The Effect of Corporate Taxation on Loss Provisioning of Property-Casualty Insurers: Evidence from the Adoption of SSAP 101

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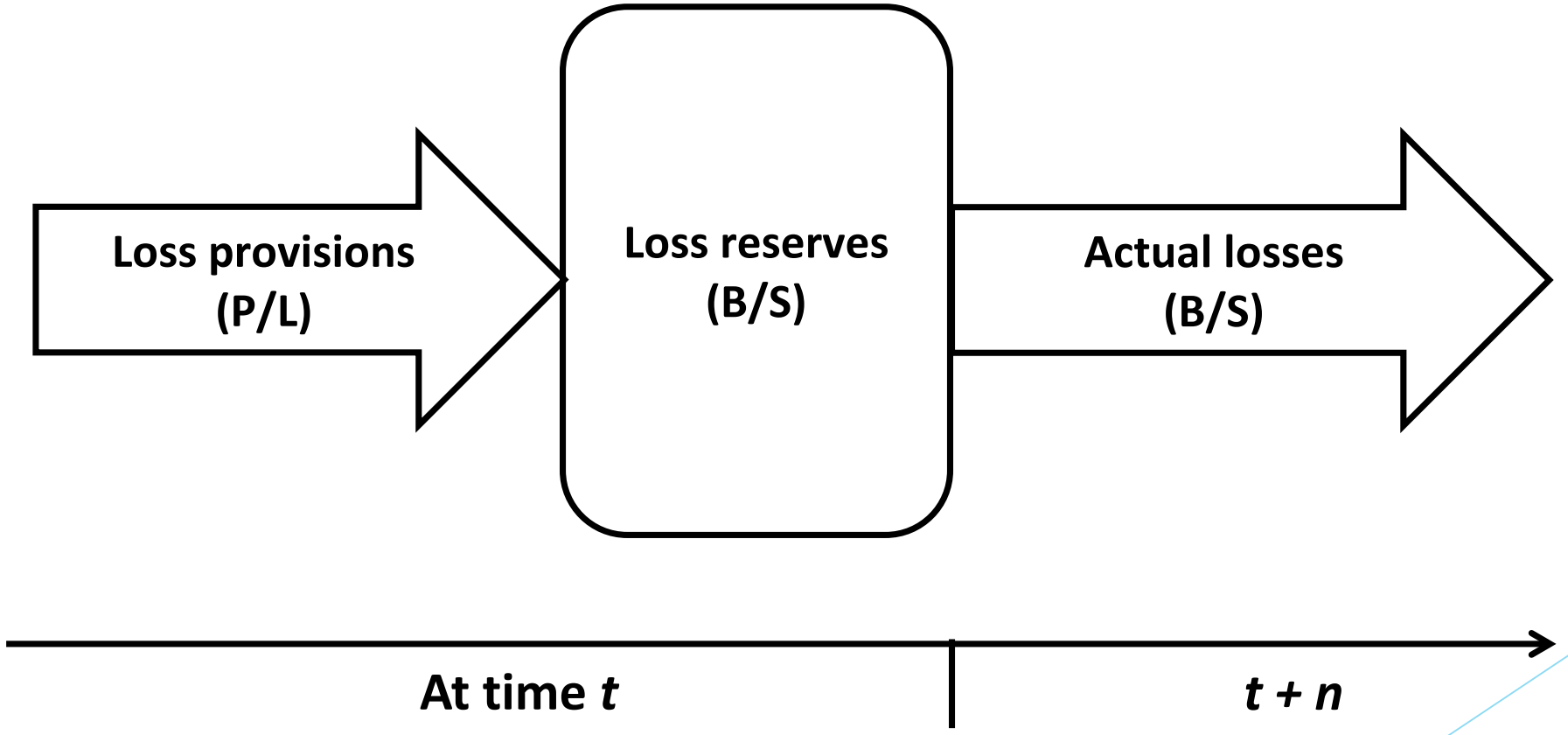
Research Motivation

- How does a financial accounting standard for tax accruals affect loss provisioning of PC insurers?

- Loss reserves, which accounted for approximately 57% of the total liabilities of PC insurers in 2012, are the largest liability in a typical property-casualty (PC) insurer's book and are tax deductible.
- Statement of Statutory Accounting Principles No. 101 (SSAP 101), *Income Taxes*, became effective in January 2012.
- We predict that SSAP 101 will decrease insurers' loss reserves by reducing their tax incentives in overstating loss reserves.

Loss provisioning



Main Finding

- SSAP 101 adoption significantly reduces insurers' use of loss provisioning to avoid tax.
- Relative to public insurers who have already been exposed to FIN 48, private insurers significantly decrease their loss provisions in the post-SSAP 101 period.
- Effect is stronger when private insurer is subjected to greater IRS monitoring and when the insurer is more likely to be avoiding tax.
- After SSAP 101, both the persistence of loss provisions and earnings significantly increased and the volatility of ROA significantly decreased for private insurers. In contrast, public insurers do not show such improvement.

Contributions

- Our study documents the economic effects of accounting standards on insurers, a major player in the financial sector that has received relatively little attention in the literature.
  - It advances our understanding of how insurance companies rely on loss reserves to engage in tax avoidance.
  - It demonstrates that the accounting standard for one type of accrual, tax loss contingencies, can affect another type of accruals, loss provisions.
- It contributes to the literature on the interactions and tradeoffs between financial and tax reporting incentives and extends research on the effect of financial reporting changes on firms' corporate tax behaviors.
- It highlights when there is book-tax conformity, tax incentives can affect earnings quality.

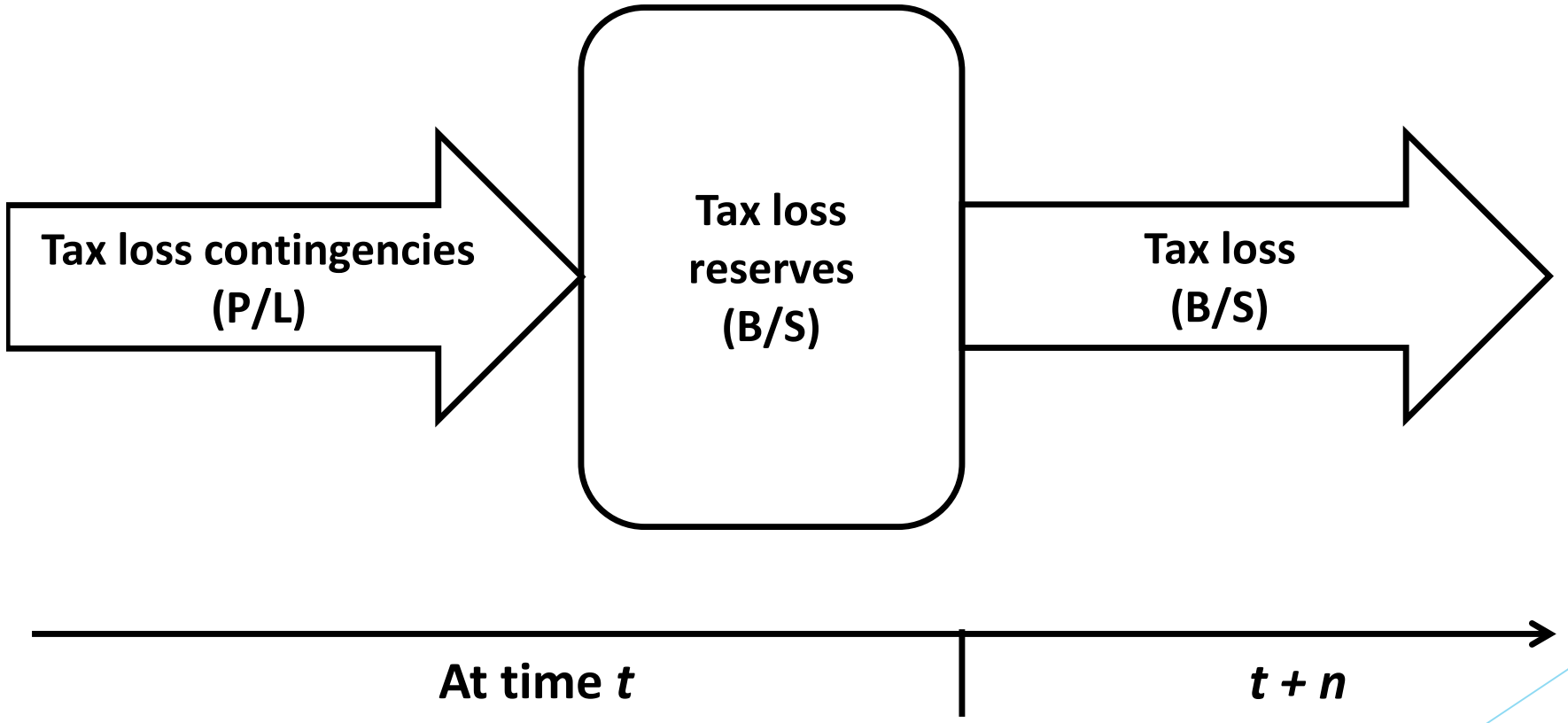
Background and Prior Research

- Prior research has documented evidence that suggests tax incentives are an important factor in insurers' loss provisions.
- Penalva (1998): Financially healthy insurers tend to overstate reserves to reduce their tax bills.
- Gaver and Paterson (1999): Insurers' loss reserve estimates are associated with tax incentives.
- Bradford and Logue (1999): Insurers overstate reserves in respond to the tax rate reduction in Tax Reform Act of 1986.

Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions

- Insurance companies in the United States are required to prepare statutory financial statement in accordance with the SAP.
- In September 2011, the NAIC issued SSAP 101 *Income Taxes* to replace former standards, effective January 1, 2012.
- SSAP 101's guidance in determining tax reserves is similar to the guidance provided by FASB Interpretation No. 48 (FIN 48), *Accounting for Uncertainty in Income Taxes*, under GAAP.
- The goal of SSAP 101 is to provide insurance companies with more consistent criteria for recording tax reserves and to require increased documentation of uncertain tax positions.

Tax loss provisioning



Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions

- SSAP 101 address the recognition and measurement of the benefits of uncertain tax positions by setting forth a process for evaluating tax positions:
- (1) In determining the amount of federal and foreign income tax loss contingencies, SSAP 101 replaces the term "probable" in SSAP 5R with the term "more likely than not (a likelihood of more than 50 percent)."
- (2) In determining the amount of federal and foreign income tax loss contingencies, it shall be assumed that the reporting entity will be examined by the tax authority that has full knowledge of all relevant information.
- (3) If the estimated tax loss contingency is greater than 50% of the tax benefit originally recognized, the tax loss contingency recorded shall be equal to 100% of the original tax benefit recognized.

- The increased uniformity of and documentation for tax contingencies provide more information about insurers' tax positions to auditors and the IRS.

Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions

- Mills, Robinson, and Sansing (2010): Under FIN 48, when information about the strength of tax positions becomes observable to the tax authority, tax compliance improves because taxpayers claim fewer weak tax positions.
- Graham, Hanlon, Shevlin, and Shroff (2014): Survey evidence from the field suggests that a majority of tax executives decrease their willingness to engage in aggressive tax planning due to FIN 48.
- Gupta, Mills and Towery (2014): Both firm-level state effective tax rates and aggregate state-level income tax collections increase after FIN 48, consistent with FIN 48 being effective in curbing tax avoidance.
- Henry, Massel, and Towery (2016): FIN 48 is associated with decreased levels of tax avoidance.

Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions

- Public insurers are less (or not significantly) affected by the introduction of SSAP 101 because of their prior exposure to FIN 48, which has been effective since 2007 and which has similar technical thresholds and documentation requirements as SSAP 101.

H1: After SSAP 101 adoption, private insurers decrease loss provisions more than public insurers.

Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions-Tax Incentives

- The characteristics associated with corporate tax aggressiveness:

  (1) IRS monitoring.

  (2) the use of in-house versus outside, independent actuaries to certify loss reserves.

  (3) the insurer's loss status.

Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions-Tax Incentives

- *H2: The effect of SSAP 101 adoption on the relatively larger reduction in loss provisions for private insurers is more pronounced for those insurers that are under greater IRS monitoring*

- Hoopes, Pittman, and Mescall (2012) find that IRS monitoring is effective in curbing firms' tax avoidance behavior.
- Information useful for monitoring will be more useful if there is more monitoring

Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions-Tax Incentives

- *H3: The effect of SSAP 101 adoption on the relatively larger reduction in loss provisions for private insurers is less pronounced for those insurers with losses prior to the adoption.*

- Loss firms have little, if any, incentive to engage in tax avoidance
- Firms can also carry forward losses from prior years to offset future profits and therefore lower future income taxes
- We expect private insurers reporting a loss prior to SSAP 101 to be less exposed to SSAP 101.

Hypothesis Development: SSAP 101 and PC Insurers' Loss Provisions-Tax Incentives

- *H4: The effect of SSAP 101 adoption on the relatively larger reduction in loss provisions for private insurers is more pronounced for those insurers that rely on an in-house actuary.*

- Cheng, Lin and Weiss (2015): In-house actuaries might lack independence because of their employment relationship with the insurer.
- Klassen, Lisowsy and Mescall (2016): Firms that rely on internal tax departments are the most tax aggressive firms.
- We examine whether private insurers that employ an in-house actuary to certify loss reserves will reduce more less provisions after SSAP 101.

Sample Selection

- *Best's Insurance Reports, Property/Casualty Editions*
- *Best's Key Rating Guide*
- The NAIC annual statement database
- The sample period is between 2009 and 2014, surrounding the adoption of SSAP 101 in 2011.
- Our full sample consists of 6,610 firm-year observations.

Research Design

- We construct a firm-year panel and employ a difference-in-difference specification of Equation (1).
- Feasible generalized least squares (FGLS) with a panel-specific AR(1) autocorrelation structure.
- $LOSS\_RES\_CY_{it} = \alpha_0 + \alpha_1 POST\_SSAP101_t + \alpha_2 PRIVATE_{it} + \alpha_3 POST\_SSAP101_t \times PRIVATE_{it-1} + \Sigma\alpha_i CONTROLS_{it} + \mu_t + \varepsilon_{it}$ (1)

A *negative* value of α_3 would indicate that compared to public insurers, private insurers with larger ex ante exposure to SSAP 101 subsequently decrease their loss provisions to a larger extent after the regulation's adoption.

Descriptive Statistics

Significant higher before SSAP 101: Support for H1

	Pre-SSAP 101		Post-SSAP 101	
Variable	Mean N = 3,300	Median N = 3,300	Mean N = 3,310	Median N = 3,310
LOSS_RES_CY	0.104**	0.102***	0.101	0.098
IRS_AUDIT	0.187	0.174	0.189	0.174
PRIVATE	0.671*	1.000*	0.692	1.000
FAMILY	0.360	0.000	0.356	0.000
LOSS	0.220***	0.000***	0.147	0.000
INHOUSE_ACTUARY	0.315**	0.000	0.297	0.000
NI (millions)	24.70***	2.159***	32.80	3.104
ROA_VOLATILITY	0.025**	0.018**	0.022	0.013
SMALL_LOSS	0.006	0.000	0.006	0.000
SMALL_PROFITS	0.031**	0.000**	0.022	0.000
TAIL	0.548	0.541	0.545	0.526
RATE_REGULATION	0.378	0.306	0.380	0.302
SIZE	17.61	17.65	17.67	17.67
HERFINDAHL_LINE	0.476*	0.371**	0.489	0.389
HERFINDAHL_STATE	0.528	0.458	0.537	0.480
NPW_PERSONAL	0.406	0.367	0.409	0.358
NPW_COMMERCIAL	0.277	0.117	0.286	0.108
REINSURANCE	0.373	0.318	0.372	0.311
NPW_GROWTH	0.041***	0.009***	0.092	0.048
GROUP_AFFILIATION	0.732	1.000	0.734	1.000

Correlations

SSAP 101 reduces the loss provisions: Support for H1

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) LOSS_RES_CY	-0.025	0.040	0.085	0.124	-0.031	0.193	0.202	0.090	0.328
(2) POST_SSAP101		0.023	-0.003	0.014	-0.019	-0.094	-0.006	0.003	0.017
(3) IRS_AUDIT			-0.165	-0.069	0.306	-0.135	0.212	0.049	0.793
(4) PRIVATE				-0.244	-0.338	0.134	-0.196	-0.106	0.233
(5) FAMILY					0.022	-0.067	0.015	0.092	-0.065
(6) LOSS						-0.114	-0.117	-0.000	-0.109
(7) INHOUSE_ACTUARY							-0.013	-0.028	0.325
(8) TAIL								0.050	0.046
(9) RATE_REGULATION									0.050
(10) SIZE									

Test of the Hypothesis that SSAP 101 Reduces Private Insurers' Loss Provisions (Table 3)

Private insurers' loss reserves decrease following SSAP 101 adoption more significantly than do public insurers.

Dependent variable: LOSS_RES_CY	(1)	(2)	(3)	(4)
	FGLS with a panel-specific AR(1) autocorrelation structure		OLS regression with firm fixed effects	
POST_SSAP101×PRIVATE	-0.0028***	-0.0020***	-0.0020*	-0.0020**
	(0.000)	(0.000)	(0.001)	(0.001)
POST_SSAP101	-0.0032***	-0.0006	-0.0037***	0.0047
	(0.000)	(0.002)	(0.004)	(0.004)
PRIVATE	0.0060***	0.0143***	-	-
	(0.000)	(0.001)	-	-

Robustness Tests (Table 4, Panel A): Parallel trend tests

Dependent variable: LOSS_RES_CY	(1)	(2)
YEAR2010×PRIVATE	0.0001	0.0010
	(0.000)	(0.001)
YEAR2011×PRIVATE	0.0002	0.0004
	(0.000)	(0.001)
YEAR2012×PRIVATE	-0.0065	-0.0016*
	(0.001)	(0.001)
YEAR2013×PRIVATE	-0.0031***	-0.0062***
	(0.000)	(0.001)
YEAR2014×PRIVATE	-0.0039***	-0.0071***
	(0.001)	(0.001)
PRIVATE	0.0135***	0.0139**
	(0.001)	(0.006)
Control Variables	Yes	Yes
Firm Fixed Effects	No	Yes
R^2	-	0.91
N	6,610	6,610

There is no clear trend between the two groups until 2012, the effective year of SSAP 101, after which the loss-reserve provisioning for private insurers started to decrease more significantly that it does for public insurers.

Robustness Tests (Table 4, Panel B): Alternative dependent variable-loss reserve errors

Dependent variable:	(1) LOSS_RES_ERROR	(2) LOSS_RES_ERROR
POST_SSAP101×PRIVATE	-0.0061***	-0.0049*
	(0.001)	(0.003)
POST_SSAP101	-0.0052*	-0.0152
	(0.003)	(0.001)
PRIVATE	0.0041***	-
	(0.001)	-
Control Variables	Yes	Yes
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	No	Yes
R^2	-	0.86
N	3,757	3,757

Compared to their public peers, private insurers reduce over-reserving in loss reserves more significantly after SSAP 101.

Robustness Tests (Table 4, Panel C): Alternative treatment variables

Dependent variable: LOSS_RES_CY	(1) TREAT= IRS AUDIT_ADJ	(2) TREAT= IRS AUDIT	(3) TREAT= LOSS	(4) TREAT= IN-HOUSE ACTUARY
POST_SSAP101	-0.0096***	-0.0187***	0.0020***	-0.0017***
× TREAT	(0.004)	(0.004)	(0.001)	(0.000)
POST_SSAP101	-0.0051***	-0.0010	-0.0049**	-0.0012
	(0.000)	(0.003)	(0.002)	(0.002)
TREAT	-0.0309***	-0.2133***	0.0183***	-0.0040***
	(0.005)	(0.005)	(0.000)	(0.000)
Control Variables	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
N	6,610	6,610	6,610	6,552

The decrease in loss provisions following SSAP 101 adoption will be larger for insurers subject to greater IRS monitoring.

1. Loss insurers have a lower marginal tax rate and are thus unable to utilize the tax deduction.
2. Loss-reserve provisions of loss insurers are significantly less affected by SSAP 101 adoption.

The decrease in loss provisions following SSAP 101 adoption is larger for insurers with an in-house actuary.

Tests of the tax incentives channel

- $LOSS\_RES\_CY_{it} = \alpha_0 + \alpha_1 POST\_SSAP101_t + \alpha_2 PRIVATE_{it} + \alpha_3 EXPOSURE_{it-1} + \alpha_4 POST\_SSAP101_t \times PRIVATE_{it} + \alpha_5 POST\_SSAP101_t \times EXPOSURE_{it-1} + \alpha_6 POST\_SSAP101_t \times PRIVATE_{it} \times EXPOSURE_{it-1} + \Sigma\alpha_i CONTROLS_{it} + \mu_t + \varepsilon_{it}.$ (3)

- EXPOSURE is our empirical proxy for the insurers' tax environment:

  (1) IRS audit probability

  (2) loss status

  (3) the use of an in-house actuary to certify loss provisions

Table 5: The effect of SSAP 101 adoption on loss provisions: The effect of an IRS audit

Dependent variable: LOSS_RES_CY	(1)	(2)
POST_SSAP101× PRIVATE× IRS AUDIT_ADJ	-0.0466***	-0.0258***
	(0.009)	(0.009)
POST_SSAP101× PRIVATE	-0.0007	-0.0006
	(0.000)	(0.001)
POST_SSAP101× IRS AUDIT_ADJ	-0.0208***	0.0023**
	(0.007)	(0.001)
PRIVATE × IRS AUDIT_ADJ	-0.0696***	-0.0363
	(0.008)	(0.037)
POST_SSAP101	-0.0047***	-0.0090***
	(0.001)	(0.001)
PRIVATE	0.0136***	-
	(0.001)	-
IRS AUDIT_ADJ	-0.0099*	-0.0358
	(0.001)	(0.026)
Control Variables	Yes	Yes
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	No	Yes
R^2	-	0.92
N	6,610	6,610

The decrease in loss provisions following SSAP 101 is incrementally larger for private insurers subject to greater IRS monitoring.

Table 6: The effect of SSAP 101 adoption on loss provisions: The effect of loss firms

Dependent variable: LOSS_RES_CY	(1)	(2)
POST_SSAP101×PRIVATE× LOSS	0.0064**	0.0122**
	(0.003)	(0.006)
POST_SSAP101× PRIVATE	-0.0030***	-0.0030***
	(0.001)	(0.001)
POST_SSAP101× LOSS	-0.0021	-0.0069
	(0.002)	(0.005)
PRIVATE× LOSS	-0.0187***	-0.0148***
	(0.002)	(0.004)
POST_SSAP101	0.0048**	0.0056
	(0.002)	(0.005)
PRIVATE	0.1433***	-
	(0.001)	-
LOSS	0.0318***	0.0260***
	(0.002)	(0.003)
Control Variables	Yes	Yes
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	No	Yes
R^2	-	0.91
N	6,610	6,610

The loss provisions of private insurers suffering from losses will be less affected by SSAP 101 adoption.

Table 7: The effect of SSAP 101 adoption on loss provisions: The Effect of an in-house actuary

Dependent variable: LOSS_RES_CY	(1)	(2)
POST_SSAP101×PRIVATE×INHOUSE_ACTUARY	-0.0044***	-0.0101***
	(0.001)	(0.002)
POST_SSAP101× PRIVATE	-0.0007	0.0029*
	(0.001)	(0.001)
POST_SSAP101×INHOUSE_ACTUARY	0.0010	0.0064***
	(0.001)	(0.002)
PRIVATE×INHOUSE_ACTUARY	-0.0346***	-0.0101
	(0.001)	(0.006)
POST_SSAP101	0.0001	0.0022
	(0.002)	(0.005)
PRIVATE	0.0099***	-
	(0.001)	-
INHOUSE_ACTUARY	-0.0082***	-0.0016
	(0.001)	(0.005)
Control Variables	Yes	Yes
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	No	Yes
R^2	-	0.91
N	6,552	6,552

The decrease in loss provisions following SSAP 101 adoption is larger for private insurers with in-house actuary.

Additional Tests: Improved Earnings Quality

- We examine whether the adoption of SSAP 101 improves affected insurers' loss reserve persistence, earnings persistence and return volatility.
- $LOSS\_RES\_CY_{it+1} = \alpha_0 + \alpha_1 POST\_SSAP101_t \times PRIVATE \times LOSS\_RES\_CY_{it} + \alpha_2 POST\_SSAP101_t \times PRIVATE + \Sigma\alpha_3 PRIVATE_{it} \times LOSS\_RES\_CY_{it} + \alpha_4 POST\_SSAP101_t \times LOSS\_RES\_CY_{it} + \alpha_5 POST\_SSAP101_t + \alpha_6 PRIVATE + \alpha_7 LOSS\_RES\_CY_{it} + \Sigma\alpha_i CONTROLS_{it} + \mu_t + \varepsilon_{it}$ (4)
- $NI_{it+1} = \alpha_0 + \alpha_1 POST\_SSAP101_t \times PRIVATE \times NI_{it} + \alpha_2 POST\_SSAP101_t \times PRIVATE + \alpha_3 PRIVATE \times NI_{it} + \alpha_4 POST\_SSAP101_t \times NI_{it} + \alpha_5 POST\_SSAP101_t + \alpha_6 PRIVATE + \alpha_7 NI_{it} + \Sigma\alpha_i CONTROLS_{it} + \mu_t + \varepsilon_{it}$ (5)
- $ROA\_VOLATILITY_{it} = \alpha_0 + \alpha_1 POST\_SSAP101_t \times PRIVATE + \alpha_2 POST\_SSAP101_t + \alpha_3 PRIVATE + \Sigma\alpha_i CONTROLS_{it} + \mu_t + \varepsilon_{it}$ (6)

Table 8 Panel A: SSAP 101 adoption and loss reserve persistence

Dependent variable: $LOSS\_RES\_CY_{t+1}$	(1)	(2)	(3)
$POST\_SSAP101 \times LOSS\_RES\_CY_t$	0.0122***	-0.0149***	-0.0617***
	(0.004)	(0.005)	(0.022)
$POST\_SSAP101 \times PRIVATE \times LOSS\_RES\_CY_t$		0.0520***	0.0587**
		(0.005)	(0.026)
$POST\_SSAP101 \times PRIVATE$		-0.0044***	-0.0084***
		(0.000)	(0.002)
$LOSS\_RES\_CY_t \times PRIVATE$		-0.0367***	-0.0368
		(0.003)	(0.053)
POST_SSAP101	0.0070***	0.0106***	0.0089*
	(0.001)	(0.001)	(0.005)
$LOSS\_RES\_CY_t$	0.9361***	0.9535***	0.1746***
	(0.003)	(0.003)	(0.052)
PRIVATE	0.0007***	0.0040***	-
	(0.000)	(0.000)	-
Control Variables	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	No	No	Yes
R^2	-	-	0.92
N	5,262	5,262	5,262

A significant increase in loss reserves persistence after SSAP 101 adoption for private insurers relative to public insurers.

Table Panel B: SSAP 101 adoption and earnings persistence

Dependent variable: NI_{t+1}	(1)	(2)	(3)
$POST\_SSAP101 \times NI_t$	0.1716**	0.1324	-0.1285
	(0.047)	(0.095)	(0.169)
$POST\_SSAP101 \times PRIVATE \times NI_t$		0.5190**	0.4445**
		(0.235)	(0.195)
$POST\_SSAP101 \times PRIVATE$		0.5772	-3.1634
		(4.262)	(3.597)
$NI_t \times PRIVATE$		-0.5429***	-0.1955***
		(0.140)	(0.071)
POST_SSAP101	-2.4559	-4.2206	4.7285
	(0.365)	(4.683)	(3.795)
NI_t	0.8329***	0.8950***	-0.0231
	(0.000)	(0.056)	(0.081)
PRIVATE	-5.3609**	1.3033	-
	(0.028)	(2.672)	-
Control Variables	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	No	No	Yes
R^2	0.65	0.66	0.84
N	5,499	5,499	5,499

SSAP 101 improves insurers' earnings persistence among private insurers, which have stronger exposure to the new standard than do public insurers.

Table 8 Panel C: SSAP 101 adoption and ROA volatility

Dependent variable: ROA_VOLATILITY	(1)	(2)
POST_SSAP101×PRIVATE	-0.0033***	-0.0042***
	(0.001)	(0.001)
POST_SSAP101	-0.0013	0.0014*
	(0.001)	(0.001)
PRIVATE	-0.0004	-
	(0.001)	-
Control Variables	Yes	Yes
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	No	Yes
Adjusted R^2	0.07	0.73
N	6,562	6,562

A decrease in private insurers' ROA volatility after SSAP 101 adoption compared to public insurers.

Conclusion

- SSAP 101 Income taxes reduces the loss reserve provisions for private insurers, which are likely to be more likely to be affected by this standard compared to public insurers
- The reduction is weaker for insurers that have stronger when there is more IRS monitoring and when firms are more likely to be tax aggressive.
- For private insurers, both loss reserve persistence and earnings persistence improve and ROA volatility declines after SSAP 101.

- Thank you!!