# CAS RBC Dependency and Calibration Working Party (DCWP)

November 12, 2014

Presenting today: Allan Kaufman Robert Butsic Manolis Bardis and Christian Citarella

CAS RBC DCWP - 11/12/14

### Why?

#### NAIC interest, and:

- A "standard formula" (like RBC) is a component of any regulatory capital structure, whether or not there are internal models or ORSA components.
- Each standard formula (RBC, ICAS, Solvency II) has drawn ideas from its predecessors. We plan to expand on that chain of developments.
- A good study of the standard formula provides data and analytical techniques contributing to individual company risk assessment methodologies.

CAS RBC DCWP - 11/12/14

### Agenda

- Overview of DCWP charge and structure
- Reports on:
  - Policyholder Beyond VaR and TVar
  - RBC Reserve Factors vs. Individual Company Risk Assessment
    - Q&A Throughout

CAS RBC DCWP - 11/12/14

#### **DCWP** Publications To Date

Overview of Dependencies and Calibration in the RBC Formula (Report 1) www.casact.org/pubs/forum/12wforum/DCWP Report.pdf

2011 Research – Short Term Project (Report 2)
www.casact.org/pubs/forum/12wforum/RBC URWP Report.pdf

Solvency II Standard Formula and NAIC RBC (Report 3) http://www.casact.org/pubs/forum/12fforumpt2/RBC-DCWPRpt3.pdf

A Review of Historical Insurance Company Impairments (**Report 4**) http://www.casact.org/pubs/forum/12fforumpt2/RBC-DCWPRpt4.pdf

CAS RBC DCWP - 11/12/14

#### Introduction

- Dependencies and Calibration Working Party (DCWP) of the CAS
  - Researching methods for calibrating P&C RBC parameters
  - Particularly underwriting and reinsurance risks
  - Many workstreams, many contributors (see appendix)
  - Caveats
    - The analyses are solely the responsibility of the work stream participants,
       DCWP members and not that of their employers, the CAS or the American Academy of Actuaries
  - Presentation assumes the audience has a working knowledge of Standard Formulas
  - Some slides describe preliminary work, which may change materially as research progresses
- Work stream results are published in CAS E-Forum when finalized

CAS RBC DCWP - 11/12/14

#### **DCWP Publications To Date**

An Economic Basis for P/C Insurance RBC Measures (Report 5) http://www.casact.org/pubs/forum/13sumforum/01RBC-econ-report.pdf

Premium Risk Charges – Improvements to Current Calibration Method (Report 6)

http://www.casact.org/pubs/forum/13fforum/01-Report-6-RBC.pdf

Reserve Risk Charges – Improvements to Current Calibration Method (Report 7)

http://www.casact.org/pubs/forum/14wforum/Report-7-RBC.pdf

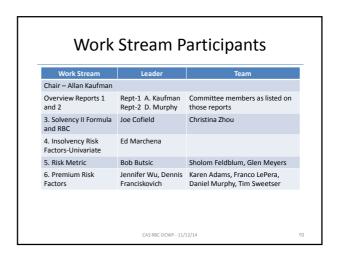
Differences in Premium Risk Factors by Type of Company (Report 8) http://www.casact.org/pubs/forum/14spforum/01-RBC-Dependencies-Calibration-Working-Party.pdf

CAS RBC DCWP - 11/12/14

## **DCWP Publications Pending**

- Differences in Premium and Reserve Risk Charges by Ceded Reinsurance Usage (Report 9)
- Reserve Risk Charges Standard Formula vs. Individual Company Assessments (Report 10)
- Insurance Risk-Based Capital with a Multi-Period Time Horizon Extension of Report 5 (Report 11)

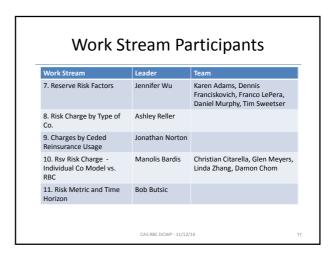
CAS RBC DCWP - 11/12/14



## **DCWP** Reports in Preparation

- Dependency and Credit for Diversification in NAIC RBC Formula
- Regression analysis of risk factors associated with insurance company impairments
- Back-testing RBC safety level
- Application of Solvency II Calibration Method to RBC Premium and Risk Factors

CAS RBC DCWP - 11/12/14



### DCWP – The People

- Many people contributed to this work (and are still contributing)
- The list of all committee members and the members who are leading or working on specific work streams follows:

CAS RBC DCWP - 11/12/14

#### **Work Stream Participants** 12. Dependency Shiwen Jiang, Glen Meyers, Kean Loh, Apundeep Lamba Dan Murphy, Damon Chom 13. Insolvency risk Factors-Regression 14. Back-testing RBC Safety Natalie Atkinson 15. Investment Income Offset James Yu 16. Solvency II Calibration Jeff Pflugger, Glen Meyers 17. Risk Factor Based on **Douglas Norton** 18. Impact Analysis Ron Wilkinson, Yi Francis Guo