ICIR International Center for Insurance Regulation

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

Annual Report 2018 2019

Contents

Editorial
Creating Impact

Looking out of our offices in the House of Finance, we can see the marvellous "Body of Knowledge" sculpture, which you also find on the cover page of this Annual Report. Apart from its beauty, the "Body of Knowledge" tells us a great deal about the competencies needed for shaping sustainable solutions to the challenges we are facing in the insurance area and beyond: awareness of an interconnected global world, open-mindedness to embrace different ideas and the contemplative calmness to see and understand new developments as they unfold.

The International Center for Insurance Regulation has tried to foster these competencies since its inception in 2010. Through our scientific research, our lectures and executive education as well as our policy-related events with our various stakeholders, we seek to provide the space for sharing knowledge on insurance regulation-related questions, with the aim of a sustainable impact on the insurance sector and the well-being of its customers.

Our research, probably the most sustainable pillar of our work, has addressed the topic of "fairness" of insurance in the digital age as well as topics related to insurance solvency regulation. The main part of our research becomes part of the doctoral dissertations of our research assistants. In the course of the last year, it was a great pleasure for me to see the great success of my former doctoral students at the ICIR. Not only did four of them earn their doctoral degree (three of them "summa cum laude"); their effort and success was also rewarded with internationally renowned prizes for their excellent research.

Exposing our students to an international perspective, the "new normal", is possible through education and the excellence of our teaching faculty. Thus, we are extremely grateful and feel honoured that Dr Christian Thimann has enlarged and enriched the insurance-related curriculum with his lecture on "Insurance and Finance" and has shared his international experience and deep knowledge with the students of our Master Programmes.

One of the highlights of this year was the 6th Conference on Global Insurance Supervision "Sustainable Insurance: Embracing Global Challenges" that was co-organized with our long-standing partners EIOPA, The World Bank and the Research Centre SAFE. In September we were privileged to welcome 170 representatives from 40 countries, from academia, regulation, supervision and the insurance industry at Goethe University to discuss current topics related to the overarching theme of sustainability: business models, protection gap and systemic risks in the insurance sector.

Creating this international atmosphere at the Global Insurance Supervision conference was only possible through the great cooperation with a fantastic team of our partner institutions. Once again, this has shown the value of a multi-stakeholder partnership that fosters open-mindedness, stimulates new approaches and broadens our horizons in a way that serves society as a whole in a fruitful way.

We cordially invite you to explore this Annual Report 2018/19 and the manifold activities that we managed to realize only in close cooperation with our colleagues, our students, and our partner institutions. I warmly thank all our stakeholders for their trust and cooperation that have contributed to the further development of the ICIR.

And I would like to thank the Goethe University, the German Insurance Association (GDV) and the State of Hesse for their continued funding and support of the ICIR.

In particular, I would like to thank my colleagues on the Executive Board and the members of the Advisory Board of the ICIR, and also our alumni for their continuous support and great commitment. I also wish to thank all ICIR team members for their great work throughout the year.

Enjoy reading!
Yours sincerely,

Prof. Dr. Helmut Gründl
Managing Director of the ICIR

The Year at a Glance

November 29–30, 2018
Goethe University, Frankfurt
Research Workshop
2nd Frankfurt Insurance Research Workshop
for doctoral students and post-doctoral researchers

March 27–28, 2019
Berlin, Germany
Research Presentations
Annual Congress of the German Insurance Science Association 2019

March 29, 2019
Frankfurt, Germany
EIOPA Workshop
Understanding Consumer Behavior In Insurance Markets
Dr. Irina Gemmo

April 3, 2019
Goethe University Frankfurt
16th ICIR Talk on Insurance and Regulation
Insurance and Regulation in the Digital Age
Peter Skjoedt, Geneva Association
Dr. Irina Gemmo (ETH Zurich, ICIR Alumna)

April 11, 2019
Bratislava, Slovakia
IAIS-OECD-NBS Conference
Regulatory Approaches for Long-Term Financial Products
In Insurance and Pensions
Prof. Karel Van Hulle

May 16–17, 2019
Bucharest, Romania
EIOPA Strategy Day
Micro and Macro Interaction to Address Financial Stability Risks in the Insurance Sector
Prof. Dr. Helmut Gründl

August 4–7, 2019
San Francisco, USA
Research Presentations
Annual Meeting of the American Risk and Insurance Association (ARIA)
Nicolaus Grochola

August 22, 2019
Research Award
Ernst Meyer Prize 2019 for Dr. Christian Kubitza
and his thesis 'Essays on Financial Stability and Insurance Markets'

September 4–5, 2019
Goethe University Frankfurt
EIOPA, Research Center SAFE, The World Bank
6th Conference on Global Insurance Supervision
Sustainable Insurance: Embracing the Global Challenges Business Models. Protection Gaps. Systemic Risks.

September 19–22, 2019
Rome, Italy
Research Presentations
46th Seminar of European Group of Risk and Insurance Economists (EGRIE)
Prof. Dr. Helmut Gründl, Fabian Regele

October 7, 2019
Goethe University Frankfurt
17th ICIR Talk on Insurance and Regulation
The Pan-European Personal Pension Product (PEPP): Implications for Consumers and Providers
Gabriel Bernardino, EIOPA
Dr. Klaus Wiener, GDV
Prof. Dr. R. Maurer, Goethe University

Oct–Dec, 2019
South Carolina, USA
International Research Exchange
University of South Carolina Department of Finance
Fabian Regele

Goethe University Frankfurt, Campus Westend

The ICIR at Goethe University

ICIR
The Three Pillars

Research
The International Center for Insurance Regulation (ICIR) is recognized as a leading scientific institution fostering independent research on insurance regulation and market solutions to regulatory questions. As an integral part of Goethe University in Frankfurt, the ICIR is committed to Goethe University's values and mission statement.

Education
The ICIR offers several lectures and seminars within the Bachelor and Master degree programs at the Faculty of Economics and Business Administration of Goethe University in order to increase professional knowledge in the field of insurance economics and insurance regulation.

Policy Platform
The ICIR provides an international and interdisciplinary platform for scholars, executives of the insurance industry, regulatory authorities, and policy makers to exchange ideas and shape strategic thinking about the future development of insurance and insurance regulation.

Funding and Partners

We would like to express our gratitude towards our funding partners, the university, cooperation partners, and all the people within our network, for their continuous trust and tremendous support shaping the ICIR's development.

The ICIR receives generous funding by the State of Hesse (Land Hessen) and the German Insurance Association (Gesamtverband der Deutschen Versicherungswirtschaft (GDV)) for a period of ten years.

Goethe University, a research-oriented university at the heart of Europe's financial center Frankfurt am Main, provides an outstanding and modern infrastructure located on the Campus Westend in the House of Finance.

Goethe University gives the ICIR a unique scientific environment for interdisciplinary research, especially through its research center "Sustainable Architecture for Finance in Europe" (SAFE).

In addition, the ICIR receives further research funding from the German Association for Insurance Studies (Deutscher Verein für Versicherungswissenschaft e.V.) in Berlin, the Frankfurt Association for the Promotion of Insurance Studies at Goethe University (Förderkreis für die Versicherungslehre an der Johann Wolfgang Goethe-Universität) and Goethe Finance Association e.V. (GFA).

Goethe University Frankfurt, IG Farben Building

People at the ICIR

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Chair of Insurance and Regulation
Goethe University

Managing Director
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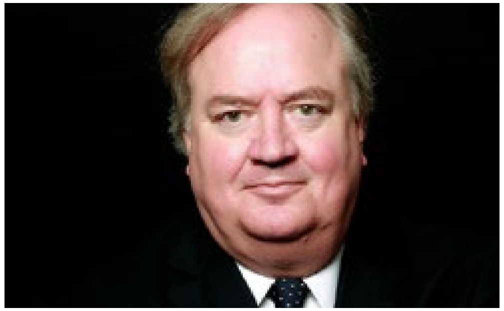
Prof. Dr. Brigitte Haar
(† 27. März 2019)
Chair of Private Law, German, European and International Business Law, Law and Finance, and Comparative Law, Goethe University



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Honorary Professor, Goethe University

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(Vice-Chair of the ICIR Advisory Board)

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Dr. Klaus Wiener
Member of the Management Board of the German Insurance Association, (Gesamtverband der Deutschen Versicherungswirtschaft e. V. (GDV)), Berlin

Dr. h.c. Petra Roth
Former Lord Mayor of Frankfurt am Main

Raj Singh
Member Executive Committee and Chief Risk Officer, EFG International

The ICIR Team

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Chair of Insurance
and Regulation
Managing Director, ICIR

Jozefina Kontić
ICIR Management

Dea Lapi
Chair Management

Dr. Irina Gemmo
Research Assistant
and Doctoral Student
(until 08/19)

Nicolaus Jan Karol Grochola
Research Assistant and
Doctoral Student

Fabian Regele
Research Assistant and
Doctoral Student

Minh Huong Dao, B.Sc.
Student Assistant

Lisa Fischer
Student Assistant

Victor Krug Kovacs Borges
Student Assistant

Mingjie Shi
Student Assistant

Nils Simon
Student Assistant

Xingrong Zhang
Student Assistant

Campus Westend, House of Finance

Research

Insurance

Risk

Regulation

ICIR Research Portfolio

Insurance Industry and Financial Stability

Diversification of Business Activities and Financial Stability
Fabian Regele, Christian Kubitza (University of Bonn, ICIR Alumnus)

Rising Interest Rates and Liquidity Risk in the Life Insurance Sector
Christian Kubitza (ICIR Alumnus), Elia Berdin (Generali, ICIR Alumnus), Helmut Gründl

Systemic Risk and Late Resolution of Economic Shocks
Christian Kubitza (University of Bonn, ICIR Alumnus), Helmut Gründl

Asset Concentration Risk and Insurance Solvency Regulation
Fabian Regele, Helmut Gründl

Comparative Study of African and European Insurance Regulation
Nana Adwoa Dekyem Amo-Mensah

(Life) Insurance and Risk Management

The Influence of Market Risks on the Stock Return of Life Insurance Companies
Sebastian Schlütter (Mainz University of Applied Sciences), Mark J. Browne (St. John's University), Helmut Gründl, Nicolaus Grochola

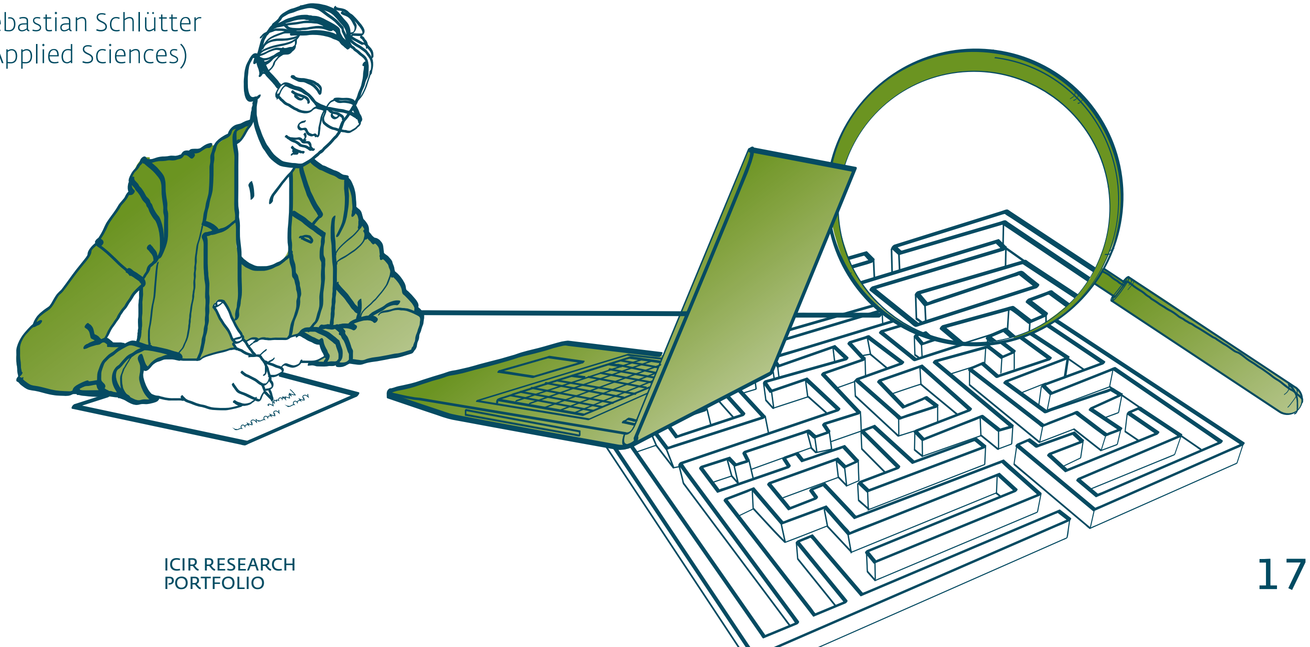
Do Solvency II Reports Appropriately Inform About European Stock Insurers' Market Risk Exposures?
Nicolaus Grochola, Sebastian Schlütter (Mainz University of Applied Sciences)

Digitalization in the Insurance Industry

Privacy Concerns in Insurance Markets: Implications for Market Equilibria and Social Welfare
Irina Gemmo (ETH Zurich, ICIR Alumna), Mark J. Browne (St. John's University, New York), Helmut Gründl

Sustainable Insurance

Profitable Sustainable Investments for Insurance Companies
Sebastian Schlütter (Mainz University of Applied Sciences), Helmut Gründl, Emmanuel Fianu



Helmut Gründl, Fabian Regele

↗ Prof. Dr. Helmut Gründl
(Goethe University, ICIR)

↗ Fabian Regele
(Goethe University, ICIR)

Asset Concentration Risk and Insurance Solvency Regulation

Historical evidence of the kind delivered by the global financial crisis from 2007–09 highlights that asset concentration risk plays an important role for the stability of financial institutions. Due to their large investment portfolios, insurers seem to be particularly exposed to this risk type. However, current regulatory frameworks like Solvency II and the Global Insurance Capital Standard (ICS) consider only name concentration risk explicitly, but neglect sector concentration risk. We show by means of a unique dataset of insurers' asset holdings that substantial sector concentrations exist for US and EU insurers, potentially exposing them to severe contagion risks. Moreover, we demonstrate by using a theoretical asset model that the current regulatory approaches are conceptually inadequate to cover asset concentration risk and can lead to inappropriate levels of solvency capital. Our findings have important implications to improve risk-based solvency regulation, in particular with regard to the ongoing review process of Solvency II and the ICS in the insurance sector.

INTRODUCTION

Insurance companies act as large-scale financial investors, as they collect enormous amounts of premiums and invest them on capital markets in order to generate stable cash flows. For example, insurers in the European Union (EU) have a volume of more than 60% of the EU's GDP in assets under management in 2017 (Insurance Europe (2018)), which strongly highlights their possible influence on, and exposure to, capital market movements. In this regard, literature has studied different aspects of insurers' investment behavior, for instance, with regard to fire sales (e.g. Ellul et al. (2011)), reaching for yield behavior (e.g. Becker and Ivashina (2015)) or procyclicality (e.g. Bijlsma and Vermeulen (2016), Bank of England (2014)).

However, one aspect that has been largely neglected so far concerns the concentration risk of the assets, which emerges from the accumulation of exposures to various different sources, for instance, single entities (names), business sectors or geographies. Typically, a higher level of asset concentration can increase the investment portfolio's total risk level, as it becomes less diversified and more exposed to counterparty risk (International Association of Insurance Supervisors (IAIS) (2018a)). A prominent example for the adverse impact of sector concentration risk are the large institutional holdings of real estate assets during the financial crisis of 2007–09. For example, AIG and Metlife had up to 30% of their total assets invested in the real estate sector, which led to severe losses and contributed to the near collapse of AIG (McDonald and Paulson (2015)). But even today, insurance companies seem to concentrate their exposures with regard to certain sectors. For instance, the German insurance sector has an accumulation of 68% of its total assets within the financial sector in 2017 (European Insurance and Occupational Pensions Authority (EIOPA) (2018a)), exposing it to potentially severe contagion risks in case of a shock on the financial sector (International Monetary Fund (IMF) (2018)).

THE ROLE OF ASSET CONCENTRATION RISK IN INSURANCE REGULATION

Although there is some evidence that sectoral asset concentration has contributed to the financial impairment of several insurers in the past (European Insurance and Occupational Pensions Authority (EIOPA) (2018b)), current regulation in terms of Solvency II, the Global Insurance Capital Standard (ICS) or the US-RBC framework still considers asset concentration risk only with a focus on single entities and thus, aims to limit destabilizing impacts from idiosyncratic (firm-specific) shocks. Sector concentration risk, in contrast, which relates to destabilizing impacts from systematic (sector-specific) shocks (e.g. Basel Committee on Banking Supervision (2006)), is considered as an immaterial risk source and is explicitly excluded from the calculation of solvency capital requirements (e.g. European Union (2015), International Association of Insurance Supervisors (IAIS) (2018b)).

One particular reason might be the general lack of empirical evidence on the actual asset concentrations of financial institutions (Beck et al. (2018)), which makes the assessment of asset concentration risk highly subject to supervisory discretion (International Association of Insurance Supervisors (IAIS) (2018b)). From an academic perspective, however, it is not clear to what extent the asset portfolios of insurers are actually subject to asset concentration risk and whether the current regulatory approaches are sufficient to cover it. Moreover, it seems questionable to exclude the sector allocation of assets ▸

Min	1st Quantil	Median	Mean	3rd Quantil	Max
0%	0,14%	0,36%	0,98%	0,93%	92,5%

Table 1: Summary statistics on name concentration of US insurers in 2018
Source: Own calculations based on data from S&P Market Intelligence

from the determination of solvency capital requirements, as it can generally be a substantial contagion channel for the transmission of systematic shocks. Therefore, we aim to shed light on this issue by focusing on the role of name and sector concentration risk for insurers' solvency.

NAME AND SECTOR ALLOCATION IN INSURERS' ASSET PORTFOLIOS

Due to the lack of appropriate microdata on insurers' asset holdings, assessing the concentrations with regard to individual counterparties (names) and business sectors becomes a difficult task. Insurers in the European Union, for instance, are required to provide granular data on their asset holdings (Regulation (EU) No 1374/2014 of the European Central Bank); however, public access to it is very limited. Moreover, due to the confidentiality of this data, conclusions can only be drawn on the country-aggregated insurance sector level and are less appropriate to derive regulatory implications. Therefore, in order to conduct the most precise analysis of the asset concentrations possible, we mainly rely on the statutory filings of US insurers with the NAIC, which provide the most informative basis for our research purpose. However, we also refer to EU insurers as far as possible.

For EU insurers, we cannot derive any conclusions on name concentration risk due to the lack of data, but for US insurers, we find that name concentration risk is generally well-diversified with an average allocation of almost 1% of total assets to a specific counterparty (**Table 1**). It seems that the current regulatory aim of limiting name concentration risk is generally effective. Nevertheless, some insurers reveal substantial exposures to certain counterparties in the range of 90% of their total assets and hence are strongly exposed to destabilizing impacts from idiosyncratic shocks.

Table 2 summarizes the highest sector allocations for EU insurers in 2017. The most important sector is the financial sector, to which German insurers have the highest exposure at 68% of their total assets. The median fraction for all countries is almost 41%. Regarding the public sector, including holdings of government debt securities, Romanian insurers have the highest exposure at 72%, whereas the median value is 31%. Norwegian insurers are particularly exposed to the real estate sector at 12%; the median value is 2%. Besides the manufacturing sector (median value of 3.4%) and the electricity and gas sector (median value of 1.86%), all other sectors have a median value of less than 1% and seem not to be generally important for the sector allocation decisions of EU insurers. As the sectoral allocations vary significantly between countries, this suggests strong differences in the concentration risk assessment by insurers and supervisors.

US insurers likewise have a high concentration on the financial sector with, on average, 34% of their total assets, followed by 16% in the public sector and 9% in the materials sector. Regarding the real estate sector, US insurers have almost 4% of their assets invested in this sector.

From the perspective of financial stability, the relatively high sector concentrations of EU und US insurers expose them to potentially severe contagion risks. In particular the financial, public and real estate sectors have already demonstrated their destabilizing impact on financial institutions in the past. For example, the (International Monetary Fund (IMF) (2018) notes that the relatively high concentration of insurers' assets on the financial sector could potentially destabilize insurance companies, which is underpinned by findings of Allen and Carletti (2006) and Chen et al. (2013), showing that credit risk transfer between banks and insurance companies can potentially lead to destabilizing contagion effects between both institutions. Regarding the real estate sector, the global financial crisis of 2007–09 is a prominent example of how exposures to this sector can destabilize financial institutions (McDonald and Paulson (2015), Brunnermeier (2009)). For government debt exposure, the European sovereign debt crisis revealed contagion effects between sovereign debt and banks (e.g. Acharya et al. (2014)), which can also affect insurers with respect to their typically large sovereign debt holdings.

Thus, the consequences for the solvency capital of an institution resulting from sector concentration risk, which relates to an accumulation of systematic risk exposures, can be substantial. Düllmann and Masschelein (2007) ▸

NACE Sector	Min	Max	Median
Financial and Insurance Activities	18.3% (Hungary)	68.2% (Germany)	40.6%
Public Sector	4.3% (Iceland)	71.9% (Romania)	30.9%
Manufacturing	0.2% (Hungary)	9.0% (Slovenia)	3.4%
Real Estate	0.08% (Lithuania)	12.4% (Norway)	1.91%
Electricity and Gas	0.07% (Hungary)	5.0% (Iceland)	1.86%

Table 2: Overview of the most important sector allocations of EU insurers in 2017
Source: Data from EIOPA (2018a)

show that sector concentration in banks' credit portfolios can increase the required economic capital to back up losses by more than 37%. Overall, these findings argue for a conceptual inclusion of sector concentration risk in risk-based insurance solvency regulation.

THE ROLE OF ASSET CONCENTRATION RISK FOR SOLVENCY CAPITAL REQUIREMENTS

We quantitatively investigate the impact of asset concentration risk on insurers' solvency capital by means of a stylized portfolio model. We assume that the insurer can invest in a large number of different assets and each asset's return can be decomposed into an idiosyncratic (firm-specific) and a systematic (sector-specific) risk component to reflect name and sector concentration risk. Then, by means of exemplary portfolio allocations, we evaluate the solvency capital requirements based on a Value at Risk (VaR) approach and on the example of Solvency II's standard formula. With this approach, we can explicitly allocate solvency capital to name and sector concentration risk and assess their roles for the insurer's solvency.

Table 3 shows the solvency capital allocation based on the VaR approach and the Solvency II's standard formula under a real world calibration assumption, meaning the insurer is subject to name and sector concentration in its portfolio. Our baseline results show that around 6% of the total invested capital needs to be allocated to sector concentration risk, whereas only 0.12% needs to be allocated to name concentration risk. Accordingly, the Solvency II's standard approach substantially underestimates the entire concentration risk exposure, as it does not consider any sector concentration risk. Moreover, in relation to the portfolio's overall solvency capital requirement in our model, the sector concentration capital amounts to almost 15% and name concentration risk only to 0.3%.

We also find that, although modeled independently from each other, the capital allocations for name and sector concentration risk can interact with each other in terms of the amount of equity capital required to cover potential losses. The higher the risk-based capital allocation to sector concentration risk, the lower the capital allocation to name concentration risk under the implemented VaR approach. This finding implies that the current regulatory exclusion of sector concentration risk leads to a substantial estimation bias, which means that solvency capital is not adequately allocated to the respective risk sources. Moreover, the current regulatory approaches do not provide suitable incentives for insurers to spread investments across sectors and, hence, to reduce the portfolios' systematic risk exposure, which can be seen in terms of the relatively high sector allocations in practice.

Therefore, from a microprudential regulatory perspective, sector concentration risk should not be considered as being immaterial, neither in terms of its quantitative fraction with respect to the entire risk-based solvency capital nor in terms of its influence on the capital charge for name concentration risk.

REGULATORY IMPLICATIONS AND CONCLUDING REMARKS

Overall, our results suggest that focusing only on name concentration risk shows only one side of the coin. Solvency capital requirements based on this limited reflection of asset concentration risk are subject to a conceptual bias and, hence, should be revised.

Generally, it would be beneficial to set incentives for insurance companies to lower both name and sector concentration in order to reduce the accumulation of idiosyncratic and systematic risk exposures. As name concentration risk seems to be well-diversified, potential regulatory changes need to focus on sector concentration risk. In particular, the first step should be to treat sector concentration risk as a material risk source, as the current portfolio allocations of insurers and our theoretical assessment underpin. Moreover, policyholders could think of, for instance, introducing an explicit capital add-on for sector concentration risk, which would be a similar approach as already used in the banking regulation of the United Kingdom (Bank of England (2017)). Another tool, and probably easier to integrate into the current regulatory frameworks, could be to introduce soft requirements, such as increasing the reporting requirements for insurers with regard to the name and sector allocations of their assets. This would utilize market discipline effects that ▸

	Based on SCR_{VaR}	Based on SCR^{SF}_{Market}
Overall Asset Concentration Risk	$0.0612A_0$	$0.0049A_0$
Sector Concentration Risk	$0.0600A_0$	0
Name Concentration Risk	$0.0012A_0$	$0.0049A_0$

Table 3: Results of the capital allocation scheme for the sample portfolio

could prevent insurers from concentrating their investments in certain sectors.

Moreover, as sector concentration risk is increasingly discussed as a potential source for systemic risk, its appropriate and risk-based treatment in microprudential regulatory frameworks like Solvency II, the ICS or the US RBC-framework, can help to increase the stability of both individual insurers and the financial system. ◆

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ACADEMIC CONFERENCES

09/2019: 2019 Annual Meeting of the European Group of Risk and Insurance Economists (EGRIE), Rome, Italy.

03/2019: 2019 Annual Meeting of the German Insurance Science Association (DVfVW), Berlin, Germany.

08/2018: 2018 Annual Meeting of the American Risk and Insurance Association (ARIA), Chicago, USA.

Sebastian Schlütter, Nicolaus Grochola

Do Solvency II Report Appropriately Inform About European Stock Insurers' Market Risk Exposures?

↗ Sebastian Schlütter
(Mainz University of Applied Sciences, ICIR Alumnus)

↗ Nicolaus Grochola
(Goethe University, ICIR)

One of the central outcomes of Solvency II, the new regulatory framework for European insurance companies, is the solvency ratio. It is frequently employed to state the insurer's solvency position by a single figure. Although Solvency II aims at providing a fair view on the risk and solvency position of European insurers, the components of the solvency ratio, namely the own funds and the solvency capital requirement (SCR), are subject to various options between which insurers can choose.

There are four non-mandatory long-term guarantee (LTG) measures which the companies can use or not: the matching and the volatility adjustment as well as transitionals for interest rates and technical provision. These measures affect the discount rate that insurers use to calculate their provisions and hence directly impact the own funds. In addition, they influence the calculation of the SCR and ultimately increase the reported solvency ratio.

In order to evaluate the impact of the LTG measures on the solvency ratio, we systematically analyze data from the Solvency and Financial Condition Reports (SFCRs) published so far for the years 2016 to 2018. The idea behind the SFCRs is that the insurers' stakeholders gain transparency about the companies' risk profiles and that their potential punishment provides the insurers with an incentive to seek a sound risk and solvency position. From a stakeholder perspective, it is important to have empirical evidence on whether the reported solvency ratio is informative and whether this regulatory tool works.

Gatzert and Heidinger (2019) demonstrate that the published quantitative data on risk characteristics in the SFCRs lead to a significant abnormal stock return, indicating that shareholders react to "good news" or "bad news" provided by the SFCRs. Nevertheless, it remains an open question how much the reported solvency ratios reflect the actual solvency position of an insurer.

Our results in Table 1 and Figure 1 demonstrate that for the stock exchange listed insurers in our sample, the solvency ratios are strongly affected by the LTG measures. In 2018, the volatility adjustment is applied by 56% of the firms and it increases the ratio by 24% on average, while the matching adjustment is used by a smaller fraction of insurers due to higher regulatory requirements. However, on average the matching adjustment increases the solvency ratio by 55% in absolute terms, thereby suggesting a substantially better solvency position. According to the regulatory authority, the average solvency ratio of a European insurer would decrease from 205% to 162% without the use of LTG measures (EIOPA, 2018). These findings indicate that the reported solvency ratio is more informative when taking into account how it has been influenced by the insurers' choices on transitionals and adjustments.

The purpose of this paper is to investigate the determinants of insurers' discretionary decisions in the implementation of Solvency II. Specifically, we want to shed light on the relation between information about the insurers' risk profiles and their implementation strategy. We suspect that insurers strategically make use of the leeway available in the determination of the solvency ratio. When deciding on LTG measures, they trade off ▶

	Applied by firms	Average impact on Solvency Ratio for companies applying this measure
Transitional for technical provisions (TP)	26.9%	34.1%
Transitional for interest rates (IR)	1.9%	1.0%
Volatility adjustment (VA)	55.8%	23.5%
Matching adjustment (MA)	11.5%	55.2%

Table 1: Usage of LTG measures in 2018

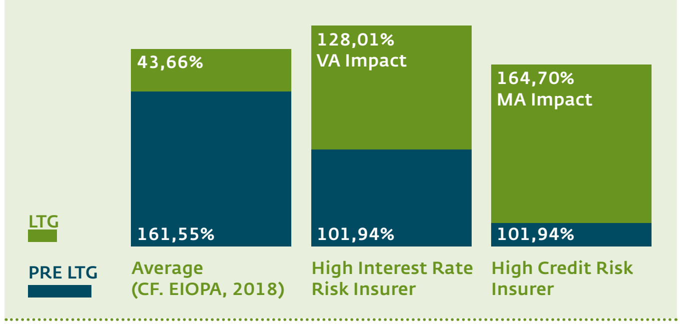

Figure 1: Impact of LTG measures on Solvency Ratios in 2018

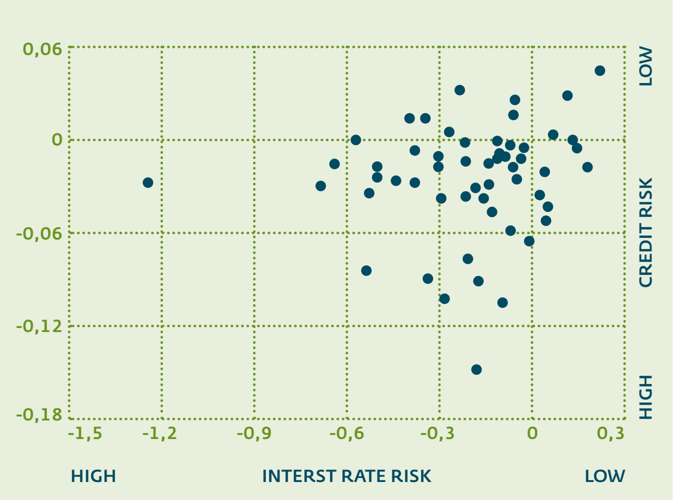

Figure 2: Estimated sensitivities to interest rates and default probabilities of sovereign debt

the improvement of the solvency ratio against possible drawbacks such as increased disclosure requirements and higher regulatory attention.

To estimate the insurers' market risk profiles, we analyze for each firm how its daily stock returns react to changes in interest rates, default probabilities of sovereign debt and to movements in stock indices. In Figure 2, each dot reflects an insurer's estimated sensitivities to interest rate and credit risk. The results of examining the risk profiles are largely consistent with other recent empirical studies indicating that insurers typically benefit from rising interest rates (Hartley et al., 2017) and from decreasing default probabilities of government bonds (Düll et al., 2017). The estimated sensitivities also reveal a considerable heterogeneity in market risk exposures across European insurers.

We perform a panel regression for each LTG measure to determine the drivers of insurers' discretionary decisions. Our findings for the volatility adjustment suggest that its impact on the solvency ratio is significantly larger for life insurers and for firms with a high estimated sensitivity to interest rates as perceived by financial investors. This implies that the use of the volatility adjustment becomes more valuable to an insurer, the higher its interest rate risk is. In addition, we identify a highly significant negative relationship between the level of the solvency ratio calculated without the volatility adjustment and the absolute impact of the LTG measure on the reported solvency ratio. This shows that the optional measure is applied particularly by insurers with low unadjusted solvency ratios. Overall, our results indicate that LTG measures allow insurers to gradually adjust their solvency ratios upwards and that the insurers' choices of LTG measures can be viewed as a strategic selection. Furthermore, the insurers' options in the implementation of Solvency II can substantially diminish the connectedness between reported Solvency II figures and a market-oriented, risk-based view. ◆

ACADEMIC CONFERENCES

September, 2019: 26th Annual Meeting of the German Finance Association (DGF), Essen, Germany

August, 2019: 2019 Annual Meeting of the American Risk and Insurance Association (ARIA), San Francisco, CA, USA

July, 2019: 23rd International Congress on Insurance: Mathematics and Economics (IME), Munich, Germany

March, 2019: Annual Congress of the German Insurance Science Association 2019, Berlin, Germany

November, 2018: 2nd Frankfurt Insurance Research Workshop, Frankfurt, Germany

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Insurance Economics

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I.VW Management Information: St. Galler Trendmonitor für Risiko- und Finanzmärkte, 4: 20 – 22

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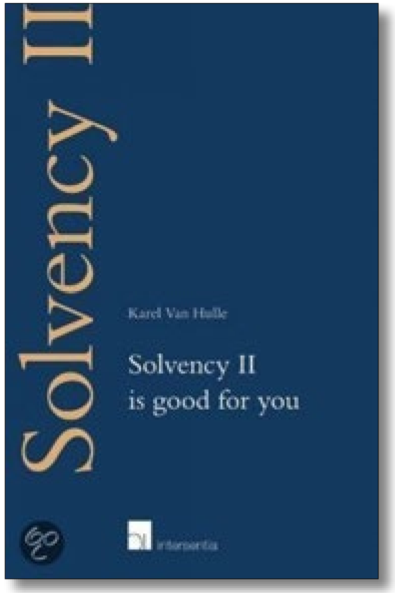
3rd Edition, VVW, 2019

Karel Van Hulle
Solvency Requirements for EU Insurers – Solvency II is Good for You
Intersentia, 2019



Working Paper No. 25 (revised in 2019)
Privacy Concerns in Insurance Markets: Implications on Market Equilibria and Social Welfare
Irina Gemmo, Mark J. Browne, Helmut Gründl

Working Paper No. 29 (revised in 2019)
Rising Interest Rates and Liquidity Risk in the Life Insurance Sector
Elia Berdin, Helmut Gründl, Christian Kubitza

Working Paper No. 34/2019
Financial Literacy and Precautionary Insurance
Christian Kubitza

Working Paper No. 33/2019
Making the Square-Root Formula Compatible with Capital Allocation
Joachim Paulusch, Sebastian Schlütter

Publications
Insurance Law
Prof Dr. Manfred Wandt

BOOK

Wandt, Manfred (2018): Gesetzliche Schuldverhältnisse. Deliktsrecht, Schadensrecht, Bereicherungsrecht, GoA, 9., neu bearbeitete Auflage 2019. XXVI, München: Vahlen

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Die Gruppenversicherung in den Principles of European Insurance Contract Law (PEICL), in: Grolimund/Koller/Loacker/Portmann (Hrsg.), Festschrift für Anton K. Schnyder, 2018, S. 903–923.

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ARTICLES

Wandt/Bork, Der moderne Guidon de la Mer: die Principles of Reinsurance Contract Law (PRICL), in: VersR 2019, S. 1113–1121.

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Insurance and Reinsurance Law: Vietnamese Law and Transnational Principles, Jurisprudence Journal Vietnam 2018, pp. 28–38.

Auskunfts- und Aufklärungsobliegenheiten nach Eintritt des Versicherungsfalls, VersR 2018, S. 321–328.

Wandt/Bork, AIDA German Chapter – Response to the Questionnaire on Disclosure Duties in Insurance, 2018, S. 1–21.

PRESENTATIONS

Zur Bedeutung der Rückversicherung und des Rückversicherungsrechts, November 2019, Vietnam

Reinsurance Principles in a Changing Legal Environment: PRICL – Remedies, AIDA Europe Conference Lisbon, October 2019

Research
Awards for Alumni

APRIL 2019
DZ BANK CAREER AWARD 2019

Arina Brutyan received the **DZ Bank Career Award 2019** prize for her master thesis **"The Impact of Solvency II on the Capital Structure of European Insurers"** supervised by the Chair of Insurance and Regulation and the ICIR of Goethe University.

APRIL 2019
GAUSS YOUNG TALENT AWARD 2018

Dr. Jan-Hendrik Weinert received the **"GAUSS Young Talent Award 2018"** of the German Society for Insurance and Financial Mathematic (DGFVM) and the German Association of Actuaries (DAV) for his excellent research work **'Essays on Tontine Annuities**' supervised by the Chair of Insurance and Regulation and the ICIR of Goethe University.

AUGUST 2019
ERNST MEYER PRIZE 2019

MAY 2019
FRANKFURTER PREIS FÜR VERSICHERUNGSWISSENSCHAFTEN 2019

Dr. Christian Kubitza received for his thesis **"Essays on Financial Stability and Insurance Markets"** the **Ernst Meyer Prize 2019** by the Geneva Association and the **Frankfurter Preis für Versicherungswissenschaften 2019** by the Förderkreis für die Versicherungslehre an der Johann Wolfgang Goethe-Universität (Frankfurt Association for the Promotion of Insurance Studies at Goethe University). His thesis was supervised by the Chair of Insurance and Regulation and the ICIR of Goethe University.

Academic Conferences
Research Presentations

January 4–6, 2019
Atlanta, USA
2019 ASSA Annual Meeting (Poster Session)
Privacy Concerns in Insurance Markets: Implications on Market Equilibria and Social Welfare
Irina Gemmo

March 27–28, 2019
Berlin, Germany
Annual Congress of the German Insurance Science Association 2019
Asset Concentration Risk and Insurance Solvency Regulation,
Fabian Regele, Helmut Gründl

The Impact of Systematic Longevity Risk on Optimal Lifecycle Portfolio Choice with Tontines
Irina Gemmo, Ralph Rogalla, Jan-Hendrik Weinert

July 10–12, 2019
Munich, Germany
23rd International Congress on Insurance: Mathematics and Economics (IME 2019)
Do Solvency II Reports Appropriately Inform About European Stock Insurers' Market Risk Exposures?
Nicolaus Grochola, Sebastian Schlütter

August 4–7, 2019
San Francisco, USA
2019 Annual Meeting of the American Risk and Insurance Association (ARIA)
Do Solvency II Reports Appropriately Inform About European Stock Insurers' Market Risk Exposures?
Nicolaus Grochola, Sebastian Schlütter

September 19–22, 2019
Rome, Italy
46th Seminar of European Group of Risk and Insurance Economists (EGRIE)
Asset Concentration Risk and Insurance Solvency Regulation
Fabian Regele, Helmut Gründl

29 – 30 November 2018, House of Finance, Frankfurt/M.

↗ Link to Event

2nd Frankfurt Insurance Research Workshop

29 November 2018

Welcome Address
Helmut Gründl
(Chair of Insurance and Regulation, ICIR)

Session 1 (Life Insurance 1)
A measure to analyse the interaction of contracts in a heterogeneous life insurance portfolio**
Jonas Eckert (with Stefan Graf and Alexander Kling)
Discussant: Oliver Lubos

Life Insurance Demand and Borrowing Constraints**
Bojan Srbinoski
Discussant: Sascha Offermann

Session 2 (Life Insurance 2)
What Drives Policyholders' Relative Willingness to Pay? Empirical Analysis under Default Probability and Varying Coverage*
Florian Klein (with Hato Schmeiser)
Discussant: Marc-André Hillebrandt

Session 3 (Regulation 1)
Do Solvency II reports appropriately inform about European stock insurers' market risk exposures?
Nicolaus Grochola
(with Sebastian Schlütter)
Discussant: Felix Scheidl

Panel on Writing and Publishing in Academia
with Prof. Dr. Sebastian Ebert

Session 4 (Risk Transfer and Behavioral Insurance)
Risk Transfer and Moral Hazard: An Examination on the Market for Insurance-Linked Securities
Tobias Götze (with Marc Gürtler)
Discussant: Florian Klein

Seasonality in Catastrophe Bonds
Markus Herrmann (with Martin Hibbeln)
Discussant: Tobias Götze

Impact of Changes in Relative Wealth on Risk-Taking Behavior
Marc-André Hillebrandt
Discussant: Markus Herrmann

30 November 2018

Session 5 (Information)
Competitive Equilibrium in the Access Economy: The Role of Information Asymmetries
Markus Haas (with Alexander Braun)
Discussant: Réda Aboutajdine

Should I Stalk or Should I Go? An Auditing Exploration/ Exploitation Dilemma
Réda Aboutajdine (with Pierre Picard)
Discussant: Lu Li

Session 6 (Insurance Pricing)
Impact of Period premium payments on participating life insurance products
Katharina Stein (with Sascha Offermann and Antje Mahayni)
Discussant: Jonas Eckert

Optimal Insurance Demand – Low Probability, High Consequence versus High Probability, Low Consequence
Cathleen Sende (with Nicole Branger and Antje Mahayni)
Discussant: Markus Haas

Session 7 (Technological Advancements and Digitalization)
Peeking into the Black Box: Technological Transparency, Regret and Self-Protection
Lu Li
Discussant: Kwangmin Jung

Latent fatalism on cyber risk: Interdependency, ambiguity-aversion and loss-aversion*
Kwangmin Jung (with Martin Eling)
Discussant: Bojan Srbinoski

Session 8 (Corporate Governance)
Corporate Governance und Wertschöpfung bei Versicherungs-unternehmen – Eine qualitativ empirische Analyse
Felix Scheidl (with Thomas Hartung)
Discussant: Nicolaus Grochola

Goethe University, Library

Education

Studies
Lectures
Seminars

Curriculum
Insurance Economics and Regulation

Winter Term

Bachelor Program
Fundamentals: Basic Concepts, Methods and Models in the Field of Finance and Insurance

Lecture
Corporate Finance
Finanzen III
Prof. Dr. Helmut Gründl

Lecture
Insurance Economics
Versicherungsökonomie
Prof. Dr. Helmut Gründl

Seminar
Risk Management in Insurance Companies
Risikomanagement in Versicherungsunternehmen
Thomas C. Wilson, Ph.D.

Master Program
Specialization in the Field of Insurance and Regulation

Seminar
Insurance Technology and Its Limits
Versicherungstechnologie und ihre Grenzen
Prof. Dr. Hartmut Nickel-Waninger

Seminar
Selected Topics in Insurance Regulation
Prof. Karel Van Hulle

Summer Term

Bachelor Program
Fundamentals: Basic Concepts, Methods and Models in the Field of Finance and Insurance

Lecture
Insurance Products and Their Distribution
Versicherungsprodukte und deren Absatz
Prof. Dr. Hartmut Nickel-Waninger

Seminar
European Insurance Regulation
Europäische Versicherungsregulierung
Prof. Karel Van Hulle

Master Program
Specialization in the Field of Insurance and Regulation

Lecture
Asset and Liability Management in Insurance Companies
Prof. Dr. Helmut Gründl

Lecture
The Micro- and Macroeconomic Role of Insurance Companies
Prof. Dr. Helmut Gründl

Lecture
Insurance and Finance
Dr. Christian Thimann

Curriculum
Insurance Law

Institut für Versicherungsrecht (IVersR)
Chair of Insurance Law,
Prof. Dr. Manfred Wandt

Winter Term

Seminar
Aktuelle Herausforderungen der Versicherungswirtschaft im Spannungsfeld zwischen Versicherungsaufsichtsrecht und anderen Rechtsgebieten
Current Challenges of the Insurance Industry in the Interplay Between Insurance Supervisory Law and other Areas of Law
Jun.Prof. Dr. Jens Gal

Colloquium
European Insurance Contract Law
Prof. Dr. Jens Gal

Colloquium
Deutsches und Europäisches Versicherungsaufsichtsrecht
German and European Insurance Supervision Law
Dr. David Sehrbrock

Colloquium
Deutsches und Internationales Transportrecht
German and International Transport Law
Prof. Dr. Reiner Freise

Summer Term

Seminar
Gruppenversicherung und Querverkäufe unter Berücksichtigung der Principles of European Insurance Contract Law (PEICL)
Group Insurance and Cross Sales Under Consideration of the Principles of European Insurance Contract Law (PEICL)
Prof. Dr. Manfred Wandt

Lecture
Zivilrecht III (Deliktsrecht)
Civil Law
Prof. Dr. Jens Gal

Seminar
Versicherungsaufsichtsrecht
Insurance Supervision Law
Jun.Prof. Dr. Jens Gal

Colloquium
Internationales Einheitliches Kaufrecht
Prof. Dr. Hanns-Christian Salger

Colloquium
Deutsches und Europäisches Versicherungsvertragsrecht: Einführung in das Privatversicherungsrecht
German and European Insurance Contract Law:
Introduction to Private Insurance Law
Prof. Dr. Peter Reusch

Lecture
Corporate Finance
Finanzen III
Prof. Dr. Helmut Gründl

The bachelor degree lecture "Finance III" covers corporate finance, insurance and risk management topics. The main goal is to equip students with the fundamental concepts of valuation, capital structure and risk management of financial institutions. They learn about the reasons why risk financing matters and how to use derivatives for hedging risks and what the difference is. ◆

Lecture
Insurance Economics
Versicherungsökonomie
Prof. Dr. Helmut Gründl

The objective of the lecture on "Risk Management and Insurance" is to understand the relevance and principles of risk management in the context of insurance. To this end, the life and non-life insurance segments are analyzed, including current developments unfolding from time to time. This approach is based inter alia on the expected utility theory [Bernoulli principle], the (cumulative) prospect theory as well as theoretical risk approaches. In the course of the exercises, an introduction is given to statistical programming, and the content of the lecture is applied to various problem cases to be solved. The students are enabled to understand, reflect on and apply modern theory. ◆

Lecture
Insurance Products and Their Distribution
Versicherungsprodukte und deren Absatz
Prof. Dr. Hartmut Nickel-Waninger

The objective of the lecture is to understand the fundamental concept of insurance as well as the delineation between individual and social insurance. Moreover, selected insurance products are to be introduced from the non-life (motor vehicle insurance, building insurance), life insurance and health insurance segments. The calculations used for the various insurance products are dealt with in detail. The sales policy of an insurance company represents a further focal point of the module. In the process, the sales strategies and sales policy instruments of insurance companies are presented, followed by a discussion of their respective benefits and drawbacks. Students are enabled to understand the fundamental concept of insurance along with the clear delineation between individual and social insurance systems. They acquire an overview of the large variety of insurance products available and receive an in-depth insight into selected insurance products from the non-life, life and health insurance segments. They develop a firm command of quantitative methods of insurance calculation and receive an insight into distribution policy of the insurance industry and are to understand the benefits and draw-backs of various distribution channels. ◆

Insurance Economics
Bachelor Program

Seminar
Risk Management in Insurance Companies
Risikomanagement in Versicherungsunternehmen
Thomas C. Wilson, Ph.D.

The seminar aims at introducing students to the basic concepts of risk management in insurance companies. During the seminar, the students will gain insight on how companies develop and assess their risks, and the role of regulation. The range of topics covers all areas of traditional and non-traditional insurance activities and related regulation. Learn how to interpret, classify and critically discuss results of scientific research and more. Generally improve presentation and communication skills. ◆

Seminar
European Insurance Regulation
Europäische Versicherungsregulierung
Prof. Karel Van Hulle

The seminar aims at providing students with basic knowledge about insurance regulation and supervision in the EU. During the seminar, students will first receive a general introduction about insurance regulation and supervision in the EU. They will then have to research a topic relating to insurance regulation and/or supervision, to present their research and to discuss the outcome with fellow students. Students will be able to select the relevant topic from a list provided in advance. The topics will relate to areas such as Solvency II, market conduct, insurance distribution, supervisory co-operation. ◆

Insurance Economics
Master Program

Lecture
Asset and Liability Management in Insurance Companies
Prof. Dr. Helmut Gründl

The goals of the ALMI lecture are to under-
stand asset and liability management strategies used in insurance companies, and to understand the new Solvency II insurance regulatory rules. The contents of the ALMI lecture are separated into three categories: Liability Management, Asset Management, and Asset Liability Management and Solvency II. The first part – Liability Management – focuses on topics such as risk pooling, insurance pricing, estimation of reserves, risk sharing, reinsurance, alternative risk transfer, and capital management. Students are supposed to understand the sources of risks in insurance companies, and to learn techniques to measure and limit these risks. For the Asset Management part, the lecture applies classic pricing methods as well as performance measurements to the insurance context. Specifically, in this part students are expected to practice knowledge such as Markowitz Diversification, CAPM, Performance Measurements, and Dynamic Financial Analysis. In addition, the second part offers insights into the regulatory framework for insurers' investment policies. The last part – Asset Liability Management – integrates both asset management and liability management strategies to arrive at an integrated risk management of insurance companies. It aims to help students understand the motivation and importance of conducting ALM, and to further equip students with methodologies such as simultaneous and classic modeling based on the Markowitz approach. Furthermore, policyholders' reactions on the default risks of insurers are also incorporated as one of the topics. We alsodiscuss the envisaged Solvency II regulatory regime and its implications for ALM. ◆

Insurance Economics
Master Program

Lecture
The Micro- and Macroeconomic Role of Insurance Companies
Prof. Dr. Helmut Gründl

Insurance companies play a vital role: for individuals that seek to decrease uncertainty of wealth, for businesses that want to manage business risk, for the real economy by providing funds and pooling risks, and for the financial market by being important counterparties in numerous financial transactions. In this course we will shed light on these different roles of insurance companies. We will compare the implications for different stakeholders and (insurance) markets in general. In the first part of the course, we will provide the basics for understanding the different roles of insurance companies, that include the microeconomics of insurance demand and information asymmetries in insurance markets, the specifics of life insurance and its regulation, the relation between economic growth and insurance penetration, the behavior of insurers as asset investors, and the relation between financial crises and insurance companies. In the second part of the course, participants will present research papers that examine specific details about these different roles of insurance companies. Based on their presentation, participants are required to hand in a written homework about the policy implications of the presented research. ◆

Lecture
Insurance and Finance
Dr. Christian Thimann

This course is relevant for students who have a keen and comprehensive interest in finance, financial stability and financial regulation and who are aware that focusing on the banking system alone covers only part of the relevant issues in the area. This course gives a concise and rigorous insight into the purpose, role and regulation of insurance. Key items include: (1) The essence of insurance and its delimitation from other financial activities; (2) The analytical foundation of insurance: risk and uncertainty; adverse selection and moral hazard; mutualisation, diversification and the law of large numbers. (3) Interaction of insurance with the economy and the financial system: the economic and financial role of insurance. The role of capital, liquidity and leverage. (4 Insurance products, services and markets: a brief overview. (5) The regulation of insurance at European and international level: key policy issues.◆

Seminar
Insurance Technology and Its Limits
Versicherungstechnologie und ihre Grenzen
Prof. Dr. Hartmut Nickel-Waninger

During this seminar, students establish how enterprises can identify and evaluate their risks so that they can develop concepts for bearing such risks on that basis. The central topic of the seminar varies each year and includes current developments unfolding e.g. in the fields of liability insurance and aviation risks or current topics in the fields of life insurance and health insurance. Apart from the discussion of current theoretical and practical problems posed, a central element of the seminar is the processing of complex insurance theory models by students. In addition, an external expert attends the courses each year and delivers a topic-related presentation on current practical developments of the subject selected. ◆

Seminar
Selected Topics in Insurance Regulation
Prof. Karel Van Hulle

The objective of the seminar is to build on the knowledge acquired in the bachelor seminar on European Insurance Regulation. Students are required to research a specific topic, to report about their research and to discuss the results of the research with their fellow students. As opposed to the bachelor seminar, the topics in the master seminar will have to be researched on a comparative basis. The topics will be provided in advance and will relate to issues such as the ORSA, key governance functions, assessment of fit and proper requirement for key function holders, internal model approval, market conduct issues, insurance distribution, etc. ◆

Policy Platform

People Positions Presentations

Frankfurt am Main, Goethe University, Campus Westend

Sustainable Insurance: Embracing Global Challenges
Business Models. Protection Gaps. Systemic Risks.

6th Conference on Global Insurance Supervision
4 and 5 September 2019 Goethe University Frankfurt, Germany

Insurance companies in their function as risk managers, risk carriers and investors play a key role in addressing the global sustainability challenges. At the same time, the insurance sector itself is facing disruptive changes caused by climate change, a continuous low-interest rate environment and digitalization. How can business models of (re)insurers become more sustainable and resilient? What can be done to avoid a widening of the protection gap? Moreover, how can a holistic framework contribute to mitigate systemic risks in the insurance sector?

At the 6th Conference on Global Insurance Supervision (GIS), which was held on 4 and 5 September 2019 at the Goethe University Frankfurt, 170 representatives from the insurance sector, academia, supervisory and regulatory authorities from 40 countries discussed the key topics of sustainability from a European and international supervision perspective.

The International Center for Insurance Regulation (ICIR), the European Insurance and Occupational Pensions Authority (EIOPA), the Research Center SAFE (Sustainable Architecture for Finance in Europe) and the World Bank Group organized the conference. ◆

Goethe University, Campus Westend,
Casino Building, Festsaal

Conference Programme
4 September 2019

Moderation: Karel Van Hulle,
Associate Professor KU Leuven and ICIR, Goethe University

Welcome & Introduction

Helmut Gründl, Managing Director, International Center for Insurance Regulation (ICIR),Goethe University
Serap Oguz Gönülal, Lead Financial Sector Specialist, The World Bank Group

Conversation
What is Sustainability?

Gabriel Bernardino, Chairman, EIOPA
Christian Thimann, CEO and Chairman, Management Board, Athora Insurance Holding

Moderator: Karel Van Hulle

After introductory remarks by **Helmut Gründl** (Managing Director of the international Center for Insurance Regulation, ICIR) and **Serap Oguz Gönülal** (Leader Financial Sector Specialist of The World Bank Group), **Gabriel Bernardino** (Chairman of EIOPA) and **Christian Thimann** (CEO and Chairman of Athora Insurance Holding) discussed what is sustainability and its importance for the insurance sector. Thimann acknowledged that a lot of progress in understanding how environmental risks affect both sides of insurers' balance sheets has been made. However, on risk analysis and risk monitoring further improvements are needed. He reminded that in order to achieve European Union's climate targets in line with the Paris agreement investments of additional EUR 180 billion per year are needed. He also called for a change towards a long-term oriented investment profile. Thimann considered the focus on short-time investment horizons by financial markets as one of the major obstacles in re-directing investments towards sustainable projects. Moreover, he suggested that the biggest climate killer was not coal but globalization. "To become a more sustainable economy, we need to produce more local and avoid transportation of large volumes of goods over long distances," he stated.

Bernardino agreed with Thimann's assessment and called on economic and political decision-makers to show more courage for sustainability. According to Bernardino Solvency II provides already all needed by insurers to become more sustainable. "The money is there, the regulatory framework is there, however, there are not enough projects for sustainable investments," he said. He invited insurers to incentivize corporates to adapt their business models towards sustainability. Moreover, Bernardino urged supervisors to be alert as regards greenwashing.

Furthermore, Bernardino stressed the stewardship role of the insurance sector. For example to increase the European market and citizens' resilience to climate change, (re)insurers should consider the impact of their underwriting practices on the environment. Consistently with sound actuarial practice, where risk mitigation and loss prevention can make a significant difference, the development of new insurance products, adjustments in the design and pricing of the products and the engagement with public authorities, should be part of the industry's stewardship activities.

Both panellists are optimistic that sustainability will become soon a major topic in the public debate. Especially the young generation is aware of the urgent need for a change. ◆






Conference Programme
4 September 2019

Moderation: Karel Van Hulle

Since several years, new, agile and innovative firms are posing a challenge to current/traditional business models in the insurance sector. Entry barriers seem to be different depending on where in the value chain the service is provided; new entrants not always require an insurance license. However, boundaries continue to be blurred and the fragmentation of the value chain steadily advances with reversed outsourcing only being one of the latest developments. How will sustainability of insurance business models be impacted in the long-run and with which consequences for the roles of insurance for society? Furthermore, on the one hand, supervisors need to keep an eye on risks arising from innovative technologies, such as Big Data, Artificial Intelligence and Machine Learning, identifying, assessing and monitoring them. On the other hand, supervisors themselves are striving to make use of innovative technologies for their own data analytics and supervision. In the end, the right balance needs to be kept not to stifle innovation. ◆

Panel I
Sustainable Business Models for Insurers: Fair Competition in a Disruptive Environment

- Disruption by global innovation: How to create a level playing field with nonregulated players and more flexible frameworks?
- To what extent can regulation enable innovation and which consequences have to be expected for the insurance sector?
- How can a responsible use of innovative technology be achieved by insurers and supervisors alike?

Panelists:
Andreas Grigull, Senior Business Development Manager Finance & Digital Transformation Expert, Microsoft
Godfrey K. Kiptum, Chief Executive Officer, Insurance Regulatory Authority, Kenya
Kathleen Köhn, Senior Officer, Insurance and Pension Fund Supervision Department, German Federal Financial Supervisory Authority and Chair of InsurTech Task Force, EIOPA
Monica Mächler, Member, Board of Directors, Zurich Insurance Group
Ricardo Ernesto Ochoa Rodríguez, President, CNSF (Mexico's Insurance and Surety Bond Regulator)

Moderator:
Monique Goyens, Director General, BEUC – The European Consumer Organisation

Panel I
Sustainable Business Models for Insurers: Fair Competition in a Disruptive Environment

New technology firms (InsurTechs) and incumbent technology giants such as Google enter the insurance market and challenge traditional business models in the insurance sector. To meet the new challenges supervisors do not only have to keep an eye on new market entrants but also strive to make use of innovative technologies for their own analytics. How can regulators and supervisors response to the changing environment to ensure a level playing field as well as the solvency of the insurance sector without stifling innovation?

Monique Goyens, Director General, BEUC – The European Consumer Organisation, who moderated the panel opened the discussion from the consumers' perspective highlighting possible negative effects due to the application of new analytical tools for profiling consumers.

TRANSPARENCY ON THE USE OF ALGORITHM IS IMPORTANT

Monica Mächler, Member of Board of Directors, Zurich Insurance Group took the industry perspective and emphasised that consumers are calling for more convenience and better service when dealing with insurance. Therefore, a more risk-based assessment was in the interest of the customers. She mentioned the example of Zurich, which recently succumbed to a self-committed code of conduct on data handling. Moreover, to build trust insurers should be transparent on the use of algorithms. Mächler recommended focusing on the validity of data input as well as on data output, as the verification of the algorithm model itself was rather difficult.

Andreas Grigull, Senior Business Development Manager Finance & Digital Transformation Expert, of Microsoft agreed with Mächler's assessment that transparency was critical for the use of algorithm and the implementation in Artificial Intelligence (AI) models. He stressed that insurers should be transparent and accountable. There is no need for a black box. Nevertheless, Grigull argued against a more regulatory approach to transparency. This would not bring any benefit to governance of the insurance sector. He stated that it would probably hinder the sector's innovation capability.

SELF-COMMITMENT IS NOT ENOUGH

Ricardo Ernesto Ochoa Rodriguez, President, CNSF (Mexico's Insurance and Surety Bond Regulator) questioned that self-commitment by companies was not sufficient to protect consumers because they could not enforce those commitments. He argued that policy holders should know which risk factors the insurers take into account.

Furthermore, Rodriguez pointed out that the pace of digital transformation varied among member states. Therefore, regulators should follow the principle of proportionality to find the right balance between innovation and solvency of the system.

This was also underlined by **Godfrey K. Kiptum, Chief Executive Officer, Kenyan Insurance Regulatory Authority**. He argued that even though data protection was important availability and affordability of insurance was a more pressing issue in Kenya.

SUPERVISORY AUTHORITIES TO PROVIDE MORE GUIDANCE

Kathleen Köhn, Senior Officer, Insurance and Pension Fund Supervision Department, German Federal Financial Supervisory Authority and Chair of EIOPA's InsurTech Task Force stressed that the regulatory framework Solvency II is efficiently equipped to address the challenges of Big Data and AI in insurance, regarding its principle-, risk-based and forwards-looking approach. She conceded that Solvency II left room for interpretation. Therefore, EIOPA was striving to create a clearer guidance on the assessment of algorithms and AI tools and takes a leading role in developing detailed guidelines on new technologies for the sector.

She stressed the need to look further into the topics digital responsibility and supervision of innovative algorithms, ensuring that insurers processes remain traceable, transparent and legal in order to maintain consumer confidence in the market.◆

Conference Programme
4 September 2019

Moderation: Karel Van Hulle

Insurers in their function to provide protection to citizens and consumers are confronted not only with an ever-changing risk landscape but also with changing consumer behavior and preferences. Insurance has an important function to help people and firms getting back into business after a disaster struck and major damages were caused. However, low insurance penetration, increasingly uninsurable high value exposures as well as underestimated or silent developments in risk profiles contribute to a widening protection gap. This not only refers to natural catastrophes but also to ageing populations. Climate change, scientific progress and increasing healthcare costs, to mention but a few, may exacerbate the protection gap. On the other hand, trends in sustainable finance and sustainability in general provide momentum for new products and innovative product development to cover the changing needs of emerging economies and the young generations around the globe. ◆

Impulse Statement
Protection Gaps: Natural Catastrophes

Swenja Surminski, Head of Adaptation Research, Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science (LSE)

Impulse Statement
Protection Gaps: Demographic Change and an Ageing Society

Yoshihiro Kawai, Chair, Insurance and Private Pensions Committee, OECD, and Professor at Tokyo and Kyoto University

Panel II
Closing the Protection Gaps: The Leading Role of Insurance

- What is the role of insurers with regards to the protection gap?
- How can the protection gap be turned into an opportunity for all stakeholders, be it at the political, economic or policyholder level?
- How can new trends and innovation help to meet changing needs and behavior of the young generation around the globe and close the gap?

Panelists:
Anderson Caputo Silva, Practice Manager; Finance, Competitiveness & Innovation - Long Term Finance, The World Bank Group
Arup Chatterjee, Principal Financial Sector Specialist, Asian Development Bank
Ekhosuehi Iyahen, Secretary General, Insurance Development Forum
Robin Lang, Senior Vice President and Chief Risk Officer, RenaissanceRe Syndicate Management Ltd.
Swenja Surminski, Head of Adaptation Research, Grantham Research Institute on Climate Change and the Environment, London School of Economics and Political Science (LSE)

Moderator:
Gabriel Bernardino, Chairman, EIOPA

Panel II
Closing the Protections Gaps: The Leading Role of Insurance

Panel II discussed possibilities of how political and economic stakeholders could work together to mitigate or even close protection gaps and how the insurance sector could contribute to this process. **Gabriel Bernardino, Chairman of EIOPA** who moderated the panel stressed in his introduction that the awareness of the negative consequences of protection gaps for the economic development was still missing in the society. Therefore, to foster the dialogue with the different stakeholders still many concerted efforts are needed.

CONCERTED APPROACH OF ALL STAKEHOLDERS NEEDED

Anderson Caputo Silva, Practice Manager, Finance, Competitiveness & Innovation – Long Term Finance of the World Bank Group pointed out that apart from natural disasters and health protection, the ageing population was posing a major challenge to governments and the financial sector. He insisted on a concerted approach from all relevant private- and public-sector stakeholders to meet the challenges of protection gaps. According to Silva, there is already a close cooperation of The World Bank, governments and scientists on the issue of protection gaps. However, so far the input of the insurance industry is missing, Silva stated. He invited the private sector to share information and to work on innovative solutions. Silva announced that in the near future The World Bank would provide access to one of its web-based databases as a first step towards a joint data collection for measuring and quantifying underinsurance in different markets.

NEW RISK MODELS FOR A CHANGING RISK LANDSCAPE

Robin Lang, Senior Vice President and Chief Risk Officer of RenaissanceRe Syndicate Management expressed confidence that insurers due to their experience in assessing, computing and trading risks could contribute to close protection gaps. According to him, new risk models are needed to meet the changing consumer demands as well as for a changing risk landscape. Due to the collection of more and better data, Lang pointed out that risk mapping and risk modelling will improve.

WORK ON THE CAUSE OF PROTECTION GAPS

Swenja Surminski, Head of Adaptation Research, Grantham Research Institute on Climate Change and the Environment at the London School of Economics, noted that some leaders in the insurance sector have started treating sustainability as a strategic issues, but that the majority of companies still struggle with integrating this topic into their business models. In particular she highlighted lack of engagement with customers, and encouraged the sector to use sustainability as an opportunity. She cautioned for exaggerated expectations on the accumulation of more granular risk data as better data alone would not necessarily lead to better decisions. The assumption that the insurance industry knows all about risks, is wrong, especially when it comes to future risks, she said, warning the sector of complacency when it comes to assessing climate change risks. Moreover, she reminded that the protection gap was only a symptom and stressed that the insurance industry neglected the reduction and prevention of loss. According to Surminski, research provided already a lot of evidence on the payoff of loss prevention and resilience. However, she argued this has not yet triggered a change in behaviour, as the gains from other investments are more visible. She called upon the regulatory authorities to incentivise the insurance industry to work on the causes of protection gaps, and urged the sector to use their investment, underwriting and advisory practices to help reduce risks.

PRODUCT INNVATION ACCOUNTING REGIONAL DIFFERENCES

Ekhosuehi Iyahen, Secretary General of the Insurance Development Forum underlined that understanding the risk was a prerequisite for closing the protection gap. However, according to Iyahen, developing emerging markets' risk awareness is often insufficient and the regulatory framework is immature. Moreover, for lower-income households and small- and medium-sized enterprises insurance is often either not available or affordable. Therefore, there is a need for different insurance products for developing markets, which have other ▸

needs and a different risk appetite compared to mature markets, Iyahen stated. She stated that collaboration between the private sector and the public sector thinking outside of the box, presents an opportunity to develop relevant solution and is a key pillar of IDF's efforts. She stated that there is a lot more that can be done jointly to develop markets through education, development of new solutions, standards and better insurance regulatory regimes.

According to **Arup Chatterjee, Principal Financial Sector Specialist of the Asian Development Bank** the lack of transparency and trust have hindered the development of the insurance markets in the developing countries. Added to this is the lack of awareness and failure of professional advice. He encouraged the insurance sector to engage in cross-sectoral coordination within the financial sector to define both synergies and trade-offs. A transition to a more integrated approach to decision making is critical and multi-stakeholder partnerships can facilitate cross-sectoral coordination and decision making can help in accelerating achievement of development outcomes by supporting effective policy planning, prioritization, implementation and outcomes. ◆

Conference Programme
4 September 2019

Moderation: Karel Van Hulle

Break-Out Sessions
Session 1: The Do's and Dont's of Infrastructure Investments

Moderator:
Yoshihiro Kawai, Chair, Insurance and Private Pensions Committee, OECD, and Professor at Tokyo and Kyoto University

Session 2: How to Identify, Monitor and Assess Emerging Risks and their Impact on Sustainability

Moderator:
Anna Maria D'Hulster, Independent Board Member

Session 3: Enabling Fair Competition in the Light of Innovation

Moderator:
Timothy Shakesby, Principal Expert on Financial Innovation & Leader of the Conduct of Business Oversight Team, EIOPA

Conference Programme
5 September 2019

Moderator: Manuela Zweimüller,
Senior Advisor on International Affairs, EIOPA

Systemic risk, if undiscovered or underestimated, can provide for major turbulences on financial markets and jeopardise financial stability. Similar to emerging risks also systemic risks need to be identified, assessed, mitigated and monitored. Not only to avoid similar crisis situations as in the past but also to be prepared for future challenges. Therefore, a holistic framework needs to encompass not only a market-wide perspective but also an economic activity view with regards to individual firms. Macro-elements, together with micro-prudential ones are providing together for a robust framework, which then can be complemented by recovery and resolution schemes as well as insurance guarantee schemes as a last resort in a gone concern environment. Not only financial stability is in the focus of such macro regulatory activities but also individual consumer protection objectives, which sometimes may be in tension to each other. Overall, sustainable insurance businesses and markets support a sustainable economy and thus financial stability overall. ◆

Impulse Statement
Systemic Risks: A Challenge to a Sustainable Insurance Business Model?

Francesco Mazzaferro, Head of the Secretariat, European Systemic Risk Board (ESRB)

Panel III
Micro Meets Macro: A Holistic Framework for Systemic Risks in the Insurance Sector

- How can the holistic framework be best implemented in practice? What is needed forits smooth functioning and implementation assessment from a global perspective?
- How can the holistic framework contribute to a sustainable and robust market and financial stability?
- Which differences will we see in the monitoring of the policy measures and their assessment and how can risks arising from such differences be mitigate

Panelists:
Jonathan Dixon, Secretary General, International Association of Insurance Supervisors
Helmut Gründl, Chair of Insurance and Regulation, Goethe University
Francesco Mazzaferro, Head of the Secretariat, European Systemic Risk Board (ESRB)
Cristina Mihai, Head of Prudential Regulation and International Affairs, Insurance Europe
Hiroshi Ota, Deputy Commissioner for International Affairs, Japanese Financial Services Agency

Moderator:
Steven E. Seitz, Director, Federal Insurance Office, U.S. Department of the Teasury

Panel III
Micro Meets Macro: A Holistic Framework for Systemic Risks in the Insurance Sector

In his impulse statement **Francesco Mazzaferro, Head of the Secretariat of the European Systemic Risk Board**, outlined the major risks to European Union financial stability and explained how they may affect insurers. He pointed out that insurers under certain circumstances - although they are specific entities with particular risk-bearing capacities - could be affected by systemic risks or even contribute to amplify systemic risks. According to Mazzaferro, to make business models of insurers more resilient, a comprehensive regulatory framework is needed, which supports and complements the existing micro-prudential policy tools such as Solvency II via a macro-prudential policy. Furthermore, he advocated a recovery and resolution scheme to ensure orderly failures of distressed insurers and to provide for loss compensation for policy holders in the event of insurance insolvency.

MICRO MEET MACRO: A HOLISTIC FRAMEWORK FOR SYSTEMIC RISKS IN THE INSURANCE SECTOR

The subsequent panel moderated **Steven E. Seitz, Director; Federal Insurance Office of the U.S. Department of Treasury** discussed how a holistic framework for the insurance sector could contribute to financial stability. The panellists from insurance, academia and regulators agreed on Mazzaferro's assessment that a holistic framework is needed to address potential systemic risks in the insurance sector. However, different views were expressed on the questions what the holistic framework should encompass and how it could be best implemented in practice.

ALIGNED MICRO- AND MACRO-PRUDENTIAL POLICIES

Jonathan Dixon, Secretary General of the International Association of Insurance Supervisors (IAIS) outlined that the IAIS has developed a holistic framework for assessing and mitigating systemic risk in insurance, which will be put to a vote at the forthcoming IAIS annual general meeting in Abu Dhabi in November this year. The IAIS' holistic framework takes into account that potential systemic risk can arise from both entity-based risks as well as from activity-based risks in insurance. Therefore, the framework aligns micro-prudential and macro-prudential policies. We are moving to an approach that combines system-wide risks arising from particular activities and exposures and potential systemic risks arising from the distress or disorderly failure of particular insurers, Dixon said. At the same time, according to him additional measures are needed, such as stress testing on company level and supervisory powers for intervention. Supervisors would need a broad toolbox of supervisory powers of intervention in response to different causes of systemic risks under different circumstances. Moreover, Dixon underlined that an integrated framework was needed, including the consistent and comprehensive implementation of those supervisory measures across global jurisdictions.

GLOBAL LEVEL PLAYING FIELD AND FLEXIBILITY IN IMPLEMENTATION

Cristina Mihai, Head of Prudential Regulation and International Affairs of Insurance Europe took the industry perspective, arguing that the tools provided by Solvency II were already sufficient to tackle potential systemic risks at the micro-prudential level. In her view, systemic risk in insurance can only originate from a very limited number of activities undertaken on a large scale in adverse conditions. Therefore, a greater focus on potential systemic activities of the insurance sector as a whole was warranted. We agreed that insurance is not necessarily systemic. However, some activities that may ▸

pose vulnerabilities. Let us identify them, measure them and find out, if they are relevant, she pleaded. Mihai called for a global level playing field, which ensures that all participating jurisdictions achieve comparable outcomes once the holistic framework has been approved and is being implemented. She insisted on the strict and consistent application of the principle of proportionality allowing all insurers to apply a measure with different expectations of granularity.

Hiroshi Ota, Deputy Commissioner for International Affairs at the Japanese Financial Services Agency also emphasised the need for flexibility in implementing the holistic framework. According to him, the supervisory measures to address systemic risks should be adjustable to take particularities of the insurance sector and the supervisory framework in the different jurisdictions into account. Otherwise, we will end up imposing unnecessary regulations for some jurisdictions, Ota stressed. Potential vulnerabilities of insurers such as the risk of illiquidity could differ from region to region depending on the composition of investment assets, he said. In Japan, a turmoil of international markets would directly affect Japanese insurers through the foreign currency markets, as the share of hedged foreign bonds in Japanese investment trust portfolios is relatively high.

DATA POOLING FOR BETTER RISK MODELS

Helmut Gründl, Chair of Insurance and Regulation at the Goethe University Frankfurt reminded that measuring risk is a prerequisite for managing risk and underlined the importance of research on systemic risk. He conceded that most research on systemic risk was based on regression analysis and produced inconclusive results. We do not have yet sufficient data to cover properly systemic risks in research, Gründl stated. He recommended the application of calibrated research models instead. Gründl presented the results of a research project, which estimates surrender rates of German insurance policy holders in the event of a sudden steep rise in interest rates. Our results show that a mass surrender is possible, Gründl said. However, according to the results the asset sale would take place over a couple of years. Therefore, a fire sale in insurance contracts due to economic shocks is rather unlikely, Gründl argued.

Mazzaferro pointed out that there had already been runs on insurances and insisted on stress tests for insurance companies. He urged for a continuous dialogue between the industry and the supervisors to share information. Micro and Macro need to come closer, he said. ◆


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5 September 2019

Moderator: Manuela Zweimüller,
Senior Advisor on International Affairs, EIOPA

Keynote Address
Outlook for Global Insurance Markets – Towards Sustainability

Greg Medcraft, Director, Directorate for Financial and Enterprise Affairs, OECD

Closing Remarks

Fausto Parente, Executive Director, EIOPA

In his keynote address, **Greg Medcraft, Director, Directorate for Financial and Enterprise Affairs, OECD** outlined the various risks arising from climate change and digital transformation highlighting the economic and social role of insurance in mitigating these risks.

He further illustrated how the insurance industry could meet expectations of policyholders while maintaining long-term value.

Medcraft expressed confidence that technological developments and a global regulatory environment will promote the industry's adaptation towards the new complex risk environment. According to him, the utilisation of big data and Artificial Intelligence (AI) will allow underwriters to offer innovative products and lower costs.

Moreover, he called for a greater use of the international reinsurance markets as it could absorb losses caused by natural catastrophes more easily compared to the domestic financial system. However, for accessing risk capital from international markets an appropriate regulatory framework is the precondition, Medcraft stated.

He continued by stressing the importance of policy in addressing the underlying risks of new technologies and called for cooperation and collaboration among governments to make sure insurance markets are fit for purpose.

Medcraft presented examples of the OECD's contribution to support governments, the insurance industry and regulators in building better policies for addressing the challenges of climate change and new technologies. In order to keep pace with the fast-moving development in the insurance market, OECD would expand its research on possible coverage for cyber risks, Medcraft explained. He concluded by emphasizing the relevance of the international dialogue in achieving a sustainable global insurance market.

Insurance and Regulation in the Digital Age

Digitalization is dramatically changing the economy. New digital technologies promise to transform the insurance sector as well and to extend the role of insurers from risk protectors to risk managers and even to risk preventers. However, this evolution in the insurance sector will possibly not only generate economic benefits but may have also socially unwanted effects.

At the 16th Talk of Insurance and Regulation, hosted by the International Center for Insurance Regulation, Peter Skjødt and Irina Gemmo, discussed the benefits and the challenges of digitalization in the insurance sector. **Peter Skjødt is Director of Financial Stability and Regulation at The Geneva Association**, a Suisse think tank of the insurance industry. **Irina Gemmo was a Research Assistant at the Chair of Insurance and Regulation at Goethe University Frankfurt.**

“Digitalization will affect every part of the value chain of insurers from the development of new products to claims handling,” Skjødt predicted. By using Big Data instruments insurance products would become more personalized because the availability of granular data makes risk assessment more accurate. This would lead to a more effective distribution of insurance products and lower selling costs. Moreover, claims handling would be improved and fraud would be easier detected, Skjødt stated.

However, those improvements will come at a cost – especially for customers: “Due to the increased scope for personalized insurance people with prior health problems and high-risk individuals may face prohibitively high insurance costs or may be denied cover. Moreover, as distribution of insurance policies via internet becomes more common, financially illiterate customers may possibly become overinsured. Skjødt also raised concerns about data protection and the possible misuse of personal data. For the insurers, he expects a flipside as well: ▸

As customers gain a better understanding of their own health status, the risk of anti-selection arises.

NEW COMPETITORS PUSH INTO THE MARKET

With the rise of new technology, the competitive landscape for insurers is changing. New technology start-ups, so-called InsurTechs, enter the market. Also, incumbent technology giants such as Google, Amazon and Alibaba are eyeing opportunities in der insurance market. Yet, the relationship between big technology companies and insurers have been more complementary than competitive and mostly generated mutual benefits. "However, some think that this might quickly change if those companies extend their market power towards the insurance market," Skjødt stated and raised the question how such technology firms should be treated by regulators. "Regulators need to assess the new business models and to examine whether they are adequately covered by the current regulatory framework and whether a level playing field is secured," Skjødt claimed. Despite these challenges, Skjødt is optimistic that the benefits for the customers will outweigh the detriments of digitalization. For the insurance companies it is essential to pool similar risks and to extend the customer protection which regulation aims to bring about, to new entrants, he concluded.

THE EFFECTS OF SCREENING AND MONITORING

In the subsequent speech, Irina Gemmo outlined the results of a joint research work with Mark J. Browne and Helmut Gründl, which examines the effects of screening when insurance policyholders value their privacy and therefore do not want to share personal information with the insurer. In the age of digitalization telemonitoring devices, such as wearables or telematic systems for car drivers, can serve to screen consumers' health status or driving characteristics. However, not all policyholders may feel comfortable sharing information with insurers and thus, rather abandon the option of a premium reduction or accept a deductible. Other low risk consumers with less or no privacy concerns may possibly opt for a cheaper contract without a deductible, which requires the provision of comprehensive personal data.

Gemmo's theoretical analysis shows that because of these preferences utility shifts in favor of individuals, who choose to share their private information with their insurers. Therefore, the utility of all low-risk insurance policy holders could be improved, if their concerns of in-formation disclosure towards their insurers was sufficiently low.

In a cross-subsidized market individuals with privacy concerns will have to pay higher deductibles in order to subsidize high-risk policy holders. Gemmo argued that in a market, which offers screening contracts, cross-subsidization could decrease or could even be eliminated depending on the number of policyholders, which share their personalized data with their insurance company.

According to Gemmo privacy concerns of policyholders could be remedied by a stronger regulation and enhanced data security. She also suggested a redistribution scheme "although it is unclear what kind of redistribution scheme is desirable," she conceded.

Another recent research work of Gemmo takes the possibility of self-protection and self-insurance into account. Whereas measures of self-protection decrease the probability of loss, self-insurance reduces the size of a potential loss. Therefore, self-insurance can substitute market insurance. Self-protection is considered to be a complement.

According to the results of Gemmo's analysis the availability of monitoring technology does not necessarily incentivize policyholders to behave differently with respect to self-protection and self-insurance efforts if they can choose the level of information disclosure to their insurer. The situation looks different if a certain level of information disclosure is mandatory to receive insurance coverage. In this setting, a higher level of information sharing can enhance efforts of self-protection. For measures with self-protection and self-insurance effect, the impact of monitoring on policyholders' behavior depends on the efficacy of those measures: For very high effort efficacy, high levels of mandatory information disclosure could incentivize individuals to opt for market insurance instead of self-protection and self-insurance. ◆

Irina Gemmo, Helmut Gründl

“Fairness” in Insurance in the Digital Age

↗ Prof. Dr. Helmut Gründl
(Goethe University, ICIR)

↗ Dr. Irina Gemmo
(ETH Zurich, Goethe University/ICIR Alumna)

SUMMARY
New digital technologies promise to transform the insurance sector and to extend the role of insurers from risk financiers to risk managers and even to risk preventers. This evolution in the insurance sector will possibly generate benefits for insurers as well as for policyholders. However, at the same time it may have socially unwanted effects. By using new digital technologies, which provide insurers with more granular and personalized data about their clients, insurance contracts become more individualized. Due to improved data protection and transparency in the use of their clients' personal data, more and more clients may opt for a screening contract which subsequently may lead to cross-subsidization in insurance being abandoned. However, clients who are, for different reasons, not willing to reveal their characteristics to insurance companies may become the losers of increased digitalization: contracts of people with privacy concerns may become very expensive, which ultimately can lead to welfare losses.

Policymakers and regulators need to discuss whether a deliberate cross-subsidization for essential private insurance policies such as private long-term care or occupational disability insurance is desirable to mitigate negative effects for individuals with privacy concerns. Such deliberate cross-subsidization would also make insurance affordable for high-risk individuals who would otherwise suffer a protection gap when their true risk becomes transparent.

DIGITALIZATION IN THE INSURANCE INDUSTRY

Big data and new digital technologies are transforming the insurance industry in different dimensions. The workflows for contract processing and claims handling are becoming more efficient, making cost efficiency on the administrative side a major competitive factor. In order to gain competitive advantages, new digital technologies are also used to acquire, store and manage more granular data about consumers. The aim is to price insurance policies more accurately according to the actually prevailing risk, and to influence policyholders' risk behavior, e.g. through telematic systems in car insurance. Screening consumers' characteristics by using new digital technologies such as medical wearables can mitigate problems arising from information asymmetries leading to adverse selection and market failure in insurance markets.

ABANDONING CROSS-SUBSIDIZATION IN DIGITALIZED INSURANCE MARKETS AND PRIVACY CONCERNS

If private information can predict consumers' risk types sufficiently well, high-risk consumers obviously do not have an incentive to share their private information with insurers. Revealing their risk type would lead to a higher premium, lower coverage, or even rejection of insurance. Therefore, they avoid a screening contract. Conversely, for low-risk consumers in the same pool, a screening contract could lead to a lower premium or higher coverage.

Nevertheless, low-risk consumers may not feel comfortable about sharing information with insurers because their private data might not be adequately protected against hacker attacks or might be voluntarily shared by the insurer with other sections of the corporate group or even with other companies. Thus, instead of sharing private information with their insurer, they rather abandon the option of a premium reduction or accept a deductible. As a consequence, in a cross-subsidized market, individuals with privacy concerns will have to pay higher insurance premiums or deductibles.

Our theoretical analysis[1] shows that utility shifts towards those individuals who choose to share their private information with their insurers. Therefore, the utility of all low-risk insurance clients could be improved if their concerns about information disclosure to their insurers were sufficiently low. In a digitalized insurance market in which data protection is reliable and the use of private data by insurers is sufficiently transparent, consumers may decide to give up their concerns on data security and choose a screening contract. Within this framework, low-risk policyholders are better off because they obtain risk-adequate and therefore cheaper insurance contracts. In contrast, high-risk policyholders are worse off. Since there is no cross-subsidization by low-risk insurers anymore, they are priced risk-adequately and therefore obtain insurance contracts that are more expensive.
An additional issue – that is beyond the scope of our theoretical analysis – lies in the fact that for high-risk con- ▸

1 Irina Gemmo, Mark J. Browne, Helmut Gründl, Privacy Concerns in Insurance Markets: Implications for Market Equilibria and Social Welfare, ICIR Working Paper Series No. 25/2017, Goethe University Frankfurt.

sumers insurance might even become unaffordable. This might be societally desired if consumers' riskiness is mostly determined by their behavior rather than by their characteristics, as for instance in car insurance, where information sharing might induce less risky behavior. In long-term care or occupational disability insurance, however, high-risk individuals might lose their insurance protection although they cannot influence their health status. Such situations lead to injustice in society, and there should be a consensus to avoid such a protection gap. This raises the question of whether risk-adequate pricing of insurance contracts is socially preferable to a cross-subsidized insurance market.

PRIVACY CONCERNS IN INSURANCE: TWO SCENARIOS

We see two scenarios of how digitalization in insurance markets, privacy concerns, and data protection might affect cross-subsidization in private insurance (as opposed to social insurance, where cross-subsidization is mandatory by social insurance schemes). The two scenarios are based on the assumption that digital technologies will cause a transformation of the insurance sector that cannot be avoided by market players. Insurance companies will certainly use technical devices to collect granular data about their clients and use big data technologies to develop more appropriate risk scenarios and individualized risk profiles of their clients.

1. The first scenario suggests that policyholders who value their privacy continue to cross-subsidize high risks because they do not want to share their information with their insurer, even though data security is taken for granted. In this scenario, a few low-risk clients whose privacy concerns could not be educated away serve as risk bearers for high-risk consumers. In this scenario, low-risk clients with privacy concerns suffer utility losses from digitalization. An improved and well communicated data protection system could change their mind towards allowing their characteristics and behavior to be screened and would thus reduce cross-subsidization towards high-risk individuals. Insurance regulation that improves data protection and subsequent communication would therefore positively affect low-risk individuals with substantial privacy concerns.

2. In the second scenario, insurance clients do not value their privacy or are convinced that their privacy is sufficiently protected. These insurance clients are priced according to their personal risk. Since all low-risk individuals opt for a screening contract, cross-subsidization is abandoned. High-risk clients pay higher premiums and consumers face the risk of anti-selection by insurers due to prohibitively high risk premiums for private insurance, such as private long-term care insurance policies. For this scenario, we need a political and societal discussion on insurability and affordability of insurance for those high-risk individuals who should be covered from a societal point of view. This applies, among other things, to long-term care risks (for instance, the risk of Alzheimer's disease) that might be discovered even decades before they eventuate, going along with extremely high and often unaffordable risk-adequate insurance premiums. The political alternatives could include prohibiting price discrimination. The problem is that there might be a supply of screening contracts from other (foreign) markets, leading to adverse selection and high prices on the regulated market. Another alternative could be to subsidize certain high-risk insurance contracts by taxpayers' money. This could help avoiding adverse selection but entails a high degree of bureaucracy and a redistribution of wealth via the tax system.

DISCUSSION ON "FAIRNESS" NEEDED

As digitalization in the insurance industry moves forward and fully individual risk-based insurance becomes available, the issue of "fairness" arises. High-risk individuals may face (prohibitively) high insurance costs or will even be denied cover, while low-risk individuals may not be willing to further subsidize high-risk individuals by paying higher premiums. Policymakers, regulators, insurers and policyholders need to reflect and discuss the ethics of "fairness" in insurance in the digital age. The outcome of this discussion could be the foundation of an adapted insurance system that will continue to ensure social cohesion while insurers and clients benefit from the achievements of digital technologies. ◆

Insurance Market in the Western Balkan Countries: Challenges and Perspectives

Over the past 15 years the Western Balkan Countries (WBC) have undergone a major economic transformation. They have adapted to market economy conditions and have opened up to global trade by a rapid transformation process. Banking, insurance and pension systems have been built up literally from the scratch in some cases.

At the 15th Talk of Insurance and Regulation organized by the International Center for Insurance Regulation (ICIR) Klime Poposki gave an overview of the economic developments of the WBC and outlined the prospects and challenges of the insurance market. **Klime Poposki is President of the Council of Experts, the management body of the Insurance Supervision Agency of the Republic of Macedonia.**

Poposki emphasized the importance of the European integration process for the reforms in the WBC and pointed out the progress which has been achieved so far. The WBC include Albania and the countries of former Yugoslavia Serbia, Bosnia and Herzegovina, Macedonia, Montenegro and Kosovo. Aspirations to become part of the EU family had facilitated economic recovery and boosted institutional reforms, Poposki stated. Due to the Free Trade Agreement with the EU the economy of the WBC had become increasingly export-oriented. Also, regulations had been dismantled, as a result the importance of the private sector has increased. "The result of these efforts shows in robust economic growth, a significant rise in incomes and enhanced macroeconomic and financial stability." At the beginning of this year the EU Commission had offered the prospect of EU accession to Serbia and Montenegro by the year 2025 under the condition that respective progress in reforms was achieved. Further WBC are expected to follow soon. The prospect of the forthcoming EU accession was perceived by those countries as an important positive sign, Poposki stated.

Yet, until then there is a long way to go: Compared to the EU the financial system in the West-Balkan region is underdeveloped. This holds in particular for the insurance sector. The region still struggles with the legacy of the Balkan Wars in the 1990s. Bilateral sentiments among the former combatants hamper the economic development. Though living standards have improved within the WBC it may take many decades to reach full convergence with EU living standards. Especially social risks still form a big impediment for a fast-track EU accession. Despite some improvements in the labor markets long-term unemployment and unemployment of young people are still major challenges. Also, due to a high concentration of low wage earners, wage inequality is rather high.

Klime Poposki hopes for a fast EU accession and calls for common efforts

After illustrating the economic developments Poposki gave an overview of the insurance market. According to Poposki the insurance market in the WBC is underdeveloped compared to a European level due to a low insurance penetration and density rate. However, the long-term prospect seems promising. During the past seven years the average growth rate of gross written premiums increased exceeding the average growth rate of gross written premiums in the EU.

The insurance market in the Western Balkan region is dominated by foreign insurers, covering more than half of the total premiums of local markets. In Montenegro and Macedonia for example foreign insurers cover more than 90 percent of the premiums. Insurance products are mainly distributed by traditional sales channels such as direct sale, agents, brokers and recently from banks.

The sale of life insurances in the WBC started only after the end of the communist era. Therefore, insurers of non-life insurances, of which motor insurances make the major part, dominate the market. However, life insurances show the most dynamic growth rate.

For Poposki the creation of the national supervisory authorities was one of the most important driving factors for growth acceleration in the insurance sector. Due to liberalization, deregulation and access to foreign capital the number of active insurance companies increased and created a more competitive market.

Poposki reminded the audience that the WBC needed a reliable regulatory and credible supervisory framework to build confidence in the insurance industry. Thus, regulatory and supervisory authorities needed proper staffing and funding, he claimed. “The creation of independent, effective and professional insurance supervisory authorities has to be our priority”, he stated. The EU requires a strong commitment of all aspirant states to implement gradually EU insurance directives into national legislation and to harmonize with the international insurance core principles. According to Poposki the introduction of Solvency II and the respective implementation of fundamental legal, institutional and corporate governance standards, are an important step towards EU accession.

To further strengthen the level of competence the implementation of best-practices was needed, Poposki explained. Therefore, the WBC seek for technical support from EU countries in the form of EU twining projects, especially for the implementation of Solvency II.

“The Western Balkan is region with high potential. We need a multi-stakeholder engagement to create an environment in which insurers can operate effectively and efficiently”, Poposki concluded. ◆

Policy Platform
Presentations

November 16, 2018
Frankfurt, Germany
8th Bundesbank-CFS-ECB Workshop on Macro and Finance
Rising Interest Rates, Lapse Risk, and the Stability of Life Insurers
Dr. Christian Kubitza (University of Bonn, ICIR Alumnus)

January 31, 2019
Paris, France
Seminar, BIPAR Academy
Is Solvency II Good For You?
Prof. Karel Van Hulle

February 5, 2019
Brussels, Belgium
Actuarial Association
The Actuarial Function Under Solvency II
Prof. Karel Van Hulle

February 15, 2019
Dublin, Ireland
Central Bank of Ireland
2019 Insurance Conference
Solvency II: Past, Present and Future
Prof. Karel Van Hulle

February 19, 2019
Madrid, Spain
Fundacion Ramon Areces
True and Fair View in Financial Reporting: Search for the Holy Grail
Prof. Karel Van Hulle

29 March 2019
Frankfurt, Germany
EIOPA Workshop "A behavioural economics perspective to the supervision of cross-selling practices"
Understanding Consumer Behavior in Insurance Markets
Irina Gemmo (ETH Zurich, ICIR Alumna)

April 11, 2019
Bratislava, Slovakia
Joint IAIS-OECD-NBS Conference
Regulatory approaches for long-term financial products in insurance and pensions
Prof. Karel Van Hulle

May 17, 2019
Bucharest, Romania
X-Primm
Moderation of the Consumer Protection Conference
Prof. Karel Van Hulle

16-17 May 2019
Bucharest, Romania
EIOPA Strategy Day |
Micro and Macro Interaction to Address Financial Stability Risks in the Insurance Sector
Prof. Dr. Helmut Gründl

May 20, 2019
Sinaia, Romania
IAR- International Insurance and Reinsurance Forum organised by X-Primm
Solvency II Origins and Future Developments
Prof. Karel Van Hulle

May 21, 2019
Sinaia, Romania
IAR- International Insurance and Reinsurance Forum organised by X-Primm
Solvency II Origins and Future Developments
Prof. Karel Van Hulle

May 21, 2019
Sinaia, Romania
X-Primm
FIAP International Insurance and Reinsurance Forum
Insurance Distribution in the EU: New Developments
Prof. Karel Van Hulle

May 23, 2019
Bucharest (Romania)
Insurance Europe
Moderaton of the 11th International Insurance Conference
Prof. Karel Van Hulle

June 6, 2019
Trier, Germany
Europäische Rechtsakademie (ERA) Annual Conference on EU Law in the Insurance Sector
Solvency Requirements for EU insurers: Latest Developments
Prof. Karel Van Hulle

July 5, 2019
Frankfurt, Germany
ESRB Insurance Expert Group Meeting
Micro and Macro Interaction to Address Financial Stability Risks in the Insurance Sector
Prof. Dr. Helmut Gründl

September 12, 2019
Vienna, Austria
Imh
Prof. Van Hulle chaired a seminar on the **Pan-European Pension Product (PEPP)**

September 26, 2019
Sarajevo, Bosnia and Herzegovina
Bosnia and Herzegovina Insurance Association
Days of Insurance
Perspectives of Insurance and New EU Regulatory Requirements: Why is Insurance Important?
Prof. Karel Van Hulle

October 3, 2019
Ljubljana, Slovenia
Slovenian Insurance Supervisory Agency
Solvency II: Supervisory Developments
Prof. Karel Van Hulle

October 4, 2019
Ljubljana, Slovenia
Slovenian Insurance Supervisory Agency
Solvency II: Regulatory Developments
Prof. Karel Van Hulle

October 18, 2019
Zurich, Switzerland
University of Zurich, LLM International Business Law programme,
Principles of EU Insurance Regulation
Prof. Karel Van Hulle

31. Oktober 2019
Frankfurt, Germany
1. DVFA Geldpolitik Forum „Die zukünftige Geldpolitik im Euroraum: Neubeginn oder weiter wie gehabt?"

Panelteilnahme „Finanzstabilität: Geldpolitik nicht aus der Verantwortung entlassen!"
Prof. Dr. Helmut Gründl

Goethe University, Campus Westend, Lecture Hall

ICIR Events 2018 2019

ICIR Events 2018/19

November 15, 2018
House of Finance, Frankfurt
15th Talk on Insurance and Regulation

Insurance Market and Regulatory Developments in the Western Balkan Countries – Challenges and Perspectives
Dr. Klime Poposki, President of the Council of Experts of the Insurance Supervision Agency, Republic of Macedonia

November 22, 2018
House of Finance, Frankfurt
Frankfurter Vortrag zum Versicherungswesen (Frankfurt Association for the Promotion of Insurance Studies at Goethe University (Förderkreis für die Versicherungslehre e.V.) in cooperation with the ICIR)

Diversification of Insurance Activities and Systemic Risk
Fabian Regele, M.Sc. Doctoral Student at the Chair of Insurance and Regulation and the ICIR, Goethe University Frankfurt

Coinsurance in a Changing Regulatory Environment: A Workshop Report
Jun.Prof. Dr. Jens Gal, European Insurance Law, Goethe University, ICIR

November 29 – 30, 2018
House of Finance, Frankfurt
2nd Frankfurt Insurance Research Workshop

A research workshop for doctoral students and post-doctoral researchers in the areas of insurance, risk management, or insurance regulation

April 3, 2019
House of Finance, Frankfurt
16th Talk on Insurance and Regulation | House of Finance

Insurance and Regulation in the Digital Age
Peter Skjoedt, Director, Regulation, Geneva Association
Irina Gemmo, ETH Zurich, Goethe University/ICIR Alumna

September 4 – 5 2019
Goethe University, Frankfurt
6th Conference on Global Insurance Supervision (GIS) in cooperation with EIOPA, The World Bank and the Research Center SAFE
Sustainable Insurance: Embracing Global Challenges Sustainable Models. Protection Gaps. Systemic Risks.

October 7, 2019
House of Finance, Frankfurt
17th Talk on Insurance and Regulation

The Pan-European Personal Pension Product (PEPP): Implications for Consumers and Providers
Gabriel Bernardino, Chairman, EIOPA
Dr. Klaus Wiener, Member of the Management Board, German Insurance Association (GDV)
Prof. Dr. Raimond Maurer, Chair of Investment, Portfolio Management and Pension Finance, Goethe University

Moderation: Prof. Dr. Sebastian Schlütter, Professor of Quantitative Methods in Economics, Mainz University of Applied Science (and ICIR Alumnus)

SAVE THE DATE

January 23, 2020
House of Finance, Frankfurt
18th Talk on Insurance and Regulation
Liquidity Risk in Insurance: Academic, Industry and Regulatory Perspectives

Riccardo Appolloni, Head of Group Risk Operating Framework, Generali
Dr. Matteo Sottocornola, Senior Expert on Financial Stability, EIOPA
Dr. Christian Kubitza, Researcher/ Lecturer, University of Bonn

Moderation:
Dr. Barbara Kaschützke, Researcher/Lecturer, Chair of Investment, Portfolio Management and Pension Finance, Goethe University

Goethe University Frankfurt, IG Farben Building, Luminale

ICIR International Center for Insurance Regulation

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

Imprint

Publisher
International Center for
Insurance Regulation
(ICIR)

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