

Earnings management using available for sale securities: Evidence from OECD banks

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Agenda

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2. Motivation
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Introduction

The issue of **earnings management** is **important** because:

- Earnings are an important element of **micro-prudential regulation**. Earnings management hinders bank regulators from monitoring banks.
- Earnings can influence **executive compensation, and valuation of debt and stock**.

Earnings management occurs when managers use **judgment** in financial reporting to

- **Mislead stakeholders**
- **Influence contractual outcomes** (Healy and Wahlen (1999)).

Introduction

- The issue of **capital management** is also **important** because:
- Regulatory capital is central to **macro-prudential regulation**. Thus, regulatory capital requirement is an important macroprudential tool in Basel III.
- However, regulatory capital requirements could potentially motivate **low regulatory capital banks** to increase earnings, thereby increasing regulatory capital. This hinders bank regulators from monitoring banks based on regulatory capital ratio.

Introduction

Banks can use **accrual** and **real activities** methods to change the level of earnings and regulatory capital:

- Use their judgement to realize **loan loss provisions (LLPs)** when they anticipate loan losses (**accrual method**)
- Selectively sell **available for sale (AFS) securities** (**real activities**)

	Income statement	Regulatory capital
LLPs	√ (Accrual)	√ (Partial inclusion)
Realized gains and losses on AFS securities	√ (Profit)	√ (Full inclusion)

Introduction

Banks can engage in three types of activities to change the level of earnings:

- **Income smoothing:** Smooth earnings to decrease the volatility of earnings, thereby influencing stakeholders' risk perception.
- **Taking a big bath:** Deflate earnings to make poor performance even worse in the current year in order to report favourable performance in the following year.
- **Avoiding losses:** When they face unfavorable results, they increase earnings to avoid reporting earnings losses to signal good news to stakeholders and to avoid an increase in the cost of capital.

Motivation

- The consequences of earnings and capital management, and the unique characteristics of AFS securities motivate us to examine the use of AFS securities to manage earnings and capital because:
 - AFS securities constitutes the **largest component** of banks' securities and a considerable percentage of bank assets.
 - Banks can **selectively sell AFS securities** to realize gains and losses.
 - Realization of AFS securities to manage earnings is **less costly** than LLPs manipulation.

Motivation

- Some studies have focused on the use of AFS securities to manage earnings and capital, but they focus mainly on US banks.
- There is a **dearth** of research into the **use of AFS securities** to manage earnings and capital by **European banks**.
- A **lack** of research investigating the **difference between listed and unlisted banks** in Europe.

Literature

- Prior studies have focused on the use of AFS securities to manage earnings and capital by banks, mainly in US.
- Income smooth: Dong and Zhang (2018), Barth et al. (2017), Collins et al. (1995) , Warfield and Linsmeier (1992),
- Taking a big bath and avoiding losses: Barth et al. (2017)
- Reporting small earnings increases and decreases: Beatty et al. (2002)
- Increasing regulatory capital: Barth et al. (2017), Collins et al. (1995)
- Difference in earnings and capital management by public and non-public banks: Barth et al. (2017), Beatty et al. (2002), Beatty and Harris (1998)

Hypotheses

- Literature confirms three types of earnings management activities – income smoothing, taking a big bath, and avoiding losses – can be tested.
- Studies such as Barth et al. (2017) and Collins et al. (1995) test for capital management via the inclusion of regulatory capital. Thus, capital management can also be tested.
- We expect low regulatory capital banks use earnings to increase regulatory capital.
- We also expect that there is a difference in earnings management behaviour between listed banks and unlisted banks.

Empirical Model - Income smoothing and increasing regulatory capital

- In our paper, we follow a standard model created by Barth et al. (2017) to test earnings management - income smoothing, taking a big bath, and avoiding losses – and capital management. First, we use equation 1 to test **income smoothing** and **capital management**.

$$\begin{aligned} RGL_{i,t} = & \alpha_0 + \beta_1 NI_{i,t} + \beta_2 LowCap_{i,t} + \beta_3 NI_{i,t} \times LowCap_{i,t} + \\ & \beta_4 ULoss_{i,t-1} + \beta_5 UGain_{i,t-1} + \beta_6 Size_{i,t} + \beta_7 Liquid_{i,t} + \beta_8 Sec_{i,t} + \\ & \beta_9 VIX_{j,t-1} + \beta_{10} Unemp_{j,t} + \beta_{11} LoIs_{j,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Dependent variable: RGL

Experimental variables: NI, Lowcap, NI×Lowcap

Control variables: Sec, Ugain, Uloss, Size, Liquid

VIX, Unemp, LoIs

To control bank characteristics

To control macroeconomic factors

Empirical Model - Big baths and opportunity to manipulating earnings and capital

- To test whether banks with positive NI and negative NI behave differently, we expand the equation 1 by separating NI into NI>0 and NI<0. This allows us to test whether banks with NI<0 **take a big bath** and banks with NI> 0 **smooth income**.
- We also include interaction terms to test whether **negative earnings banks**, **positive earnings banks** and **low capital banks** have more incentives or opportunities to manage earnings or capital.
- $$RGL_{i,t} = \alpha_0 + \beta_1 NI_{neg_{i,t}} + \beta_2 NI_{neg_{i,t}} \times LowCap_{i,t} + \beta_3 NI_{neg_{i,t}} \times UGain_{i,t-1} + \beta_4 NI_{pos_{i,t}} + \beta_5 NI_{pos_{i,t}} \times ULoss_{i,t-1} + \beta_6 LowCap_{i,t} + \beta_7 LowCap_{i,t} \times UG_{i,t-1} + \beta_8 ULoss_{i,t-1} + \beta_9 UGain_{i,t-1} + \beta_{10} Size_{i,t} + \beta_{11} Liquid_{i,t} + \beta_{12} Sec_{i,t} + \beta_{13} Vix_{j,t-1} + \beta_{14} Unemp_{j,t} + \beta_{15} Lois_{j,t} + \varepsilon_{i,t} \quad (2)$$

Dependent variable: RGL

Experimental variables: NI_{neg}, NI_{neg} × Lowcap, NI_{neg} × Ugain, NI_{pos}, NI_{pos} × Uloss, Lowcap, Lowcap × Ugain

Control variables: Uloss, Ugain, Size, Liquid, Sec, VIX, Unemp, Lois

Empirical Model - Avoiding losses

- To test whether negative earnings banks engage in avoiding losses, we estimate equation 3 for observations with negative earnings banks but positive earnings after realized gains ($NI < 0$, and $NI + RGL \geq 0$). If $\beta_1 < -1$, negative earnings banks engage in **avoiding losses**.

- $$RGL_{i,t} = \alpha_0 + \beta_1 NIneg_{i,t} + \beta_2 LowCap_{i,t} + \beta_3 ULoss_{i,t-1} + \beta_4 UGain_{i,t-1} + \beta_5 Size_{i,t} + \beta_6 Liquid_{i,t} + \beta_7 Sec_{i,t} + \beta_8 Vix_{j,t-1} + \beta_9 Unemp_{j,t} + \beta_{10} Lois_{j,t} + \varepsilon_{i,t} \quad (3)$$

Dependent variable: RGL

Experimental variables: NIneg

Control variables: Lowcap, Uloss, Ugain, Size, Liquid, Sec, VIX, Unemp, Lois

Empirical Model

- To investigate the difference in earnings and capital management behavior between listed and unlisted banks, we permit the coefficients to vary between listed and unlisted banks.
- Apart from our OLS regression baseline model, we further expand the baseline regressions by:
 - Panel OLS regression with standard errors clustered by country and year.
 - Panel regression with time fixed effect and standard errors clustered by country and year.
 - Repeat all above regressions without Italy and US, respectively, for robustness check.

Data

- Fitch connect for bank-level data
Bloomberg for non-bank level data
Yearly Data
- Sample coverage:2007-2017
- The sample consists of banks in 14 OECD countries:
Belgium, Canada, Denmark, Finland, France, Germany,
Italy, Japan, Netherlands, Norway, Spain, Sweden,
United Kingdom, and United States
- Number of banks/observations:1932/9986

Data - Distribution of observations by country

Country	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total	Percentage
BELGIUM	9	7	10	12	13	11	11	10	10	11	11	115	1.2%
CANADA		10	10	3	10	18	20	22	22	24	15	154	1.5%
DENMARK	20	25	19	17	14	18	15	8	8	7	3	154	1.5%
FINLAND	2	2	2	2	4	7	11	21	62	60	55	228	2.3%
FRANCE	20	18	19	21	19	19	19	17	17	18	20	207	2.1%
GERMANY	25	27	26	24	27	27	24	22	20	19	16	257	2.6%
ITALY	280	287	435	355	489	495	454	456	402	374	118	4145	41.5%
JAPAN	6	6	9	17	22	19	22	32	78	35	34	280	2.8%
NETHERLANDS	10	9	10	11	12	12	12	15	17	15	11	134	1.3%
NORWAY	1	1		1	3	1	5	5	5	7	8	37	0.4%
SPAIN	50	56	55	28	21	21	21	24	32	30	25	363	3.6%
SWEDEN	2	1	3	1	3	4	31	42	42	49	37	215	2.2%
UNITED KINGDOM	19	19	13	15	20	20	24	33	36	40	39	278	2.8%
UNITED STATES	2	15	22	41	59	571	574	563	549	520	503	3419	34.2%
Total	446	483	633	548	716	1243	1243	1270	1300	1209	895	9986	100.0%

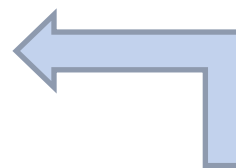
Empirical Analysis - Income smoothing

Variables	Prediction	(1) Coeff.	(2) Coeff.	(3) Coeff.
NI	-	-0.0226*** (-8.158)	-0.0226** (-2.475)	-0.0203** (-2.165)
Lowcap	+	0.00175*** (7.390)	0.00175*** (2.675)	0.00183* (2.123)
Lowcap*NI	-/+	0.277*** (28.76)	0.277*** (4.136)	0.275*** (3.643)
Control variables				
Uloss(-1)		-0.00196 (-0.151)	-0.00196 (-0.0852)	0.00381 (0.134)
Ugain(-1)		0.0404*** (10.16)	0.0404 (1.077)	0.0391 (0.970)
Other control variables		YES	YES	YES
Observations		9,986	9,986	9,986
R-squared		0.214	0.214	0.231
OLS		YES	YES	
Cluster Country			YES	YES
Year FE				YES
Cluster Year			YES	

Income smoothing

Low capital banks realize more AFS gains to increase regulatory capital

Low capital banks realize more AFS gains when they report positive earnings, which constrains income smoothing



$$RGL_{i,t} = \alpha_0 + \beta_1 NI_{i,t} + \beta_2 LowCap_{i,t} + \beta_3 NI_{i,t} \times LowCap_{i,t} + \beta_4 ULoss_{i,t-1} + \beta_5 UGain_{i,t-1} + \beta_6 Size_{i,t} + \beta_7 Liquid_{i,t} + \beta_8 Sec_{i,t} + \beta_9 VIX_{j,t-1} + \beta_{10} Unemp_{j,t} + \beta_{11} Lois_{j,t} + \varepsilon_{i,t} \quad (1)$$

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Empirical Analysis - Income smoothing

Negative earnings banks

Positive earnings banks

Low capital banks

Variables	Prediction	(1) Coeff.	(2) Coeff.	(3) Coeff.
NIneg	-/+	-0.0656*** (-9.731)	-0.0656** (-2.373)	-0.0581** (-2.737)
Lowcap*NIneg	-/+	0.0763*** (5.795)	0.0763** (2.384)	0.0717** (2.437)
NIneg*UGain(-1)	-	-6.528*** (-8.673)	-6.528*** (-2.871)	-6.465*** (-3.055)
Nipos	-	-0.00501* (-1.779)	-0.00501 (-1.230)	-0.00474 (-1.365)
Nipos*Uloss(-1)	+	9.060*** (6.545)	9.060*** (6.281)	9.092*** (7.892)
Lowcap	+	-0.00152*** (-6.408)	-0.00152* (-1.826)	-0.00147** (-2.250)
Lowcap*UGain(-1)	+	1.299*** (59.96)	1.299*** (31.34)	1.307*** (21.48)
Control variables				
Uloss(-1)		-0.0442*** (-3.189)	-0.0442*** (-3.242)	-0.0406 (-1.606)
UGain(-1)		0.00817** (2.271)	0.00817 (0.685)	0.00678 (0.525)
Other control variables		YES	YES	YES
Observations		9,986	9,986	9,986
R-squared		0.391	0.391	0.409
OLS		YES	YES	
Cluster Country			YES	YES
Year FE				YES
Cluster Year			YES	

t-statistics in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Income smoothing

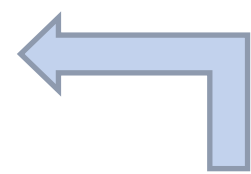
Mitigate incentives to smooth income

Income smoothing is more pronounced

No significant relationship

Income smoothing is more pronounced

Increasing regulatory capital is more pronounced



$$RGL_{i,t} = \alpha_0 + \beta_1 NIneg_{i,t} + \beta_2 NIneg_{i,t} \times LowCap_{i,t} + \beta_3 NIneg_{i,t} \times UGain_{i,t-1} + \beta_4 Nipos_{i,t} + \beta_5 Nipos_{i,t} \times ULoss_{i,t-1} + \beta_6 LowCap_{i,t} + \beta_7 LowCap_{i,t} \times UG_{i,t-1} + \beta_8 ULoss_{i,t-1} + \beta_9 UGain_{i,t-1} + \beta_{10} Size_{i,t} + \beta_{11} Liquid_{i,t} + \beta_{12} Sec_{i,t} + \beta_{13} Vix_{j,t-1} + \beta_{14} Unemp_{j,t} + \beta_{15} Lois_{j,t} + \epsilon_{i,t} \quad (2)$$

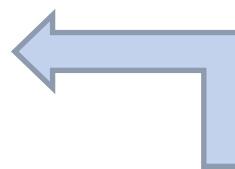
Empirical Analysis – Income smoothing between listed and unlisted banks

Variables	Prediction	(1)		(2)		(3)	
		Listed Coeff.	Unlisted Coeff.	Listed Coeff.	Unlisted Coeff.	Listed Coeff.	Unlisted Coeff.
NI	-	0.168*** (5.792)	-0.0253*** (-10.58)	0.168* (1.814)	-0.0253** (-2.012)	0.156 (1.672)	-0.0218 (-1.724)
Lowcap	+	1.35e-05 (0.00714)	0.0023*** (10.89)	1.35e-05 (0.0166)	0.0023*** (3.459)	0.000567 (0.667)	0.0024** (2.373)
Lowcap*NI	-/+	-0.144* (-1.741)	0.326*** (38.35)	-0.144* (-1.928)	0.326*** (4.964)	-0.122 (-1.555)	0.326*** (4.356)
Control variables							
Uloss(-1)		0.0155 (0.118)	0.0196* (1.745)	0.0155 (0.222)	0.0196 (1.059)	0.0131 (0.172)	0.0290 (1.263)
Ugain(-1)		0.529*** (6.439)	0.0317*** (9.378)	0.529*** (2.681)	0.0317 (1.062)	0.518** (2.683)	0.0303 (0.949)
Other control variables		YES	YES	YES	YES	YES	YES
Observations		770	9,216	770	9,216	770	9,216
R-squared		0.191	0.292	0.191	0.292	0.200	0.318
OLS		YES	YES	YES	YES		
Cluster Country				YES	YES	YES	YES
Year FE						YES	YES
Cluster Year				YES	YES		

Income smoothing

Low capital banks realize more AFS gains to increase regulatory capital

Low capital banks realize more AFS gains when they report positive earnings, which constrains income smoothing



$$RGL_{i,t} = \alpha_0 + \beta_1 NI_{i,t} + \beta_2 LowCap_{i,t} + \beta_3 NI_{i,t} \times LowCap_{i,t} + \beta_4 ULoss_{i,t-1} + \beta_5 UGain_{i,t-1} + \beta_6 Size_{i,t} + \beta_7 Liquid_{i,t} + \beta_8 Sec_{i,t} + \beta_9 VIX_{j,t-1} + \beta_{10} Unemp_{j,t} + \beta_{11} Lois_{j,t} + \varepsilon_{i,t} \quad (1)$$

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Empirical Analysis – Income smoothing between listed and unlisted banks

Variables	Prediction	(1)		(2)		(3)	
		Listed Coeff.	Unlisted Coeff.	Listed Coeff.	Unlisted Coeff.	Listed Coeff.	Unlisted Coeff.
NIneg	-/+	-0.202*** (-3.009)	-0.0630*** (-11.58)	-0.202*** (-2.948)	-0.0630** (-2.376)	-0.197** (-2.638)	-0.0543** (-2.553)
Lowcap*NIneg	-/+	0.241** (2.083)	0.0812*** (7.557)	0.241*** (4.515)	0.0812*** (2.751)	0.244*** (4.133)	0.0779** (2.675)
NIneg*UGain(-1)	-	13.77*** (2.776)	-7.839*** (-12.39)	13.77*** (3.077)	-7.839*** (-3.562)	13.10** (2.810)	-7.698*** (-3.648)
Nlpos	-	0.377*** (8.828)	-0.00919*** (-4.055)	0.377*** (2.748)	-0.00919** (-1.964)	0.367* (2.151)	-0.00759 (-1.410)
Nlpos*Uloss(-1)	+	37.68*** (3.244)	8.818*** (7.808)	37.68*** (9.571)	8.818*** (5.392)	37.00*** (3.367)	8.965*** (8.222)
Lowcap	+	0.00322 (1.211)	-0.00114*** (-5.876)	0.00322*** (3.221)	-0.00114 (-1.538)	0.00354*** (5.126)	-0.00103* (-1.974)
Lowcap*UGain(-1)	+	-0.454 (-0.976)	1.330*** (77.51)	-0.454 (40.99)	1.330*** (40.99)	-0.412*** (-7.102)	1.335*** (25.93)
Control variables							
Uloss(-1)		-0.171 (-1.210)	-0.0322*** (-2.856)	-0.171 (-1.279)	-0.0322** (-2.010)	-0.159 (-1.225)	-0.0250 (-1.253)
UGain(-1)		0.583*** (6.887)	0.000938 (0.330)	0.583*** (3.041)	0.000938 (0.192)	0.579** (2.984)	-0.000438 (-0.0654)
Other control variables		YES	YES	YES	YES	YES	YES
Observations		770	9,216	770	9,216	770	9,216
R-squared		0.240	0.521	0.240	0.521	0.246	0.547
OLS		YES	YES	YES	YES		
Cluster Country				YES	YES	YES	YES
Year FE						YES	YES
Cluster Year				YES	YES		

Income smoothing

Mitigate incentives to smooth income

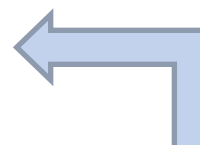
Income smoothing is more pronounced

Income smoothing

Income smoothing is more pronounced

Increasing regulatory capital

Increasing regulatory capital



$$RGL_{i,t} = \alpha_0 + \beta_1 NIneg_{i,t} + \beta_2 NIneg_{i,t} \times LowCap_{i,t} + \beta_3 NIneg_{i,t} \times UGain_{i,t-1} + \beta_4 Nlpos_{i,t} + \beta_5 Nlpos_{i,t} \times ULoss_{i,t-1} + \beta_6 LowCap_{i,t} + \beta_7 LowCap_{i,t} \times UGain_{i,t-1} + \beta_8 ULoss_{i,t-1} + \beta_9 UGain_{i,t-1} + \beta_{10} Size_{i,t} + \beta_{11} Liquid_{i,t} + \beta_{12} Sec_{i,t} + \beta_{13} Vix_{j,t-1} + \beta_{14} Unemp_{j,t} + \beta_{15} Lois_{j,t} + \varepsilon_{i,t} \quad (2)$$

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Empirical Analysis – Avoiding losses between listed and unlisted banks

Variables	Prediction	(1) NI<0 and NI+RGL>=0				(2) NI<0 and NI+RGL>=0				(3) NI<0 and NI+RGL>=0			
		Listed		Unlisted		Listed		Unlisted		Listed		Unlisted	
		Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
NI _{neg}	-	-4.576***	-0.860**	-1.234***	-1.065***	-4.576**	-0.860***	-1.234***	-1.065***	-3.323**	-0.821**	-1.214***	-1.030***
		(-8.559)	(-2.611)	(-84.23)	(-38.66)	(-2.381)	(-8.945)	(-17.26)	(-17.01)	(-2.510)	(-3.315)	(-17.67)	(-13.46)
Control variable													
Lowcap		-0.00405		0.000567		0.00405*		0.000567		0.00248*		0.000702	
		(-1.194)		(0.873)		*		(1.147)		**		*	
Uloss(-1)		-0.591		-0.0160		-0.591		-0.0160		-0.383**		-0.00321	
		(-1.643)		(-0.532)				(-0.685)		(-4.429)		(-0.133)	
Ugain(-1)		1.405***		-0.000998		1.405***		-0.000998		-0.135		-0.000545	
		(9.826)		(-0.253)		(5.883)		(-0.188)		(-0.948)		(-0.0831)	
Other control variables		NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Observations		269	34	3,154	985	269	34	3,154	985	267	32	3,154	985
R-squared		0.215	0.860	0.692	0.674	0.215	0.860	0.692	0.674	0.422	0.893	0.703	0.684
OLS		YES	YES	YES	YES	YES	YES	YES	YES				
Cluster Country						YES	YES	YES	YES	YES	YES	YES	YES
Year FE										YES	YES	YES	YES
Test H0: $\beta_1 < -100$						YES	YES	YES	YES				
		(-6.69)	(0.43)	(-15.99)	(-2.35)	(-1.86)	(1.46)	(-3.28)	(-1.03)	(-1.75)	(0.7)	(-3.12)	(-0.39)

Avoiding losses (The coefficient is smaller than -1)

Avoiding losses (The coefficient is smaller than -1)

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Empirical Analysis – Results without Italy or US

As a robustness check, we re-estimate the regressions without banks in Italy or US. Generally, the results are in line with the findings above.

Conclusions

- Overall, banks engage in **income smoothing**. Income smoothing is more pronounced when negative earnings banks have more unrealized gains and also when positive earnings banks have more unrealized losses. However, low regulatory capital banks have incentives to realize more gains when they report positive earnings, which mitigates incentives to smooth income.
- Banks with negative earnings but positive earnings after realized gains on AFS securities ($NI < 0$ and $NI + RGL \geq 0$) have incentives to **avoid losses**.

Conclusions

- **Banks with low regulatory capital** realize more gains to increase regulatory capital.
- The **income smoothing, avoiding losses, and capital management** are dominated by **unlisted banks**. But **listed banks** have more incentives to smooth earnings when they report negative earnings.
- This paper has implications for bank regulators and supervisors as well as accounting standard setters, in OECD countries.
- Bank regulators and supervisors could potentially identify troubled banks by unveiling the true financial performance of banks, especially in crisis period.

Conclusions

- Therefore, understanding how banks alter the timing and magnitude of AFS securities gains and losses to manage earnings and capital helps bank regulators and supervisors to monitor banks in order to ensure **financial soundness**.
- Accounting standard setters could further improve and enforce accounting standards to enhance accounting quality and efficiency by increasing the amount of information available to stakeholders.

Thank you.