



ACTUARIAL SOCIETY
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Assessing the potential sources of systemic risk in South African insurers: Thoughts for policymakers

Rob Rusconi | ERM Seminar | 21 August 2025

KEY MESSAGES



Research context and summary



The rationale for regulating financial markets



The nature of insurer contributions to systemic risk



Describing and classifying insurer contributions to system risk



An alternative framework for consideration



Application to South African insurers



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The rationale for
regulating financial
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PART OF A WIDER STUDY OF SYSTEMIC RISK

Insurance

- **does not contribute to systemic risk to the same extent that banks do, but**
- **the potential contribution by insurance is nevertheless not immaterial.**

Regulators and supervisors should be aware that

- those aspects of insurance that contribute to systemic risk may be identifiable
- existing technical approaches to risk modelling focus on idiosyncratic risk
- these are not appropriate for identifying systemic risk and may actually contribute to the development of such risk
- identifying sources of systemic risk in insurance should be considered an ongoing activity



FINANCIAL MARKETS PLAY CRITICAL ROLES IN THE ECONOMIES SERVED

Among the roles played are:

- facilitating payments for the exchange of goods and services
- pricing, pooling, managing and transferring risk
- pooling or mobilising resources for capital expenditure and infrastructural- or social development
- mobilising savings and financial liquidity, and
- facilitating trade in goods or services between countries and regions.



FINANCIAL MARKETS PLAY CRITICAL ROLES IN THE ECONOMIES SERVED

They are increasingly integrated, potentially contributing to instability

"[...] a complex adaptive system[...] robust and fragile[...] progressively more complex and less diverse"

Andrew Haldane, Bank of England Director of Financial Stability, speech delivered at the Financial Student Association, Amsterdam, April 2009, page 3

RATIONALE FOR REGULATING FINANCIAL MARKETS



FINANCIAL MARKETS PLAY CRITICAL ROLES IN THE ECONOMIES SERVED

They are increasingly integrated, potentially contributing to instability

They take on a number of forms but are complex, global in reach and intertwined

RATIONALE FOR REGULATING FINANCIAL MARKETS



FINANCIAL MARKETS PLAY CRITICAL ROLES IN THE ECONOMIES SERVED

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They take on a number of forms but are complex, global in reach and intertwined

Financial markets cause substantial (not easily quantified) damage when they fail



FINANCIAL MARKETS PLAY CRITICAL ROLES IN THE ECONOMIES SERVED

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They take on a number of forms but are complex, global in reach and intertwined

Financial markets cause substantial (not easily quantified) damage when they fail

These failures (or imperfections) can have a range of forms and consequences

These include:

- information inequity
- market-power imbalances
- principal-agency conflict
- externalities



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And the possibility of regulatory failure should not be excluded

RATIONALE FOR REGULATING FINANCIAL MARKETS



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These failures (or imperfections) can have a range of forms and consequences

And the possibility of regulatory failure should not be excluded

Regulation is typically justified on efforts to correct market failures

This calls for:

- a sound understanding of potential failures, and
- clearly defined objectives

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INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

"One possibility is simply to concede that systemic risk is not something that is amenable to quantification. Instead it is something that becomes self evident under casual observation."

Lars Peter Hansen (2013:1)



INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

Researchers have considered systemic risk with reference to several attributes:

- widespread adverse impacts on the financial sector, typically based on pre-conditions of extensive market interdependence
- externalities or market failure of some form
- a significant loss of confidence resulting in a loss in economic value
- severe and widespread impairment of financial-sector entities, often with spill-over into the real economy



INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

The sources of systemic risk may be classified in several ways, some of which might be:

- contagion attributable to the inopportune sale of assets
- contagion caused by counterparty defaults
- contagion due to opaque information about institutions provoking conservative unwillingness to engage financially with parties
- irrational contagion triggering a withdrawal of funds from institutions regardless of their financial strength

INSURANCE CONTRIBUTION TO SYSTEMIC RISK



INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

Are regulators effectively mitigating or managing systemic risk?

"Existing policies appear adequate to contain individual firm and systemic risks both now and in the intermediate term."

Group of Ten (2001: 7 and 18)



INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

Are regulators effectively mitigating or managing systemic risk?

Consider the special labelling and treatment of the SIFIs and G-SIFIs:

- appears to provide a free lunch of lower funding costs to SIFIs
- some insurers, in contrast, have been scrambling to avoid identification as a G-SIFI
- evidence of reducing contributions to systemic risk was found
- but flaws in the allocation of insurers to the G-SIFIs group were also identified



INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

Are regulators effectively mitigating or managing systemic risk?

Questions remain about the effectiveness of the framework in place:

- harmony underpinning Basel (and Solvency II) may be contributing to herding
- regulatory approaches to increasing market complexity appear to be inadequate
- the possibility of regulatory capture cannot be ruled out



INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

Are regulators effectively mitigating or managing systemic risk?

What of the insurer contribution to systemic risk?

The following may be stated in summary:

- banks generally contribute more to systemic risk than insurers
- insurers typically retain risks on balance sheet and outsource through a structure characterised by hierarchy rather than peer support



INSURANCE MAY CONTRIBUTE MATERIALLY TO SYSTEMIC RISK

What is systemic risk?

Are regulators effectively mitigating or managing systemic risk?

What of the insurer contribution to systemic risk?

Under what conditions are insurer contributions to systemic risk significant?

The insurer contribution to systemic is generally more significant when:

- insurers form part of financial groups or have strong bancassurance alliances
- insurers operate outside of core insurance activities
- insurance sub-markets are more concentrated
- policyholder behaviour, linked to economic circumstances, adversely impacts insurers
- insurers act in concert

INSURANCE CONTRIBUTION TO SYSTEMIC RISK



SEVERAL QUANTITATIVE APPROACHES HAVE BEEN USED TO DETECT SYSTEMIC RISK

These approaches are outside the scope of this presentation

Ellis type	Summary of approach	Contagion direction	Data sources
Capital	Propensity to be under-capitalised when the system is under-capitalised (Acharya, LH Pedersen, et al. 2010)	Market to entity	Book & market
	Capital shortfall of a company conditional on a market crisis (Acharya, Engle, and Richardson 2012)	Market to entity	Book & market
	State-dependent sensitivity VaR to show dependence on state of financial markets (Adams, et al. 2014)	Entity to market	Market
	Impact of entity distress on the value at risk of the financial system (Adrian and MK Brunnermeier 2016)	Entity to market	Book & market
	Capital shortfall of a company conditional on a market crisis (Brownlees and Engle 2017)	Market to entity	Book & market
	Joint probability of default: system tail risk, based on CDS data (Segoviano and Goodhart 2009)	No direction implied	Market
	Various approaches to study insurance contribution to systemic risk (Weiß and Mühlnickel 2014)	Several approaches	Book & market
	Based on sovereign CDS in Asia-Pacific, shows interconnectedness between countries (Wong and Fong 2010)	Entity to market	Market
Contagion	Econometric connectedness on principal component analysis and Granger causality networks (Billio et al. 2012)	Between entities	Market
	Granger causality between banks and insurers using market and CDS prices (H. Chen et al. 2013)	Between entities	Market
Early warning	Granger causality between market returns of entities (Billio et al. 2012)	Between entities	Market
	Systemic risk metrics derived from CDS prices (Giglio 2016)	No direction implied	Market
	Price of insurance against financial distress using CDS and equity price co-movements (Huang, Zhou, and Zhu 2012)	Entity to market	Market
Liquidity	Impact of shocks on individual banks and the system using Bayesian VaR (Aikman et al. 2011)	Market to entity	Book & market
	Several approaches to marginal impact of liquidity shortfall on market statistics (Jobst 2014)	Entity to market	Book & market
Liquidity / Network	Liquidity shortages due to bank inter-connectedness: six network structures (Lee, et al. 2013)	Between entities	Simulated
Network	Time-varying marginal effect of firm's VaR on system VaR, allowing for system interdependence (Hautsch, et al. 2015)	Entity to market	Book & market
	Study of dynamics of interbank exposures and payment system networks (Martinez-Jaramillo et al. 2015)	Between entities	Book & market
	Quantify contribution to systemic risk from four distinct types of financial exposure (Poledna et al. 2015)	Between entities	Book & market
	Network-based tail dependency mean expected shortfall (Cornaro and Clemente, 2023)	Between entities	Market

Note: table limited to a selection of approaches in the literature. The Ellis type follows the classification system proposed by Ellis et al (2022). The acronym VaR in the summary of approach de-notes Value at Risk. Contagion direction describes the nature of the relationship between individual entities and the market as a whole that the modelling aims to demonstrate. Market information is from quoted stock-price or CDS data and book values are obtained from accounting information.

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FRAMEWORKS HAVE BEEN PUT FORWARD

EIOPA proposes two broad sources of insurance-based systemic risk

Introduced to the market **directly**

- **entity-based source**
- typically triggered by the failure of an insurer or a group of insurers
 - dependent on the risk profile of an insurer
 - managed through micro-prudential supervision
- the method proposed focuses on both sources of risk and channels of transmission, such as linkages to banks
- questions have been asked of the effectiveness of micro-prudential methods to address systemic risk



FRAMEWORKS HAVE BEEN PUT FORWARD

EIOPA proposes two broad sources of insurance-based systemic risk

Introduced to the market **indirectly** through company reactions to events

- **activity-based source**: activities with greater potential to pose systemic risk
- examples of such activities include:
 - financial guarantees to customers
 - securities lending
 - derivative trading not concerned with hedging risk
- both sources of risk and channels of transmission are considered



FRAMEWORKS HAVE BEEN PUT FORWARD

EIOPA proposes two broad sources of insurance-based systemic risk

Introduced to the market **indirectly** through company reactions to events

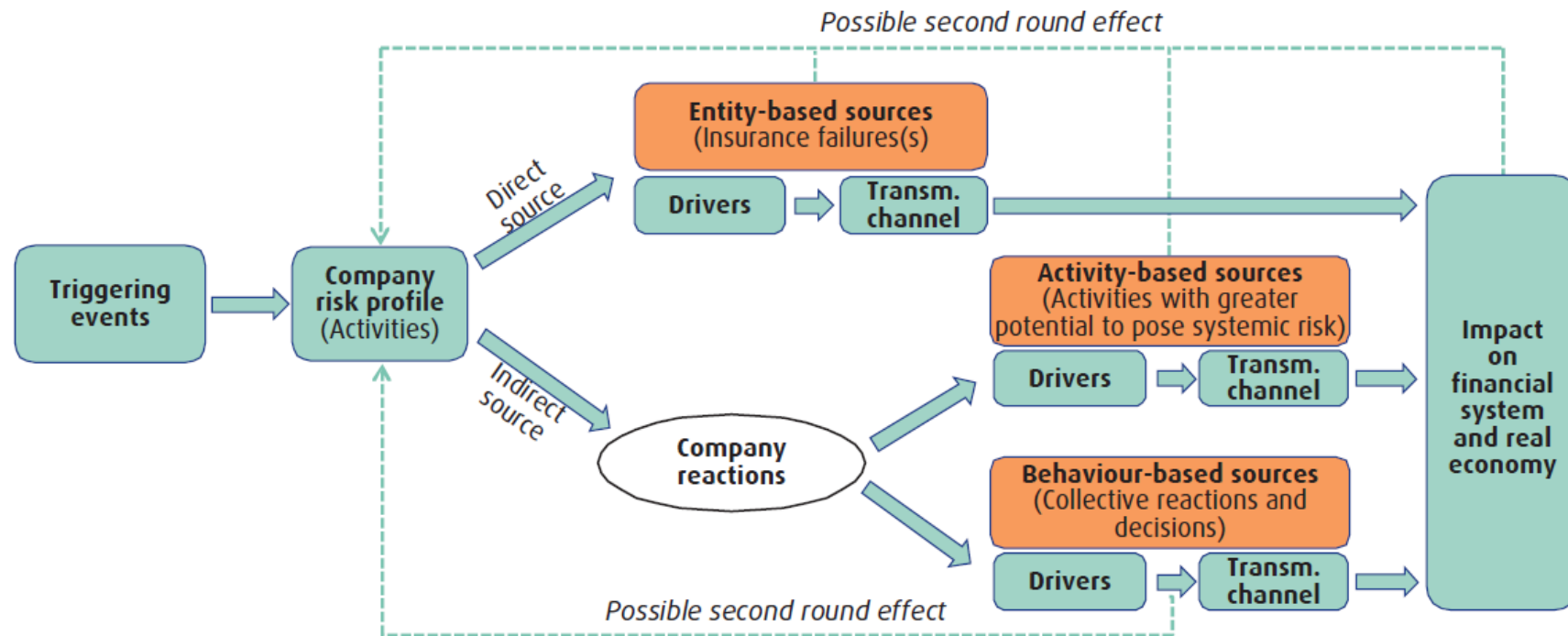
- **behaviour-based source**: collective reactions to other events
- examples of such activities include:
 - collective behaviour, like fire sales or herding, that may sharpen movements in market prices,
 - imprudent risk-taking or concentration of assets or liabilities
 - inadequate provisioning or under-pricing, typically under pressure from competitors
- **channels of transmission** are also considered, for example:
 - linkages to banks and other financial institutions
 - the use of bank-like products such as investment guarantees

DESCRIBING INSURANCE CONTRIBUTIONS TO SYSTEMIC RISK



FRAMEWORKS HAVE BEEN PUT FORWARD

EIOPA proposes two broad sources of insurance-based systemic risk





FRAMEWORKS HAVE BEEN PUT FORWARD

The IAIS considers origination and propagation separately

Primary sources of systemic risk:

- liquidity risk
- exposure to economic factors and counterparties
- effects of limited substitutability of essential products or services of one or more insurers

Transmission channels:

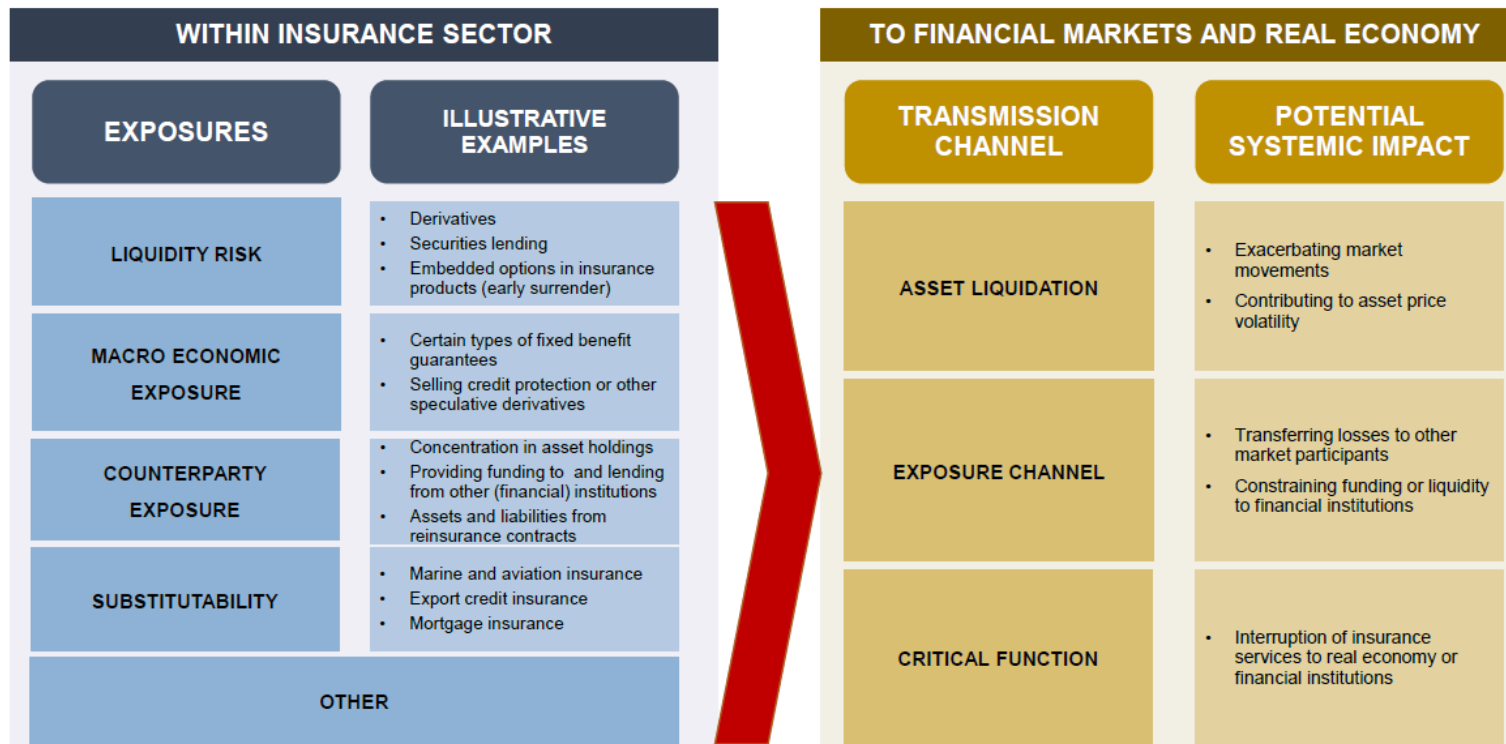
- depressed asset values resulting from fire sales
- economic impacts, through direct holdings in other entities or correlated experience with other institutions
- interruption of critical functions

DESCRIBING INSURANCE CONTRIBUTIONS TO SYSTEMIC RISK



FRAMEWORKS HAVE BEEN PUT FORWARD

The IAIS considers origination and propagation separately



DESCRIBING INSURANCE CONTRIBUTIONS TO SYSTEMIC RISK



ESTABLISHING A COMPLETE APPROACH

Matching the literature to these frameworks proved difficult

Some risks originate outside the insurance industry

- climate change impacts assets and liabilities
- could be excluded from the framework, or
- **modify** framework to include impact and contributor

Several risks proved difficult to allocate

Overall fit to the EIOPA framework not satisfactory

Source	EIOPA framework		Author	Year
	Entity, Activity, Behaviour or Impact	Driver, Contributor, Mitigator or Transmitter		
Source	Type	Nature	Author	Year
Climate change and impact on asset prices	Impact	Contributor	SARB	2019b
Exposure through investments	Activity	Contributor	IAIS	2011
Exposure to policy and governance	Entity	Contributor	SARB	2020a
Exposure to the economy	Entity	Contributor	SARB	2020a
Impact of investment returns on insurers	Behaviour	Driver	SARB	2020b
Increasingly interconnected stock market performance	Entity	Contributor	Acharya et al	2011
Increasingly interconnected stock market performance	Entity	Contributor	Baluch et al	2011
Increasingly interconnected stock market performance	Entity	Contributor	Bierth et al	2015
Increasingly interconnected stock market performance	Entity	Contributor	Billio et al	2012
Increasingly interconnected stock market performance	Entity	Contributor	Cummins & Weiss	2013
Increasingly interconnected stock market performance	Entity	Contributor	Schwarcz & Schwarcz	2014
Increasingly interconnected stock market performance	Entity	Contributor	Weiss & Muhlnicket	2014
Investment in banks and the real economy	Activity	Transmitter	SARB	2017a
Investment in banks and the real economy	Activity	Transmitter	SARB	2020a
Structured securities: liquidity and systemic impacts	Activity	Contributor	Baluch et al	2011
Structured securities: liquidity and systemic impacts	Activity	Contributor	Baranoff	2012
Structured securities: liquidity and systemic impacts	Activity	Contributor	Chen et al	2013
Structured securities: liquidity and systemic impacts	Activity	Contributor	Cummins & Weiss	2013
Structured securities: liquidity and systemic impacts	Activity	Driver	Cummins & Weiss	2014
Structured securities: liquidity and systemic impacts	Activity	Contributor	Geneva Association	2010b
Structured securities: liquidity and systemic impacts	Activity	Contributor	Grace	2011
Structured securities: liquidity and systemic impacts	Activity	Contributor	Klein	2013
Structured securities: liquidity and systemic impacts	Activity	Contributor	Trichet	2005
Counterparty exposures (assets)	Activity	Driver	IAIS	2018

Source: author analysis. Note: the table shows only a sub-set of systemic sources identified in the literature.

DESCRIBING INSURANCE CONTRIBUTIONS TO SYSTEMIC RISK



ESTABLISHING A COMPLETE APPROACH

Matching the literature to these frameworks proved difficult

Challenges were also experienced with the IAIS framework

- appears well suited to identifying significant risks
- comprehensive matching of all risks from the literature proved challenging

Source	IAIS framework		Author	Year
	Liquidity, Macroeconomic, Counterparty, Substitutability, Other Exposure	Asset liquidation, Exposure channel, Critical function Transmission		
Climate change and impact on asset prices	Economic		SARB	2019b
Exposure through investments			IAIS	2011
Exposure to policy and governance			SARB	2020a
Exposure to the economy			SARB	2020a
Impact of investment returns on insurers			SARB	2020b
Increasingly interconnected stock market performance			Acharya et al	2011
Increasingly interconnected stock market performance			Baluch et al	2011
Increasingly interconnected stock market performance			Bierth et al	2015
Increasingly interconnected stock market performance			Billio et al	2012
Increasingly interconnected stock market performance			Cummins & Weiss	2013
Increasingly interconnected stock market performance	Liquidity Economic		Schwarcz & Schwarcz	2014
Increasingly interconnected stock market performance			Weiss & Muhlnicket	2014
Investment in banks and the real economy			SARB	2017a
Investment in banks and the real economy			SARB	2020a
Structured securities: liquidity and systemic impacts			Baluch et al	2011
Structured securities: liquidity and systemic impacts			Baranoff	2012
Structured securities: liquidity and systemic impacts			Chen et al	2013
Structured securities: liquidity and systemic impacts			Cummins & Weiss	2013
Structured securities: liquidity and systemic impacts			Cummins & Weiss	2014
Structured securities: liquidity and systemic impacts			Geneva Association	2010b
Structured securities: liquidity and systemic impacts			Grace	2011
Structured securities: liquidity and systemic impacts			Klein	2013
Structured securities: liquidity and systemic impacts			Trichet	2005
Counterparty exposures (assets)		Counterparty		IAIS

Source: author analysis. Note: the table shows only a sub-set of systemic sources identified in the literature.

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A COMPREHENSIVE PRACTICAL APPROACH IS PROPOSED

It utilises the classification already in place in micro-prudential regulation

Several stages are utilised

- a framework is proposed with reference to balance sheet elements and broad risk types
- a survey of the literature is undertaken to test for mutual exclusion and collective exhaustion
- sources consulted include the publications of academic and regulatory entities
- refined with reference to publicly available risk declarations in South Africa

Balance sheet elements are as follows:

- assets
- liabilities
- the balance of assets and liabilities (ALM)
- solvency
- other issues

Risk types are:

- concentration
- mismatch
- quality
- strategic
- operational

The classification by literature sources follows in the next few slides

FRAMEWORK FOR CONSIDERATION



A COMPREHENSIVE PRACTICAL APPROACH IS PROPOSED

Balance sheet element	Risk type	Detail and references
Assets	Concentration	Climate change and impact on asset prices (SARB 2019) Exposure through investments (IAIS 2011) Exposure to policy and governance (SARB 2020a) Exposure to the economy (SARB 2020a) Impact of investment returns on insurers (SARB 2020b) Increasingly interconnected stock market performance (Acharya, Biggs, et al. 2011; Acharya, LH Pedersen, et al. 2010; Baluch, Mutenga, and Parsons 2011; Bierth, Irresberger, and Weiß 2019; Billio et al. 2012; Cummins and Weiss 2013; D. Schwarcz and S. Schwarcz 2014) Investment in banks and the real economy (SARB 2017a, 2020a)
	Quality	Structured securities: liquidity and systemic impacts (Baluch, Mutenga, and Parsons 2011; Baranoff 2012; H. Chen et al. 2013; Cummins and Weiss 2013, 2014; Geneva Association 2010b; R. Klein 2013; Trichet 2005) Counterparty exposures (assets) (IAIS 2018) Exploiting unregulated subsidiaries and information asymmetries (Acharya, Biggs, et al. 2011; Baranoff 2012; Harrington 2009; IAIS 2011) Investing in complex structured securities (Cummins and Weiss 2014) Non-traditional activities drive systemic risk (Cummins and Weiss 2013; Neale et al. 2021)

FRAMEWORK FOR CONSIDERATION



Balance sheet element	Risk type	Detail and references
Liabilities	Concentration	Catastrophe risk (Park and Xie 2014) Impact of climate change on liabilities (SARB 2020a) Correlated product classes (IAIS 2011) Export credit insurance (poor substitutability) (IAIS 2019) Exposure to business interruption claims (SARB 2021b) Exposure to civil unrest (SARB 2021b) Exposure to the economy (SARB 2017b) Industry-loss warranties (IAIS 2012b) Insurer concentration (SARB 2020a, 2021b) Insurer interconnectedness (SARB 2018b) Poor substitutability (Cummins and Weiss 2014; IAIS 2018) Poor substitutability and capacity concerns (IAIS 2011) Poor substitutability: marine and aviation classes (IAIS 2019) Poor substitutability: mortgage insurance class (IAIS 2019) Reinsurance with limited or no risk transfer (IAIS 2011)
	Mismatch	Annuities with options and guarantees (Cummins and Weiss 2013) Embedded options (early surrender, liquidity risk) (IAIS 2019) Financial guarantees: liquidity impacts (Cummins and Weiss 2013, 2014; Geneva Association 2010b; IAIS 2011) Fixed-benefit guarantees (macro-economic exposure) (IAIS 2019) Guarantee funds (Cummins and Weiss 2014) Guaranteed returns on saving products (IAIS 2018) Guarantees without matching (IAIS 2018) Policyholder lapses and surrenders (SARB 2018a, 2020a,b) Products with guarantees (Geneva Association 2011) Providing financial guarantees (Cummins and Weiss 2014) Saving and investment in long-term insurance (IAIS 2011)
	Quality	Complexity (Cummins and Weiss 2014) Complexity (low for non-life insurers) (Park and Xie 2014) Product design more like banks (IAIS 2011)
	Strategic	Bancassurance (IAIS 2011) Credit protection and associated macro-economic exposure (IAIS 2019) Exposure to burden of disease and economic impacts (SARB 2021a) Exposure to business interruption claims (SARB 2020b) Exposure to fraudulent activity (SARB 2021b) Functions critical to the financial sector (IAIS 2018) Insurance provides critical function with few substitutes (IAIS 2019) Third-party asset management (IAIS 2011)
	Operational	Cyber risk (IAIS 2018)

Sources not listed at the back of these slides are available at Rusconi et al (2023)

FRAMEWORK FOR CONSIDERATION



A COMPREHENSIVE PRACTICAL APPROACH IS PROPOSED

Balance sheet element	Risk type	Detail and references
ALM	Mismatch	Asset lending (Acharya, Biggs, et al. 2011; Besar et al. 2011; Cummins and Weiss 2014; IAS 2018) Asset lending; liquidity risk (IAS 2018) Asset liquidation (IAS 2018) Constraining funding or liquidity (exposure channel) (IAS 2019) Contributing to asset volatility (asset liquidation) (IAS 2019) Derivatives (liquidity risk) (IAS 2018, 2019) Exacerbating market movements (asset liquidation) (IAS 2019) Excessive reliance on short-term financing (Cummins and Weiss 2014) High equity levels in life insurance (H. Chen et al. 2013; Harrington 2009; IMF 2009) Liquidity risks (Cummins and Weiss 2014) Liquidity: backing liquid liabilities with illiquid assets (IAS 2018) Maturity mismatches (Cummins and Weiss 2014) Securities lending (liquidity risk) (IAS 2019) Short-term funding potentially leading to fire sales (Acharya, Biggs, et al. 2011; Besar et al. 2011; Geneva Association 2010a,b; Jobst 2014; D. Schwarcz and S. Schwarcz 2014) Speculative derivatives (macro-economic exposure) (IAS 2019) Counterparty exposures (reinsurers) (IAS 2019)
	Quality	Alternative risk transfer (Cummins and Weiss 2009; IAS 2011) Asset concentration (counterparty exposure) (IAS 2019) Banking and hedge fund activities (IAS 2011) Derivatives (liquidity risk) (IAS 2011) Lending interaction (counterparty exposure) (IAS 2019) Property management (IAS 2011) Synthetic investment portfolios (IAS 2011) Business model: mix of risks (IAS 2011)
	Strategic	Growth in non-core activities (Baluch, Mutenga, and Parsons 2011) Insurance-linked securities (IAS 2011) Interconnectedness of various types (Cummins and Weiss 2014) Size of exposures (Cummins and Weiss 2014) Hierarchical link to reinsurers insufficient (IAS 2012a; Park and Xie 2014)

Sources not listed at the back of these slides are available at Rusconi et al (2023)

FRAMEWORK FOR CONSIDERATION



A COMPREHENSIVE PRACTICAL APPROACH IS PROPOSED

Balance sheet element	Risk type	Detail and references
Solvency	Concentration	Transferring losses to other participants (exposure channel) (IAIS 2019) Leverage (IMF 2009)
	Mismatch	Funding structure (IMF 2009)
	Quality	Rapid growth (IAIS 2011)
	Strategic	Deficient provisioning and inadequate pricing (IAIS 2011)
	Operational	Limited fungibility within insurance groups (Baranoff 2012; Radice 2010) Under-reserving or under-pricing (IAIS 2018) Government policy and regulation (Cummins and Weiss 2014)
General	General	Interconnectedness higher than previously thought (Acharya, LH Pedersen, et al. 2010; Billio et al. 2012) Life insurance more concentrated (IAIS 2011) Panic run possible (Acharya and Richardson 2014) Regulation: not primarily to reduce systemic risk (IAIS 2011) Regulation: disadvantages of convergence (IAIS 2011) Inadequate governance (IMF 2022b)

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APPLICATION TO SOUTH AFRICAN INSURERS



COLLECTIVELY EXHAUSTIVE, MUTUALLY EXCLUSIVE APPROACH TO IDENTIFYING RISK

Balance sheet element	Risk type	Risk form	SARB	Total	Grp	LTI	STI	Group A			B			C	D	E	F			G
								Grp	LTI	STI	Grp	LTI	STI	LTI	Grp	Grp	Grp	LTI	STI	STI
Assets	Concentration	Economic, policy and governance impacts on assets		9	5	2	2													
		Impacts of climate change on asset values		3	3															
		Interconnected stock market performance		1	1															
		Investment in banks and the real economy or direct banking business		4	3	1														
	Quality	Counterparty exposures		10	4	3	3													
		Investment through unregulated subsidiaries																		
		Non-traditional investment activities																		
Liabilities	Concentration	Complex structured securities, CDSs and others		2	2															
		Catastrophe risk		9	3	3	3													
		Impacts on climate change on liabilities		5	4		1													
		Correlated product classes		4		2	2													
	Mismatch	Limited substitutability and capacity: general																		
		Substitutability limitations: class-specific concerns																		
		Exposure to social issues and the broader economy		9	5	1	3													
		Insurer concentration and interconnectedness		2	1	1														
		Reinsurance with limited risk transfer		2		1	1													
		Products with guarantees and embedded options		6	3	3														
	Quality	Savings and investment in long-term insurance		5	1	4														
		Policyholder lapses and surrenders		8	3	4	1													
	Strategic	Product complexity		1		1														
		Bank-like product design																		
		Distribution through banks		3	1	1	1													
	Operational	Credit protection and economic exposure		12	5	3	4													
		Exposure to burden of disease and economic impacts		6	3	2	1													
		Exposure to fraudulent activity		1		1														
		Insurer provides critical function with few substitutes																		
		Third-party asset management																		
	Operational	Cyber risk		6	4	1	1													

Highlighting... frequently identified systemic risks

APPLICATION TO SOUTH AFRICAN INSURERS



COLLECTIVELY EXHAUSTIVE, MUTUALLY EXCLUSIVE APPROACH TO IDENTIFYING RISK

Balance sheet element	Risk type	Risk form	SARB	Total	Grp	LTI	STI	Group A			B			C	D	E	F			G
								Grp	LTI	STI	Grp	LTI	STI	LTI	Grp	Grp	Grp	LTI	STI	STI
Assets	Concentration	Economic, policy and governance impacts on assets		9	5	2	2													
		Impacts of climate change on asset values		3	3															
		Interconnected stock market performance		1	1															
		Investment in banks and the real economy or direct banking business		4	3	1														
	Quality	Counterparty exposures		10	4	3	3													
		Investment through unregulated subsidiaries																		
		Non-traditional investment activities																		
Liabilities	Concentration	Complex structured securities, CDSs and others		2	2															
		Catastrophe risk		9	3	3	3													
		Impacts on climate change on liabilities		5	4		1													
		Correlated product classes		4		2	2													
	Mismatch	Limited substitutability and capacity: general																		
		Substitutability limitations: class-specific concerns																		
		Exposure to social issues and the broader economy		9	5	1	3													
		Insurer concentration and interconnectedness		2	1	1														
		Reinsurance with limited risk transfer		2		1	1													
		Products with guarantees and embedded options		6	3	3														
		Savings and investment in long-term insurance		5	1	4														
	Quality	Policyholder lapses and surrenders		8	3	4	1													
		Product complexity		1		1														
		Bank-like product design																		
	Strategic	Distribution through banks		3	1	1	1													
		Credit protection and economic exposure		12	5	3	4													
		Exposure to burden of disease and economic impacts		6	3	2	1													
		Exposure to fraudulent activity		1		1														
		Insurer provides critical function with few substitutes																		
Operational	Operational	Third-party asset management																		
		Cyber risk		6	4	1	1													

Highlighting... potential systemic risks not identified at all

APPLICATION TO SOUTH AFRICAN INSURERS



COLLECTIVELY EXHAUSTIVE, MUTUALLY EXCLUSIVE APPROACH TO IDENTIFYING RISK

Balance sheet element	Risk type	Risk form	SARB	Total	Grp	LTI	STI	Group A			B			C	D	E	F			G
								Grp	LTI	STI	Grp	LTI	STI	LTI	Grp	Grp	Grp	LTI	STI	STI
Assets	Concentration	Economic, policy and governance impacts on assets		9	5	2	2													
		Impacts of climate change on asset values		3	3															
		Interconnected stock market performance		1	1															
		Investment in banks and the real economy or direct banking business		4	3	1														
	Quality	Counterparty exposures		10	4	3	3													
		Investment through unregulated subsidiaries																		
		Non-traditional investment activities																		
Liabilities	Concentration	Complex structured securities, CDSs and others		2	2															
		Catastrophe risk		9	3	3	3													
		Impacts on climate change on liabilities		5	4		1													
		Correlated product classes		4		2	2													
	Mismatch	Limited substitutability and capacity: general																		
		Substitutability limitations: class-specific concerns																		
		Exposure to social issues and the broader economy		9	5	1	3													
		Insurer concentration and interconnectedness		2	1	1														
		Reinsurance with limited risk transfer		2		1	1													
		Products with guarantees and embedded options		6	3	3														
		Savings and investment in long-term insurance		5	1	4														
	Quality	Policyholder lapses and surrenders		8	3	4	1													
		Product complexity		1		1														
	Strategic	Bank-like product design																		
		Distribution through banks		3	1	1	1													
		Credit protection and economic exposure		12	5	3	4													
		Exposure to burden of disease and economic impacts		6	3	2	1													
		Exposure to fraudulent activity		1		1														
Operational		Insurer provides critical function with few substitutes																		
		Third-party asset management																		
		Cyber risk		6	4	1	1													

Highlighting... potential systemic risks rarely identified

APPLICATION TO SOUTH AFRICAN INSURERS



COLLECTIVELY EXHAUSTIVE, MUTUALLY EXCLUSIVE APPROACH TO IDENTIFYING RISK

Balance sheet element	Risk type	Risk form	SARB	Total	Grp	LTI	STI	Group A			B			C	D	E	F			G
								Grp	LTI	STI	Grp	LTI	STI	LTI	Grp	Grp	Grp	LTI	STI	STI
ALM	Mismatch	Asset lending and associated liquidity risk		2	2															
		Liquidity risks attributable to constrained funding, asset volatility or derivative exposure		9	3	3	3													
		Reliance on short-term financing																		
		High exposure to equity investments		13	5	4	4													
		Maturity mismatches		2	2															
	Quality	Economic exposure attributable to speculative derivatives																		
		Counterparty exposure, particularly from reinsurance		11	4	4	3													
		Alternative risk transfer, banking, hedge fund and synthetic investments		4	2	1	1													
	Strategic	Property management risk		7	3	3	1													
		Business model risks and interconnectedness		1	1															
		Non-core activities and unusual exposures		1	1															
Solvency	Concentration	Insurance-linked securities																		
		Risk exposures attributable to links with reinsurers		1	1															
	Mismatch	Losses tranfered to other participants		1		1														
		Leverage		1		1														
		Funding structures		3	1	1	1													
		Unduly rapid growth		1	1															
		Inadequate pricing and provisioning		3		1	2													
General	General	Operational liquidity risk and limited fungibility within groups		8	2	3	3													
		Policy and regulation not geared towards reducing systemic risk		2	2															
		Panic run possible		1	1															
		Inadequate governance																		

This is further supported by a set of recommendations for systemic risks identified in the literature but not by industry (see next slide)

APPLICATION TO SOUTH AFRICAN INSURERS



COLLECTIVELY EXHAUSTIVE, MUTUALLY EXCLUSIVE APPROACH TO IDENTIFYING RISK

Balance sheet element	Risk type	Risk form	SARB	Total	Grp	LTI	STI	Group A	B	C	D	E	F	G	Mitigation
Assets	Concentration	Economic, policy and governance impacts on assets		9	5	2	2								Scrutiny of impacts and potential concentration of risk Stress tests and capital buffers
		Impacts of climate change on asset values		3	3										
		Interconnected stock market performance		1	1										
		Investment in banks and the real economy or direct banking business		4	3	1									
	Quality	Counterparty exposures		10	4	3	3								
		Investment through unregulated subsidiaries													

Balance sheet element	Risk type	Risk form	SARB	Total	Grp	LTI	STI	Group A	B	C	D	E	F	G	Mitigation
Assets	Concentration	Economic, policy and governance impacts on assets		9	5	2	2								Scrutiny of impacts and potential concentration of risk Stress tests and capital buffers
		Impacts of climate change on asset values		3	3										
		Interconnected stock market performance		1	1										
		Investment in banks and the real economy or direct banking business		4	3	1									
	Quality	Counterparty exposures		10	4	3	3								Regulatory scrutiny and focus on group risk Regulatory analytics and detailed probes Analysis of derivative holdings and their purpose
		Investment through unregulated subsidiaries													
		Non-traditional investment activities													
		Complex structured securities, CDs and others		2	2										
		Exposure to burden of disease and economic impacts		6	3	2	1								
		Exposure to fraudulent activity		1	1										
ALM	Operational	Insurer provides critical function with few substitutes		6	4	1	1								Focus on operational risk management Class-by-class identification of potential for concentration Minimum governance standards Standard regulatory reporting Liquidity modelling and occasional focused studies Liquidity modelling and stress tests Liquidity modelling, regulatory disclosure and special studies Occasional focus on strategic risk management Systematic disclosure framework covering assets and liabilities Identification and assessment Reinsurer solvency and analysis of concentration risks Assessment of inward reinsurance arrangements Microprudential tools and shock testing Scenario testing and focus on identified insurers Increasing regulatory focus on systemic risk Scenario testing and care over product design Minimum standards at regulated entities
		Cyber risk		2	2										
		Asset lending and associated liquidity risk		9	3	3	3								
		Liquidity risks attributable to constrained funding, asset volatility or derivative exposure		13	5	4	4								
	Mismatch	Reliance on short-term financing		2	2										
		High exposure to equity investments		11	4	4	3								
		Maturity mismatches		4	2	1	1								
		Economic exposure attributable to speculative derivatives		7	3	3	1								
	Quality	Counterparty exposure, particularly from reinsurance		1	1										
		Alternative risk transfer, banking, hedge fund and synthetic investments		1	1										
Solvency	Strategic	Property management risk		1	1										Scenario testing and focus on identified insurers Increasing regulatory focus on systemic risk Scenario testing and care over product design Minimum standards at regulated entities
		Business model risks and interconnectedness		1	1										
		Non-core activities and unusual exposures		1	1										
		Insurance-linked securities		1	1										
	Concentration	Risk exposures attributable to links with reinsurers		1	1										
		Losses transferred to other participants		1	1										
		Leverage		1	1										
		Funding structures		3	1	1	1								
	Quality	Unduly rapid growth		1	1										
		Inadequate pricing and provisioning		3	1	2									
General	General	Operational liquidity risk and limited fungibility within groups		8	2	3	3								Increasing regulatory focus on systemic risk Scenario testing and care over product design Minimum standards at regulated entities
		Policy and regulation not geared towards reducing systemic risk		2	2										
		Panic run possible		1	1										
		Inadequate governance		1	1										

APPLICATION TO SOUTH AFRICAN INSURERS



COLLECTIVELY EXHAUSTIVE, MUTUALLY EXCLUSIVE APPROACH TO IDENTIFYING RISK

The frequency with which risks by type are self-identified is broadly in line with expectation.

	Groups	Long-term insurers	Short-term insurers	Average
Concentration	0.37	0.21	0.21	0.27
Mismatch	0.38	0.48	0.20	0.35
Quality	0.32	0.33	0.23	0.29
Strategic	0.24	0.18	0.15	0.19
Operational	0.40	0.42	0.50	0.44
General	0.20	0.00	0.00	0.08
Average	0.33	0.28	0.21	0.28

KEY MESSAGES



Research context and summary



The rationale for regulating financial markets



The nature of insurer contributions to systemic risk



Describing and classifying insurer contributions to system risk



An alternative framework for consideration



Application to South African insurers



Further research



References



FURTHER RESEARCH MAY BE BENEFICIAL IN A NUMBER OF AREAS

The following qualitative approaches may be considered:

- Deeper engagement with insurers
- Define risk sub-types more precisely along with corresponding attributes or activities
- Apply the methodology more precisely to insurance groups
- Study across countries to identify differences and similarities
- Engage with regulators and their representative bodies

Continued attention should be given to quantitative measures

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