

Hochschule Bremen
School of International Business



Capital market effects of full fair value insurance accounting

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Agenda

- 1 Motivation and findings

- 2 Regulatory background

- 3 Data and model

- 4 Results

- 5 Discussion

1 Motivation and findings

Motivation and contribution

- Solvency II (SII) marks big bang in insurance financial reporting
 - European prudential accounting shifted from conservative to market-consistent valuation since FY 2016
 - IASB follows this approach (to some extent) with IFRS 9 *Financial Instruments*, IFRS 17 *Insurance Contracts* coming into effect by FY 2023

- Prior literature found evidence that SII solvency ratio is associated with abnormal stock price returns (Gatzert & Heider 2020 JRI, Mukhtarov et al. 2021 JRI)

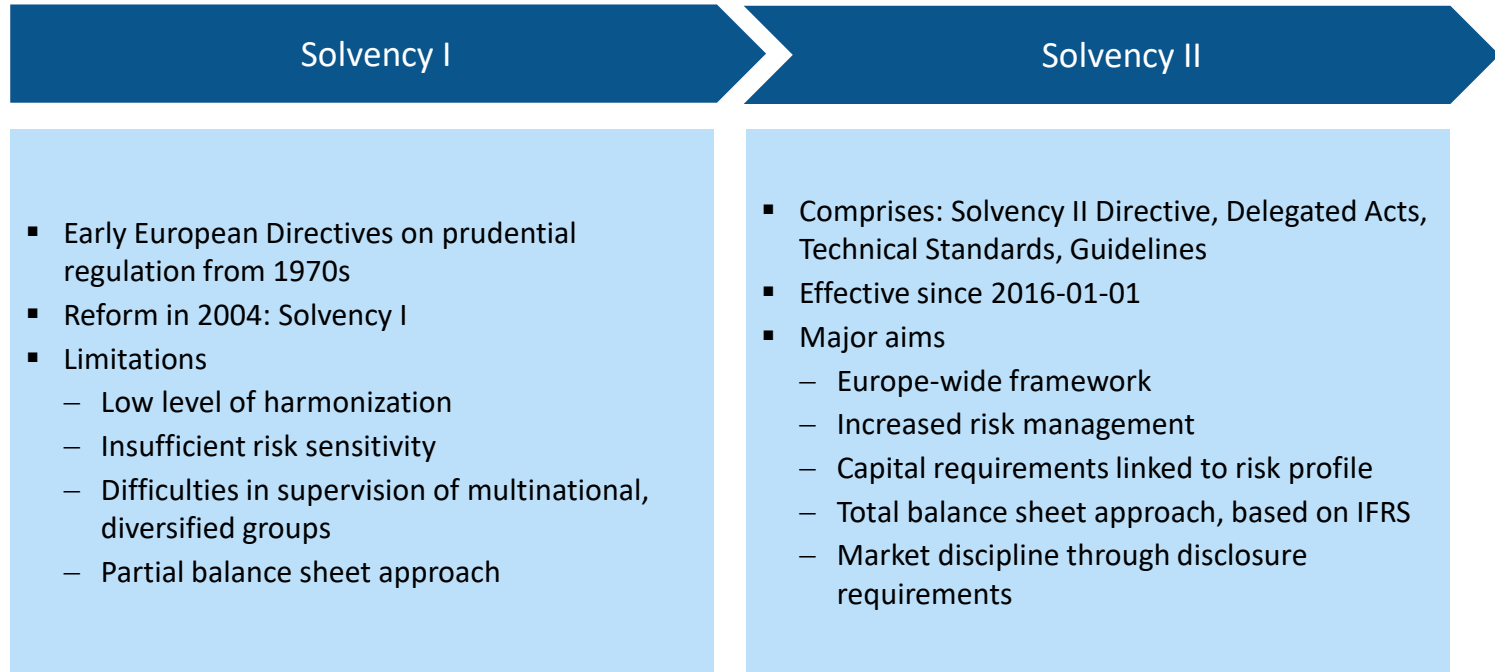
- Our contributions
 - Research so far has focused on solvency. We are the first to directly measure the relevance of valuation techniques used by SII
 - Comparison of SII and IFRS disclosures with respect to capital market effects

Findings

- We measure value relevance of IFRS and SII accounting disclosures
- Full fair values of SII are consistently priced, i.e. value relevant. Investors understand reported information, resulting in expected capital market effects
- However, SII does not show a higher relevance than IFRS. This is surprising because prior literature found fair values being more relevant than conservative accounting information
- Investors do not understand the reconciliation between IFRS and SII. Either, the Solvency and Financial Condition Reports are not informative enough, or investors are not interested in details

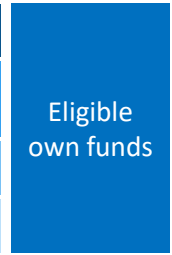
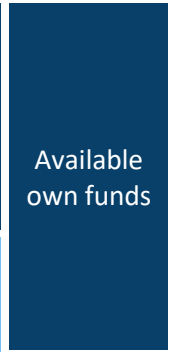
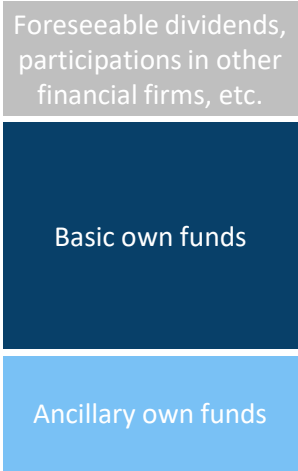
2 Regulatory Background

Prudential regulation in Europe



Solvency II terminology

Market Value Balance Sheet			
Assets	Cash and equivalents	Net assets	
	Other assets	Liabilities	Subordinated liabilities
			Other liabilities
		Technical provisions	Risk margin
	Best estimate liabilities		
Reinsurance assets			



Tiering with respect to loss absorption ability.
 Examples:
 1. Tier: Common equity, retained earnings
 2. Tier: Subordinated liabilities

- Basic own funds
 - Deduction of non-available items
 - Inclusion of e.g. subordinated liabilities
- Ancillary own funds: Inclusion of off-balance sheet items, e.g. Letters of credit

Asset valuation: IFRS-SII differences

Market Value Balance Sheet			
Assets	Cash and equivalents	Net assets	
	Other assets		
		Other liabilities	
		Technical provisions	Risk margin
			Best estimate liabilities
	Reinsurance assets		

- General rule: All assets are valued at market value in accordance with fair value in IFRS 13
- Exceptions

Asset item	IFRS	Solvency II
Goodwill	Impairment only	0
Intangible assets	Amortized cost, fair value	0 (Fair value)
Deferred acquisition costs	Amortized cost	0
Property, plant and equipment	Amortized cost, fair value	Fair value
Deferred taxes	$\Delta(\text{IFRS, tax})$	$\Delta(\text{Solvency II, tax})$
Financial instruments at amortized cost	Amortized cost	Fair value

Technical provisions: Principles

Market Value Balance Sheet			
Assets	Cash and equivalents	Net assets	
	Other assets		
			Other liabilities
		Technical provisions	Risk margin
	Best estimate liabilities		
Reinsurance assets			

- Technical provisions: Current amount that insurer would have to pay when immediately transferring the obligation in an arm’s length transaction
- Best estimate liabilities: Market-consistent valuation
 - Probability-weighted average of the expected value of future cash flows
 - Discounted by a risk-free rate, plus matching or volatility adjustment, if applicable
- Risk margin (Pelkiewicz et al. 2020 BAJ)
 - Since insurance contracts are not fungible, they represent non-hedgeable risk capital
 - Calculated as cost of capital arising from providing SCR to finally dispose off the corresponding portfolio of insurance contracts

Hypotheses

- Solvency and Financial Condition Reports (SFCRs) issued under SII contain fully market-consistent balance sheet. Not only regulatory authorities, also investors are intended addressees of these reports
 - **H1:** Full fair value accounting is consistently priced, i.e. value relevant
- Prior literature found fair values being more informative than conservative accounting (Demski & Sappington 1990 AR, Demski et al. 2002 AH, Barth 2004): Investors can better estimate discounted future cash flows from market-consistent valuation. IAS 39 and IFRS 4 are more conservative than SII full fair value measurements
 - **H2:** Full fair value accounting is more value relevant than conservative insurance accounting, i.e. SII is more strongly associated with (changes in) prices than IFRS
- Even though reporting requirements under SII induce high reporting costs, investors are exposed to „functional fixation“, i.e. unwilling or unable to understand the differences between SII and IFRS (Yu et al. 2003 JBFA)
 - **H3:** SII-IFRS reconciliation is not consistently priced

3 Data and model

Data

- All listed property-casualty, life, multi-line, reinsurance firms
- Subject to IFRS and SII, i.e. European Union, Norway, Iceland
- Hand-collected SFCRs detailing SII data, FY 2016–2020
- Capital market and additional IFRS data retrieved from Refinitiv Datastream

Calculation	Firms	Firm Years
Listed European insurance firms		
At least three consecutive years between 2016 and 2020 available	104	
Not following IFRS	-29	
No insurance activity		
Industry mismatch in Refinitiv	-6	
No primary quote	-6	
Not subject to Solvency II		
Parent is listed in Europe but domiciled outside of the Solvency II area	-4	
Insurance broker	-4	
Final sample	55	257

Model (1/2)

- Long-term association between accounting and market value usually estimated using value relevance models (Ball & Brown 1968 JAR). Here specification as
 - Price and changes model. Prices as of 5 days after IFRS or SII disclosure, respectively
 - Scale: Beginning of fiscal-year market value (Brown et al. 1999 JAE)
 - OLS with two-way clustered firm-year standard errors

- Price model

$$\frac{MVE_t}{MVE_{t-1}} = \alpha_0 + \alpha_1 \frac{NET_ASS_t}{MVE_{t-1}} + \alpha_2 \frac{NI_t}{MVE_{t-1}} + \varepsilon$$

- Changes model

$$\frac{MVE_t - MVE_{t-1}}{MVE_{t-1}} = \beta_0 + \beta_1 \frac{NET_ASS_t - NET_ASS_{t-1}}{MVE_{t-1}} + \beta_2 \frac{NI_t - NI_{t-1}}{MVE_{t-1}} + \varepsilon$$

Either IFRS or SII

Where:

- MVE – Market value of equity
 - NET_ASS – Net assets
 - NI – Net income
 - Price and accounting variables winsorized at extreme percentiles
- Further specifications include (pro forma) reconciliation between IFRS and SII, i.e. $NET_ASS_{SII-IFRS}$ or $\Delta NET_ASS_{SII-IFRS}$, respectively

Model (2/2)

- Control variables
 - *FULL_INFO*: Insurer reports line-by-line matched IFRS and SII statements of financial position
 - *ENGLISH_SFCR*: SII report is available in English
 - *SOLVENCY_RATIO*: Solvency ratio (= Eligible own funds / Solvency capital requirement)
 - *COMMON_LAW*: Dummy = 1 if insurer domiciled in common law country (UK, IE, CY)
 - *Y2017*: Dummy = 1 for first year of SII application

- To find support for H1 that SII is value relevant, we expect the coefficients for SII net assets ($\alpha_{1,SII}$ and $\beta_{1,SII}$) being significantly positive

- To find support for H2 that SII is more value relevant than IFRS, we expect
 - The coefficients for SII net assets being greater than for IFRS, i.e. $\alpha_{1,SII} > \alpha_{1,IFRS}$ and $\beta_{1,SII} > \beta_{1,IFRS}$
 - The adj. R^2 for SII models being greater than for IFRS, i.e. $Adj. R^2_{SII} > Adj. R^2_{IFRS}$

- To find support for H3 that investors do not understand the difference between SII and IFRS, we expect the coefficient for the SII-IFRS reconciliation being significantly insignificant

4 Results

Descriptive statistics

- Summary statistics

	Mean	P25	P50	P75	SD	N
<i>PRICE</i>	22.16	3.11	7.89	23.20	40.87	257
<i>NET_ASS</i> _{IFRS}	9 320.34	515.18	3 229.65	10 163.00	16 502.84	257
<i>NET_ASS</i> _{SII}	9 773.84	679.14	3 765.70	11 804.00	15 717.41	257
<i>NET_ASS</i> _{SII-IFRS}	453.49	-153.43	38.75	1 294.51	7 275.73	257
<i>NI</i> _{IFRS}	718.92	41.11	260.98	775.45	1 263.64	257

As of SII announcement date; *PRICE* in €, all other items in € m

- Pairwise correlations

	<i>PRICE</i>	<i>NET_ASS</i> _{IFRS}	<i>NET_ASS</i> _{SII}	<i>NET_ASS</i> _{SII-IFRS}
<i>NET_ASS</i> _{IFRS}	0.4941 ***			
<i>NET_ASS</i> _{SII}	0.6523 ***	0.8991 ***		
<i>NET_ASS</i> _{SII-IFRS}	0.2884 ***	-0.3258 ***	0.1208 *	
<i>NI</i> _{IFRS}	0.5651 ***	0.8498 ***	0.9055 ***	0.0286

As of SII announcement date

Price model: IFRS vs. SII net assets

	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE
	IFRS report	SII report	SII report	SII report	SII, EU only	IFRS report	SII report
	IFRS date	IFRS date	SII date	SII date	SII date	IFRS date	SII date
Constant	0.957***	0.956***	0.935***	1.034***	1.090***	1.003***	1.016***
	0.000	0.000	0.000	0.001	0.000	0.000	0.001
<i>NET_ASS</i> _{IFRS}	0.048***					0.046**	
	0.009					0.012	
<i>NET_ASS</i> _{SII}		0.047***	0.063***	0.062***	0.065***		0.066***
		0.009	0.000	0.005	0.006		0.002
<i>NET_ASS</i> _{SII-IFRS}						0.001	-0.028
						0.982	0.615
<i>NI</i> _{IFRS}	0.187***	0.183***	0.176	0.176	0.098	0.196***	0.184
	0.000	0.000	0.113	0.296	0.459	0.000	0.282
<i>FULL_INFO</i>				-0.021	-0.030		-0.027
				0.468	0.402		0.236
<i>ENGLISH_SFCR</i>				-0.063	-0.085		-0.064
				0.323	0.332		0.319
<i>SOLVENCY_RATIO</i>				-0.027	-0.038	-0.026	-0.017
				0.538	0.406	0.204	0.732
<i>COMMON_LAW</i>				0.020	0.016	0.003	0.026
				0.738	0.797	0.903	0.669
Y2017				0.098	0.091	0.029	0.098
				0.339	0.386	0.576	0.345
Adj. R ²	0.140	0.129	0.103	0.132	0.140	0.139	0.132
N	257	257	257	257	219	257	257

Changes model: IFRS vs. SII net assets

	$\Delta PRICE$	$\Delta PRICE$	$\Delta PRICE$	$\Delta PRICE$	$\Delta PRICE$	$\Delta PRICE$	$\Delta PRICE$
	IFRS report	SII report	SII report	SII report	SII, EU only	IFRS report	SII report
	IFRS date	IFRS date	SII date	SII date	SII date	IFRS date	SII date
Constant	-0.009	-0.003	0.022	0.004	0.033	-0.023	-0.003
	0.892	0.958	0.883	0.985	0.890	0.776	0.985
ΔNET_ASS_{IFRS}	0.462***					0.586**	
	0.008					0.016	
ΔNET_ASS_{SII}		0.425**	0.380*	0.386*	0.331**		0.427**
		0.038	0.054	0.059	0.039		0.049
$\Delta NET_ASS_{SII-IFRS}$						0.396	-0.084**
						0.118	0.028
ΔNI_{IFRS}	0.251	0.245	0.008	0.011	-0.140	0.147	0.000
	0.613	0.609	0.966	0.959	0.455	0.772	0.999
<i>FULL_INFO</i>				-0.021	0.025		-0.022
				0.394	0.654		0.420
<i>ENGLISH_SFCR</i>				0.024	-0.027		0.029
				0.625	0.711		0.578
<i>SOLVENCY_RATIO</i>				0.000	0.000	0.000	0.000
				0.823	0.851	0.721	0.807
<i>COMMON_LAW</i>				0.010	0.001	0.012	0.011
				0.824	0.987	0.854	0.813
Adj. R^2	0.108	0.107	0.062	0.045	0.027	0.160	0.043
<i>N</i>	204	203	203	203	174	203	203

Value relevance of solvency capital (1/2)

- Additional analysis
 - From regulatory perspective, core capital (i.e. Basic Own Funds – BOF, Eligible Own Funds – EOF) relevant for determination of solvency. Not net assets
 - Investors might find solvency capital relevant for estimation of future dividends (Mukhtarov et al 2021 JRI). But it does not clearly report on (the change in) their claim of net assets.

- Assumption: Solvency capital is does not show consistent market effects

- Finding
 - Investors find absolute amount of BOF and EOF Tier 1 capital as relevant information, but neither their changes nor the difference towards IFRS
 - Support for assumption that solvency capital is not in the primary attention of investors

Value relevance of solvency capital (2/2)

	PRICE	PRICE	PRICE	PRICE		ΔPRICE	ΔPRICE	ΔPRICE	ΔPRICE
	SII report	SII report	SII report	SII report		SII report	SII report	SII report	SII report
	SII date	SII date	SII date	SII date		SII date	SII date	SII date	SII date
Constant	0.941***	1.009***	0.940***	1.021***	Constant	0.034	0.000	0.027	-0.015
	0.000	0.001	0.000	0.001		0.823	0.998	0.838	0.932
BOF	0.056***	0.064***			ΔBOF	0.198	0.340		
	0.000	0.001				0.405	0.229		
<i>BOF-NET_ASS_{IFRS}</i>		-0.053			<i>ΔBOF-NET_ASS_{IFRS}</i>		-0.223**		
		0.326					0.023		
EOF_TIER1			0.068***	0.066***	ΔEOF_TIER1			0.429	0.609
			0.000	0.000				0.218	0.156
<i>EOF_TIER1-NET_ASS_{IFRS}</i>				-0.026	<i>ΔEOF_TIER1-NET_ASS_{IFRS}</i>				-0.352
				0.543					0.243
<i>NI_IFRS</i>	0.183	0.191	0.192*	0.195	<i>ΔNI_IFRS</i>	0.136	0.079	0.170	-0.050
	0.197	0.279	0.078	0.245		0.415	0.694	0.392	0.773
<i>FULL_INFO</i>		-0.034		-0.027	<i>FULL_INFO</i>		-0.021		-0.016
		0.194		0.317			0.587		0.620
<i>ENGLISH_SFCR</i>		-0.063		-0.059	<i>ENGLISH_SFCR</i>		0.024		0.032
		0.339		0.336			0.748		0.574
<i>SOLVENCY_RATIO</i>		-0.010		-0.018	<i>SOLVENCY_RATIO</i>		0.000		0.000
		0.840		0.712			0.747		0.816
<i>COMMON_LAW</i>		0.031		0.022	<i>COMMON_LAW</i>		0.022		0.016
		0.614		0.713			0.668		0.813
Y2017		0.100		0.096					
		0.338		0.358					
Adj. R ²	0.086	0.125	0.105	0.130	Adj. R ²	0.010	0.003	0.047	0.064
Capital market	N	257	257	257	N	203	203	204	204

5 Discussion

Discussion

- **H1 ✓** : SII information has consistently positive market effects. Support that solvency accounting is also relevant for investors
- **H2 ✗** : SII does not exhibit an increased value relevance compared to IFRS. Due to the fact that SII is limited to Europe, it lacks global comparability
- **H3 ✓** : Investors do not understand – or are not interested – in the reconciliation between IFRS and SII
- Possible outcomes of IFRS 9 & 17 adoption for insurers starting in 2023
 - No “boost” in capital market communication, even though market-consistent rules are to be applied
 - SII might gain relevance because IFRS transition fosters global understandability and acceptance

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