

**Decision-making process informed by various, and possibly conflicting metrics**

**A presentation to the Chicago Actuarial Association  
by David Schraub**

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# Agenda

- Classification of existing metrics
  - Current debates
  - Examples of business decisions based on several metrics
    - XXX Excess Reserve Financing Transaction
    - Pandemic Reinsurance
    - CMBS in Strategic Asset Allocation
    - Customer Service
  - Metrics in decision-making process
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- SOA – Joint Risk Management Section

# Classification of existing metrics

## Existing metrics

	<b>Statutory / Tax</b>	<b>US GAAP</b>	<b>Internal Model</b>
<b>Risk metric</b>	RBC capital		Solvency Capital Requirement (SCR)
<b>Retrospective metric</b>	US Stat / Tax	US GAAP	
<b>Prospective metric</b>	PBR	IFRS Phase 2	Solvency II BS MCEV

- Additional company specific metrics (GAAP ROE on stat capital, Economic Value Added...) also exist

## Other classifications of metrics

- Risk neutral vs. real world
- Stochastic vs. deterministic
- Company specific vs. industry parameters
- Counter-cyclical vs. Pro-cyclical
- Correctly capture interest rate, equity, spread, mortality, survivorship risk factors
- Used internally or not

# Current debates

## Theoretically correct

- What is the true measure of risk?
- What is the real value of the company?
- What are economic capital and economic reserve?
- What makes sense for my business?
- How close a metric implementation is to its guiding principle?

## Technical Aspects

- What is the Market Value of Liability?
- What is the difference between Market Value and Fair Value?
- Is CTE better than VAR?



## Strategic Aspects




- Do I make a profit selling this product?
- Do I want to enter this line of business?
- What should I do if several metrics have conflicting message?

# Examples of business decisions based on several metrics





## XXX Excess Reserve Financing Transaction

- Exchange of Cash Flow between insurance company, special purpose vehicle (SPV) and bond investor
- Partial risk transfer
- Letter of Credit (LOC) and other frictional costs
- Operationally complex

# XXX Excess Reserve Financing Transaction – impact on various metrics

	Statutory / Tax	US GAAP	Internal Model
Pro	<ul style="list-style-type: none"> <li>• Reserve relief</li> <li>• Capital relief</li> </ul>		<ul style="list-style-type: none"> <li>• Risk reduction <math>q_x</math> balanced by risk increase OR lead to no significant impact on SCR</li> </ul>
Con	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> </ul>
Decision			




# XXX Excess Reserve Financing Transaction – business decision

	Statutory / Tax	US GAAP	Internal Model	Business
Pro	<ul style="list-style-type: none"> <li>• Reserve relief</li> <li>• Capital relief</li> </ul>		<ul style="list-style-type: none"> <li>• Risk reduction <math>q_x</math> balanced by risk increase OR lead to no significant impact on SCR</li> </ul>	<ul style="list-style-type: none"> <li>• Reserve and Capital relief on Stat accounting</li> <li>• Positive effect on Rating</li> </ul>
Con	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Some frictional cost</li> </ul>
Decision				





## Pandemic reinsurance

- Reinsure catastrophic mortality risk
- Total risk transfer of tail mortality risk
- Cost depending on the features
- Some counterparty risk, some basis risk

## Pandemic reinsurance – impact on various metrics

	Statutory / Tax	US GAAP	Internal Model
Pro			<ul style="list-style-type: none"> <li>Significant risk reduction <math>q_x</math>, small increase in counterparty risk lead to decrease on SCR</li> </ul>
Con	<ul style="list-style-type: none"> <li>Cost</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> </ul>
Decision			

# Pandemic reinsurance – business decision

	Statutory / Tax	US GAAP	Internal Model	Business
Pro			<ul style="list-style-type: none"> <li>Significant risk reduction <math>q_x</math>, small increase in counterparty risk lead to decrease on SCR</li> </ul>	<ul style="list-style-type: none"> <li>Reduction of SCR</li> <li>Positive effect on Rating</li> </ul>
Con	<ul style="list-style-type: none"> <li>Cost</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> </ul>	<ul style="list-style-type: none"> <li>Cost</li> </ul>
Decision				



## CMBS in Strategic Asset Allocation


- Guidance provided by ALM to investment
  - Choice between asset classes
  - Choice between asset risk factors
- Depend on LOB, asset risk appetite and constraints

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<b>Asset class</b>	<b>Target</b>
Inv Grade Corp. Bond	45%
BIG Corp. Bonds	15%
UST	15%
Other bonds	8%
Securitized asset inc. CMBS	8%
CML	3%
Equity	5%
Derivative	1%
<b>Total</b>	<b>100%</b>

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# CMBS in Strategic Asset Allocation – impact on various metrics

	Statutory / Tax	US GAAP	Internal Model
Pro			<ul style="list-style-type: none"> <li>Pre-diversification SCR unchanged and higher diversification leads to decrease SCR</li> </ul>
Con			
Decision			




# CMBS in Strategic Asset Allocation – business decision

	Statutory / Tax	US GAAP	Internal Mode	Business
Pro			 <ul style="list-style-type: none"> <li>Pre-diversification SCR unchanged and higher diversification lead to decrease SCR</li> </ul>	
Con	<p>Higher pre-diversification SCR but shown as unchanged due to model shortcut. Lower diversification but shown as higher due to <u>doubtful risk factor correlation</u> <b>Metric not to be trusted</b></p>			<ul style="list-style-type: none"> <li>Pre-diversification SCR higher and lower diversification lead to higher SCR</li> </ul>
Decision				





## Customer Service

- Customer access to policyholder contract on-line
  - Visualization of contract information and can perform basic transactions, e.g.
    - Change or modifications
    - Premium payment
    - Claim filing
  - Smooth integration with administrative system
- Must have for several distribution channels

# Customer Service – impact on various metrics

	Statutory / Tax	US GAAP	Internal Model
Pro			
Con	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> <li>• Operational risk increase</li> </ul>
Decision			

# Customer Service – business decision

	Statutory / Tax	US GAAP	Internal Model	Business
Pro				<ul style="list-style-type: none"> <li>• Goodwill increase</li> </ul>
Con	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> <li>• Operational risk increase</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> <li>• Operational risk increase</li> </ul>
Decision				

# Metrics in decision making

## What does the metric say?

- Information conveyed by the metric
- Key drivers of each metric
- Credibility of the metric



# Decision-making process

- Ultimately senior management decision
  - Metrics provide information but metrics have bias
  - Like sonar and binocular provide information for sailor
- Human decision, not mechanic decision
- ERM aspects should be included
  - Check and balances, two pairs of eyes
  - Critical friends

# SOA - Joint Risk Management Section

# Joint Risk Management Section

- The SOA has sections to which one can join.
- The Joint Risk Management Section is a joint section between the SOA, CAS, and CIA created to establish leading risk management techniques
- What's in it for me?
  - Branding yourself as Risk Manager (SOA profile)
  - One free webcast, potential discount on others
  - Prime access to the leading research, articles, and webcasts on the risk management profession
  - And more

## Presenter Contact Information

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**Questions**

**Thank You**