS 2020 priorities:** Data quality, diversification, business mix focus LoBs (MTPL, GTPL, OtherM, Fire and C&S)
- **Assessment of the development of IM results over a five year time horizon:** Relative developments over time. E.g. IM development, business model and market to provide a broad overview on general trends and its breakdown into peer group.

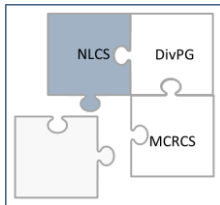
3. NLCS 2020

High participation coverage



3. NLCS 2020

The published package

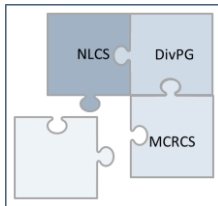


The NLCS 2020 package includes:

- **Survey A (YE16-20):** Qualitative information supporting time series and KPI analysis based on quantitative information and quality assured by validation checks
- **Survey B (YE18-20):** Mostly quantitative scenario information consistent with survey A and DivPG submissions (if any) and quality assured by validation checks
- **Validation Cross-Submission:** Validation helping to assure the consistency across submissions of the NLCS itself and DivPG
- **LogFiles (for the overall NLCS, Survey A and B):** Technical specifications and clarifications necessary to comply with the data request (descriptions/definitions of bespoke models, reporting of not modelled risks, etc.).
- **Q&A template:** For raising any additional question to the NLCS PG via NCAs

3. NLCS 2020

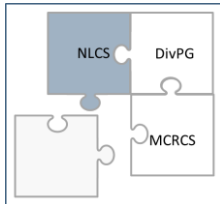
Spotlight: Data and communication



In order to avoid misunderstandings in comparative studies, clear, open and timely communication is key. While the respective Project Groups expects survey compliance they provide a number of possibilities to communicate before and during the submission (via the local NCAs) based on feedback received on previous editions of comparative studies:

- Validation checks
- Comments & Deviation reporting (from survey instructions)
- Enhanced (staged) acceptance process
- Q&A process
- Project groups reserves the right to disclose in public reports rejections of undertakings or groups

3. NLCS 2020 Spotlight: Q&A



The NLCS 2020 provides detailed guidance, instructions and clarifications already in the LogFiles as well as the possibility of undertakings to reach out for further clarifications via a Q&A Process.

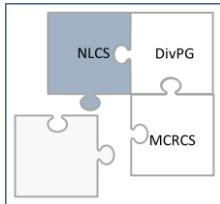
Questions should relate to clarifications (on instructions) with major impact on final results, perceived gaps or perceived errata.

- **Participants:** Can raise concrete questions (on the filing) of the submission to local NCAs.
- **NCAs:** Double check the LogFile and national reporting and can forward questions to NLCS PG.
- **NLCS 2020 Project Group:** Aims to address questions on a regular basis.

Please consider and provide the relevant knowledge of the specific internal model or local market needed to answer the questions.

3. NLCS 2020

Spotlight: Risk measure



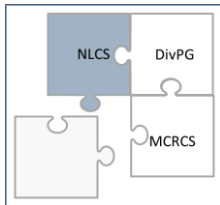
Article 101 defines the risk measure under Solvency II. Internal model undertakings are however allowed to deviate from the risk measure defined of the standard formula due to article 122 Solvency II guideline:

“Insurance and reinsurance undertakings may use a different time period or risk measure than that set out in Article 101(3) for internal modelling purposes as long as the outputs of the internal model can be used by those undertakings to calculate the Solvency Capital Requirement in a manner that provides policy holders and beneficiaries with a level of protection equivalent to that set out in Article 101.”

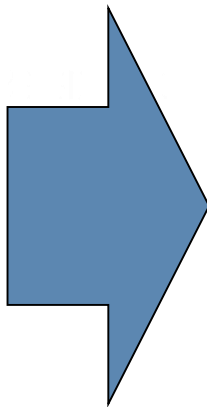
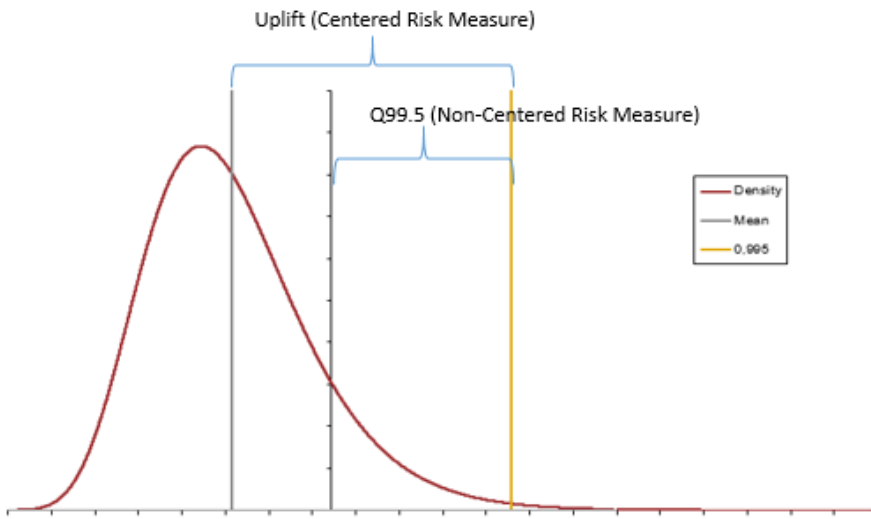
The NLCS 2020 will endeavour these differences in risk measure definitions since the (evolution of) result may differ significantly such as e.g. centred (vs non-centred) risk measure).

3. NLCS 2020

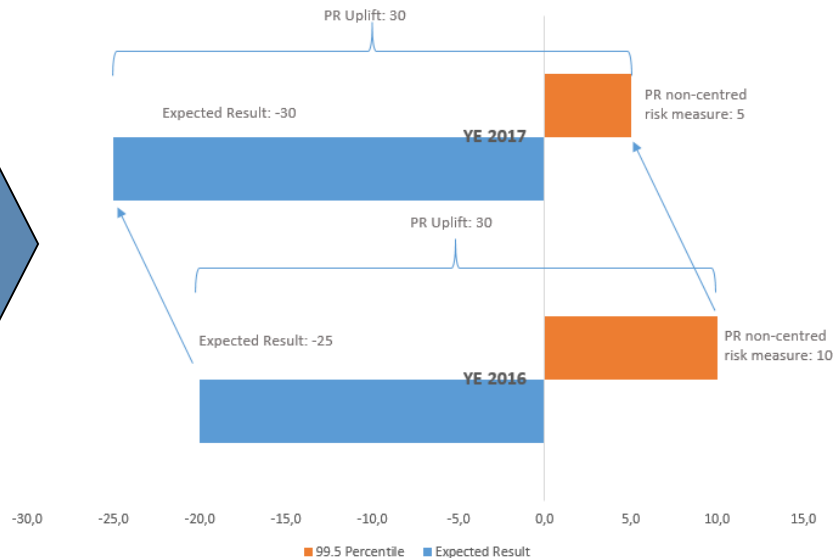
Spotlight: Risk measure: centred vs non-centred (1/2)



One Year PR Profit & Loss Distribution

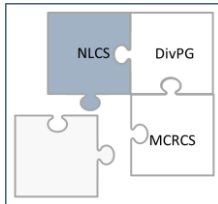


Evolution of the Risk Measures



3. NLCS 2020

Spotlight: Risk measure: centred vs non-centred (2/2)

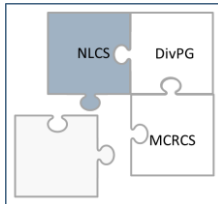


Direct comparisons of SCR and Uplift (Uplift = distance 99.5th percentile to mean of the non-centred distribution).

- EU-wide analysis on the use of different risk metrics, its rationale and implications for the understanding of Non-Life Underwriting Risk in IMs.
- Accident Year (AY) versus Underwriting Year (UY): Decomposition of Premium and Reserve Risk depending on AY and UY modelling.
- Collecting scenario information

3. NLCS 2020

Spotlight: Business & Risk Profile

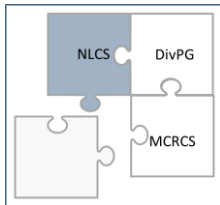


The NLCS aims to understand the individual risk profile of undertakings by collecting information on:

- **Business Mix:** IntLoB specific questions, which reflect the business (E.g. lumpy business vs plain vanilla).
- **Geographical footprint:** Understand the location of underwritten contracts and location of risks. EEA cross border business will be treated as local business.
- **Year-on-Year Changes:** Understanding risk profile changes due to organic (e.g. portfolio, model changes), inorganic (e.g. portfolio transfer, M&A) or strategy changes.
- **Covid-19:** Understand the IM impact of Covid-19.

3. NLCS 2020

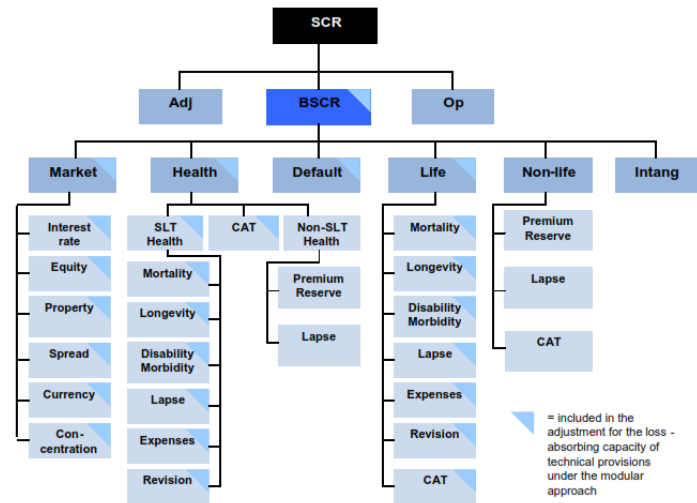
Spotlight: Granularity



Granularities for quantitative and qualitative information are key to understand the dynamics of an internal model and their development over time. The NLCS 2020 relies in part on the shared Solvency 2 granularity but allows as well the reporting used for the internal view of risk.

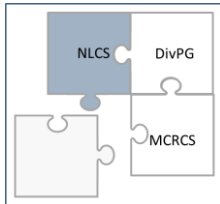
- **S2LoBs**: Shared granularity defined by Solvency II
- **IntLoBs/CatPerils**: Used for internal capital management. Typically close to the parameterisation level.

The topic of diversification is mirroring the DivPG questionnaire methodology.



3. NLCS 2020

Spotlight: Diversification in NLCS

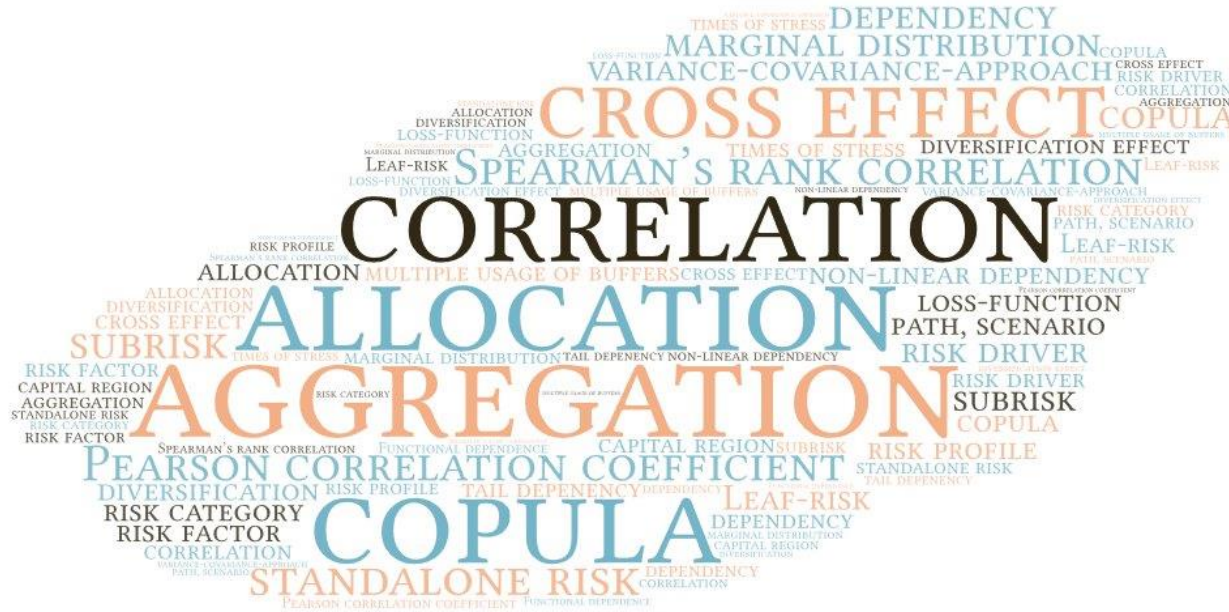
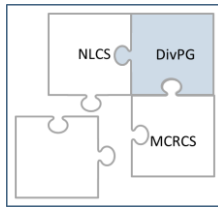


The topic of diversification is mirroring the DivPG questionnaire and its methodology with regard to the following analyses:

- Concentration of risk
- Determination of a single metric to enable comparisons
- Scenario analysis and mix dependence and single risks of undertakings.

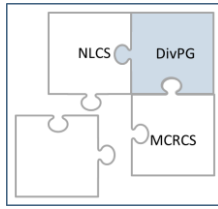
4. PG: Study on Diversification in IM

What do we mean with diversification ?



4. Diversification study

Overview



Objectives

- Gain an overview of the current approaches in the market and, on best effort basis, analyse and compare the levels of diversification,
- Facilitate a better understanding of modelling dependencies, aggregation and resulting diversification benefits,
- Enhance quality and convergence of supervision on diversification in internal models.

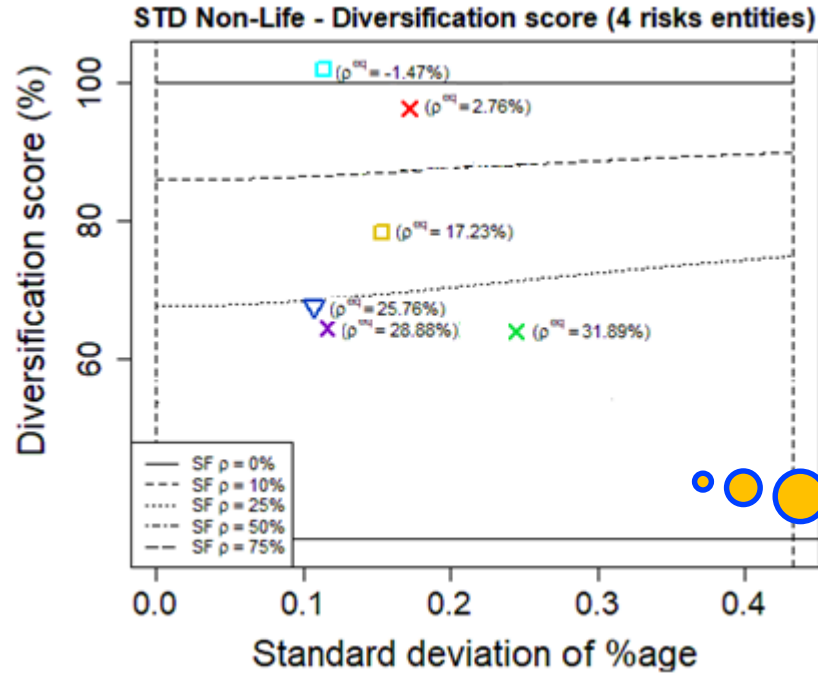
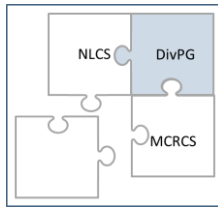
A wide participation rate is applicable for this study.

Analyses

- Concentration of risks: Viewing diversification in the light of concentration in the sub risks
- Determination of a single metric to enable comparisons
- Analyses based on simulation scenarios, mix dependence and single risks of undertakings. Perform statistical analysis on marginals, standardized marginals and gauge SCR impact of dependency function framework

4. Diversification study

Analyses – Diversification score

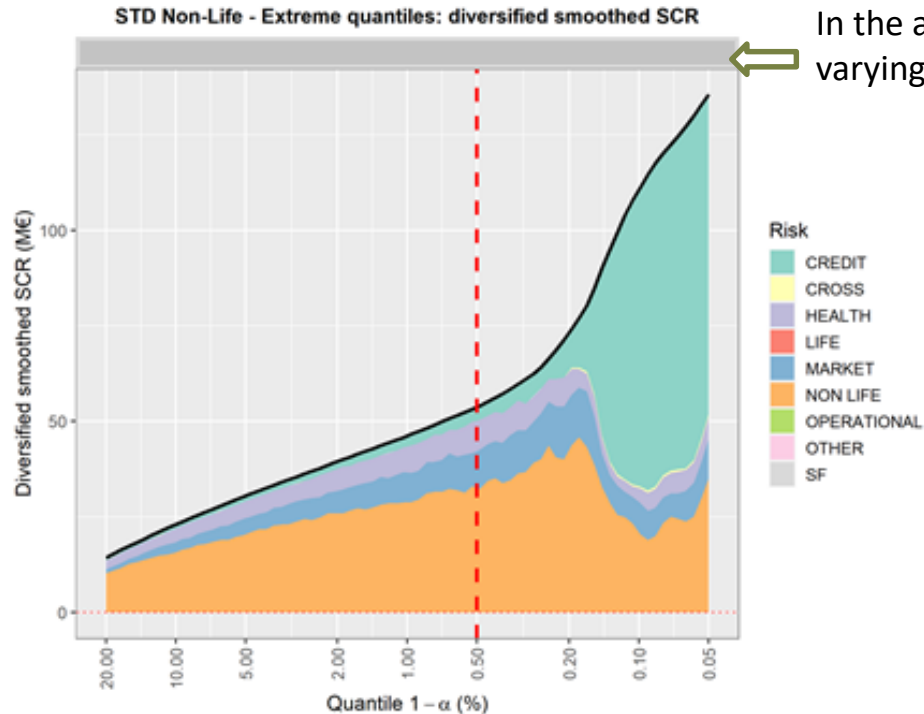
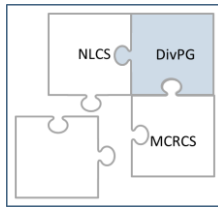


HIGH DIVERSIFICATION

Compare the diversification with those with var-covar and zero correlations.

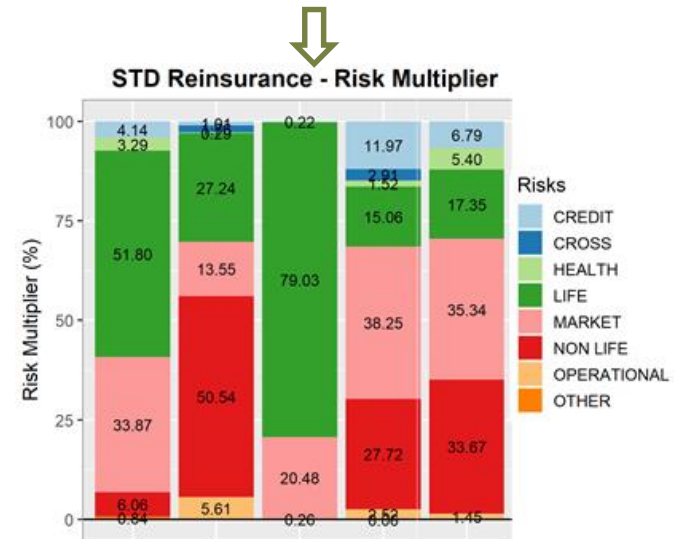
4. Diversification study

Analyses – Scenario analyses / mix dependency structures



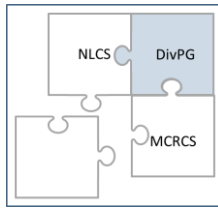
In the analyses we assess the composition of the total risk at varying quantiles and

identify the most material risks



4. Diversification study

Analyses – Scenario analyses / mix dependency structures



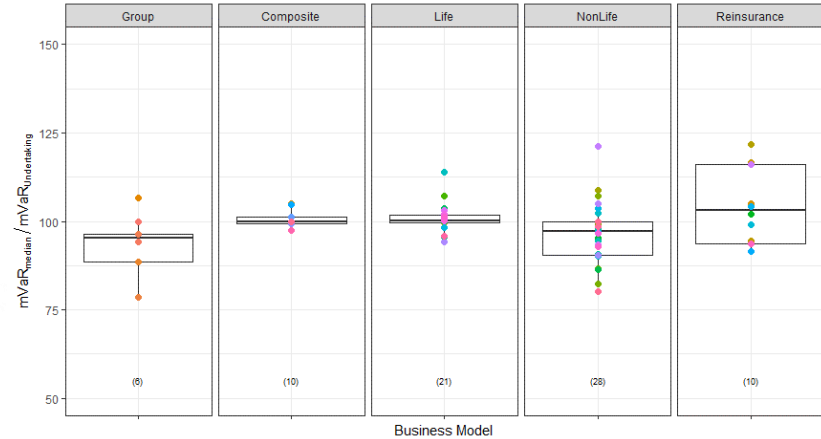
Joint quantile exceedance (80%) between PnL



Joint Quantile Exceedance Probabilities

box contains sample results between 25%- and 75%-percentile,
whiskers extend to 10% and 90%-percentile;
number in brackets is the overall sample size

Comparison top-level risk aggregation models

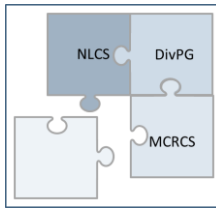


box contains sample results between 25%- and 75%-percentile,
whiskers extend to 10% and 90%-percentile;
number in brackets is the overall sample size

Compare tail dependencies between risks by making use of Joint Quantile Exceedance probabilities and gauge the SCR impact by switching dependency structures from undertaking A with undertaking B.

4. Q&A

Further information



NLCS 2020 material

- Package publication on March 1st 2021
 - [Start of the NLCS 2020](#)
 - [NLCS Homepage](#)
 - [LinkedIn Post](#)
 - [Twitter](#)
- Contact:
 - NLCS@eiopa.europa.eu
 - christoph.hamer@eiopa.europa.eu

Diversification Study material

- Package publication on March 1st 2021
 - [Start of the 2020 Diversification Study](#)
 - [Diversification Homepage](#)
 - [LinkedIn Post](#)
 - [Twitter](#)
- Contact:
 - henry.daha@eiopa.europa.eu