



# Do investors pay sufficient attention to banks' other comprehensive income

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# Comprehensive income

What is comprehensive income (CI)?

“All changes in equity of an entity that result from recognized transactions and other economic events of the period other than transactions with owners in their capacity as owners”

ASC Topic 220 – Comprehensive income

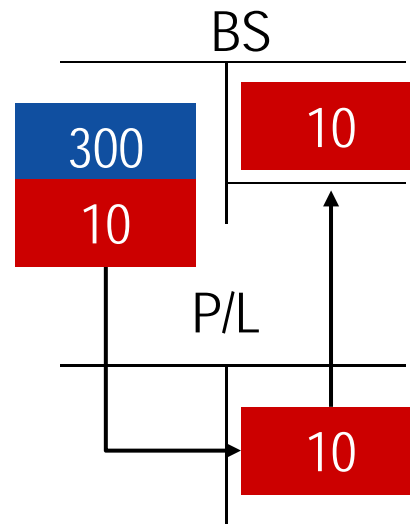
Comprehensive Income = Net Income + Other Comprehensive Income

# Net income (NI)

Example: Investment in a security

Acquisition cost at Jan. 1, 2015: 300

Market (fair) value at Dec. 31, 2015: 310



Unrealized (latent) gain is recognized in income

$$CI = NI + OCI$$

$$CI = 10 + 0 = \mathbf{10}$$

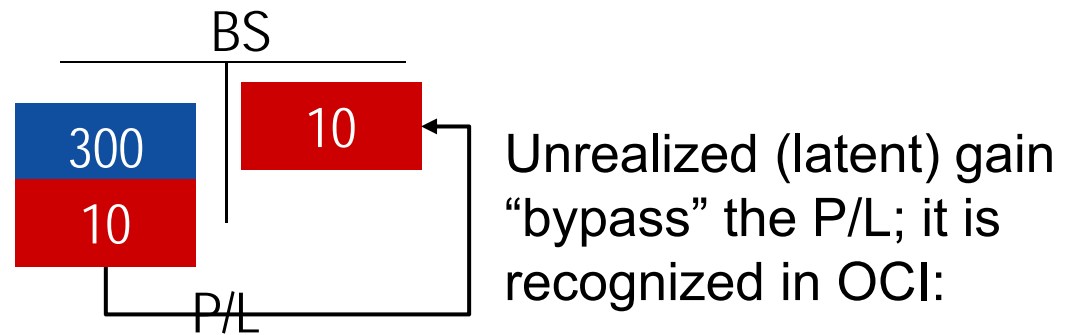


# Other comprehensive income (OCI)

Example: Investment in a security

Acquisition cost at Jan. 1, 2015: 300

Market (fair) value at Dec. 31, 2015: 310



$$CI = NI + OCI$$

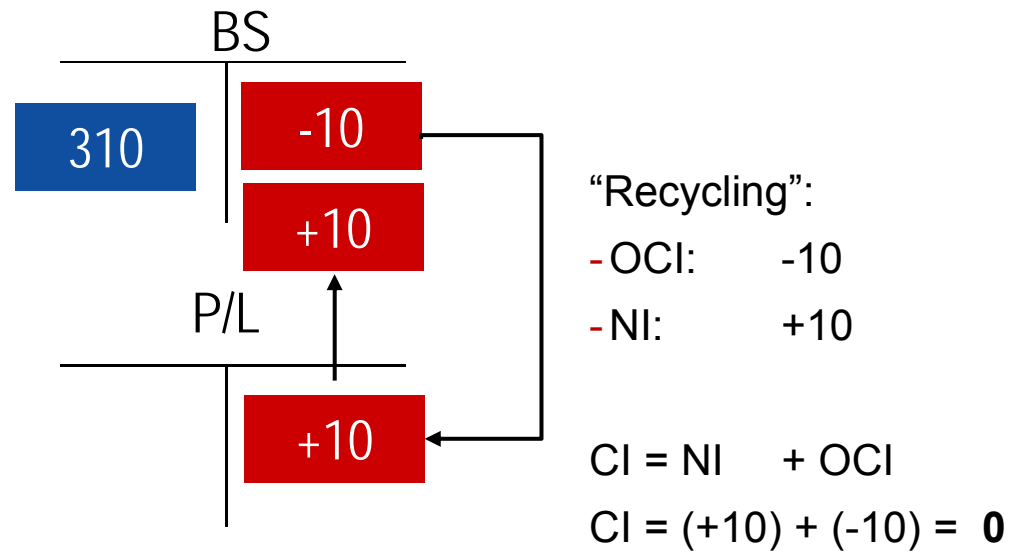
$$CI = 0 + 10 = 10$$



Motivation

# Other comprehensive income (OCI)

Acquisition cost at Jan. 1, 2015:	300
Market (fair) value at Dec. 31, 2015:	310
Manager <u>decides</u> to sell at Dec. 31, 2016:	310



# Materiality of OCI for banks



## Consolidated Statement of Comprehensive Income

(Dollars in millions)

	2012	2011	2010
<b>Net income (loss)</b>	<b>\$ 4,188</b>	<b>\$ 1,446</b>	<b>\$ (2,238)</b>
<b>Other comprehensive income, net-of-tax:</b>			
Net change in available-for-sale debt and marketable equity securities	<b>1,802</b>	(4,270)	5,872
Net change in derivatives	916	(549)	(701)
Employee benefit plan adjustments	(65)	(444)	145
Net change in foreign currency translation adjustments	<b>(13)</b>	(108)	237
<b>Other comprehensive income (loss)</b>	<b>2,640</b>	(5,371)	5,553
<b>Comprehensive income (loss)</b>	<b>\$ 6,828</b>	<b>\$ (3,925)</b>	<b>\$ 3,315</b>

Source: Bank of America form 10-K for fiscal year 2012

## Motivation

### Insurance sector: Axa



<i>(In Euro million)</i>	December 31, 2014 <sup>(a)</sup>	December 31, 2013 <sup>(b)</sup>
Reserves relating to changes in fair value through shareholders' equity	7,131	(2,339)
Translation reserves	2,625	(2,453)
<b>Items that may be reclassified subsequently to Profit or Loss</b>	<b>9,756</b>	<b>(4,791)</b>
Employee benefits actuarial gains and losses	(1,239)	726
<b>Items that will not be reclassified subsequently to Profit or Loss</b>	<b>(1,239)</b>	<b>726</b>
<b>Net gains and losses recognized directly through shareholders' equity</b>	<b>8,517</b>	<b>(4,066)</b>
<b>Net consolidated income</b>	<b>5,337</b>	<b>4,786</b>
<i>Split between:</i>		
Net consolidated income – Group share	5,024	4,482
Net consolidated income – Minority interests	313	304
<b>TOTAL COMPREHENSIVE INCOME (CI)</b>	<b>13,854</b>	<b>721</b>
<i>Split between:</i>		
Total comprehensive income – Group share	13,303	469
Total comprehensive income – Minority interests	552	252

Source: Axa annual report for fiscal year 2014

## Motivation

# Axa unrealized gains and losses on AFS securities

Source: Axa annual report for fiscal year 2014

2014	2013
Reserves relating to the change in fair value of financial instruments available for sale	Reserves relating to the change in fair value of financial instruments available for sale
8,488	10,887
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-
6,839	(2,399)
6,839	(2,399)
15,327	8,488





# Materiality of OCI for banks

## Key Assets on the Balance Sheets of U.S. Banks

(as a fraction of total assets for the years 2004 to 2006)

	<i>Large bank holding companies</i>	<i>Smaller bank holding companies</i>		<i>Large investment banks</i>
Trading assets	12.22%	0.71%	Trading assets	33.34%
Net trading assets	6.71%	0.37%	Net trading assets	15.66%
Other securities	14.69%	20.67%	Collateralized agreements	39.54%
Available-for-sale	14.56%	17.79%	Receivables	12.15%
Held-to-maturity	0.13%	2.88%	Securities received as collateral	2.83%
Loans and leases	47.28%	61.67%	Securities segregated for regulatory and other purposes	3.99%
Repo agreements	10.04%	2.41%	Financial instruments	97.73%
Financial instruments	87.83%	90.02%	<b>Total Assets</b>	<b>100%</b>
<b>Total Assets</b>	<b>100%</b>	<b>100%</b>		

Source: Laux and Leuz (2010)


Table 1.1. Illustration of Material AFS Unrealized Losses across Banks

Company	Country	Year	ROE	AFSUGLE
Dexia	Belgium	2008	-57.8%	-209.9%
Deutsche Bank	Germany	2008	-12.2	-14.1
Intesa Sanpaolo	Italy	2011	-17.0	-5.8
Banco Sabadell	Spain	2008	15.2	-9.6
Banco Sabadell	Spain	2010	6.7	-10.6
Banco Santander	Spain	2008	15.6	-5.9
BBVA	Spain	2010	13.3	-5.2
BBVA	Spain	2008	20.2	-7.7
HSBC	United Kingdom	2008	-12.2	-23.7
The Royal Bank of Scotland	United Kingdom	2008	-42.9	-8.5
Wells Fargo & Company	United States	2008	2.7	-6.7
Bank of New York Mellon	United States	2008	2.4	-8.1
Toronto-Dominion Bank	Canada	2008	14.9	-5.4

ROE after adjusting for unrealized gains and losses on AFS

**Notes:** AFSUGLE = AFS unrealized gains or losses/Equity. In Section 6, we also show the relative magnitude of components of net income (net interest income, fee income, impairments, trading profit) versus AFS and cash flow hedge gains or losses.

CFA Institute (2015) "Analyzing bank performance: Role of other comprehensive income"



Research question

Do investors adequately process the information content of reported other comprehensive income in the banking sector?

Due to their materiality, we focus on how market participants process the information about unrealized gains and losses on AFS securities

Potential lack of investors' attention

## Why investors may process OCI information slowly?

- 1 – OCI items may be perceived as noisy and transitory items (Jones and Smith, 2011) – Fair value adjustments
- 2 – Disclosures about OCI are sometimes complex (Maines and McDaniel, 2000) – Presentation format
- 3 – Limited available granular information from data providers (e.g., Bloomberg)
- 4 – No conceptual basis for the existence of OCI (Shane and Rees, 2012) – *Performance reporting* is on the IASB agenda
- 5 – Functional fixation on earnings (Elliott et al., 2011; Barth et al., 2014), i.e., OCI information is less prominent than earnings information



### *Investors:*

*H1:* Investors react with a delay to banks' unrealized gains and losses on AFS securities.

→ *empirical implication: stock price predictability*

*Analysts (“compensated snoopers”): Earnings forecasts (frequent) vs. Recommendations (unfrequent)*

*H2:* Financial analysts react with a delay to unrealized gains and losses on AFS securities when revising their earnings' forecasts.

*H3:* Financial analysts do not take into account unrealized gains and losses on AFS securities when revising their recommendations.



### *Mortgage REITS (Benchmark):*

A sector where comprehensive income is more prominent than net income

*H4:* Investors do not react with a delay to reported unrealized gains and losses on AFS securities of mortgage REITS.

## Empirical findings

### Descriptive statistics

	Mean	Std. Dev.	p25	p50	p75	N
<i>ROA</i>	0.62%	1.24%	0.44%	0.79%	1.09%	8,283
<i>ROE</i>	6.64%	1.42	4.44%	8.52%	12.29%	8,283
<i>EPS</i> (\$)	0.998	256	0.513	1.148	1.870	8,196
<i>Assets</i> (\$ million)	28,711	149,366	516	1,109	3,564	8,283
<i>ROE</i> retreated for unrealized <b>losses</b> on AFS securities	2.92%	30.99%	2.54%	6.86%	10.74%	3,496
<i>Diff with reported ROE</i>	-3.72%			-1.66%		
<i>ROE</i> retreated for unrealized <b>gains</b> on AFS securities	9.83%	195.15%	5.61%	9.87%	14.20%	4,564
<i>Diff with reported ROE</i>	3.19%			1.36%		
Realized gains and losses on AFS securities divided by total assets	0.015%	0.145%	0.000%	0.003%	0.045%	5,684
Realized gains and losses on AFS securities divided by number of common shares (in cents)	2.93	27.48	0.00	0.31	6.09	5,629

Source: Compustat Bank Fundamental Annual universe over the 2001-2014 period – US Banks

## Empirical findings

# Reported unrealized gains and losses on AFS and future abnormal returns

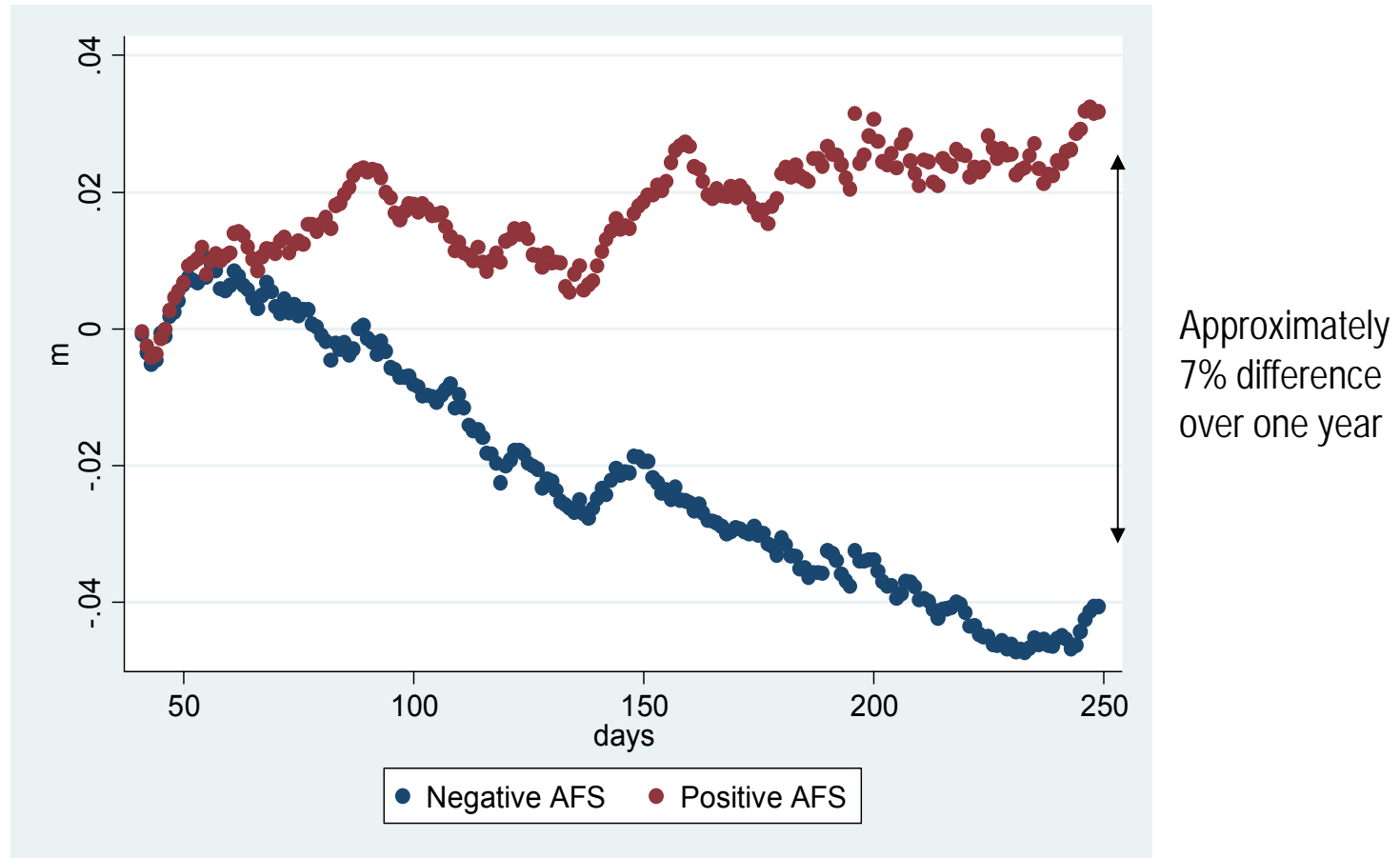


Figure 1 presents cumulative abnormal returns computed over 250 days in fiscal year  $t+1$  starting 40 trading days after the end of fiscal year  $t$  for banks that report unrealized gains on AFS securities in fiscal year  $t$  (red) and banks that report unrealized losses on AFS securities in fiscal year  $t$  (blue).



## Empirical findings

### Investors' delayed response to reported OCI information

More time after disclosure of OCI

	1-month cumulative abnormal return			4-month cumulative abnormal return			10-month cumulative abnormal return		
$\Delta AFS_t$	<b>0.643</b> (0.889)	<b>0.563</b> (0.883)	<b>0.378</b> (0.880)	<b>5.130***</b> (1.177)	<b>5.224***</b> (1.178)	<b>5.063***</b> (1.178)	<b>10.49***</b> (1.736)	<b>10.77***</b> (1.721)	<b>10.85***</b> (1.722)
$EPS_t$		-0.010*** (0.001)	-0.009*** (0.001)		0.004*** (0.001)	0.005*** (0.001)		0.022*** (0.002)	0.021*** (0.002)
$BTM_t$			-0.000*** (0.000)			-0.000*** (0.000)			0.000 (0.000)
$SIZE_t$			0.000*** (0.000)			0.000* (0.000)			0.000 (0.000)
<b>Cons.</b>	0.004** (0.002)	0.015*** (0.002)	0.027*** (0.004)	-0.003 (0.003)	-0.007** (0.003)	0.003 (0.005)	-0.020*** (0.004)	-0.042*** (0.005)	-0.048*** (0.007)
<b>Nb. Obs.</b>	5,463	5,445	5,445	5,463	5,445	5,445	5,463	5,445	5,445
<b>R<sup>2</sup></b>	0.000	0.018	0.027	0.003	0.005	0.008	0.007	0.029	0.029

## Empirical findings

### Trading strategy: Monthly Alpha

$$RET = \alpha_0 + b_1 MKT + b_2 SMB + b_3 HML + b_4 MOM + \varepsilon$$

	(1)	(2)	(3)	(4)	(5)	(6)
<b>Alpha</b>	<b>0.013**</b> (0.006)	<b>0.013**</b> (0.006)	<b>0.012*</b> (0.006)	<b>0.011**</b> (0.005)	<b>0.011**</b> (0.005)	<b>0.011**</b> (0.005)
<b>MKT</b>	-0.309** (0.140)	-0.372** (0.152)	-0.337* (0.174)	-0.424*** (0.122)	-0.464*** (0.133)	-0.384** (0.151)
<b>SMB</b>		0.286 (0.266)	0.268 (0.270)		0.251 (0.231)	0.210 (0.234)
<b>HML</b>		0.003 (0.284)	0.029 (0.292)		-0.236 (0.247)	-0.177 (0.253)
<b>MOM</b>			0.059 (0.142)			0.135 (0.123)
<b>10<sup>th</sup> vs. 1<sup>st</sup> deciles</b>	X	X	X			
<b>10<sup>th</sup> and 9<sup>th</sup> vs. 1<sup>st</sup> and 2<sup>nd</sup> deciles</b>				X	X	X
<b>Observations</b>	130	130	130	130	130	130
<b>R-squared</b>	0.036	0.046	0.047	0.086	0.099	0.107

>> Between 13.2% and 15.6% of abnormal return for one year

## Empirical findings

# Financial analysts' delayed response to reported OCI

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Dependent variable: Probability of a decrease in EPS forecast

	Between 3 and 6 month	Between 6 and 9 months
$\Delta$ AFS	-3.996*** (1.533)	-6.101*** (1.550)
EPS Change	-0.000*** (0.000)	-0.000** (0.000)
Constant	0.216*** (0.015)	0.383*** (0.014)
Year fixed effects	Yes	Yes
Observations	25,251	25,702
R-squared	0.064	0.038

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## Empirical findings

# Financial analysts' delayed response to reported OCI

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Dependent variable: Probability of a recommendation downgrade

	Between 3 and 6 month	Between 6 and 9 months
$\Delta$ AFS	2.450 (3.559)	-1.721 (3.666)
EPS Change	-0.000 (0.000)	0.000 (0.000)
Constant	-0.146*** (0.030)	-0.018 (0.014)
Year fixed effects	Yes	Yes
Observations	4,359	4,686
R-squared	0.012	0.016

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## What is a mortgage REITS?

- Mortgage Real Estate Investment Trusts (mREITS)
    - 1) Mortgage REITS are investment vehicles that invest in mortgages, and in particular in mortgage backed securities (MBS)
    - 2) A considerable fraction of their total assets are investments classified as AFS securities
    - 3) Net Asset Value (book value per share) is the primary performance measure, which is affected by comprehensive income
- >> Investors in such vehicles should pay more attention to OCI

Evidence from the mortgage REITS sector

# What is a mortgage REITS?



Example: Hatteras Financial Corp.

December 31, 2014

Assets

Mortgage-backed securities, at fair value (including pledged assets of \$16,538,214 and \$17,049,670, respectively)	\$	17,587,010
Mortgage loans held for investment, at fair value		31,460
Cash and cash equivalents (including pledged cash of \$323,791 and \$225,379, respectively)		627,595
Unsettled purchased mortgage-backed securities, at fair value		24,792
Receivable for securities sold		5,197
Accrued interest receivable		54,274
Principal payments receivable		111,439
Other investments		41,252
Derivative assets, at fair value		27,151
Other assets		6,630
Total assets	\$	18,516,800

Source: Hatteras Financial 10-K report for fiscal year 2014  
**95%** of total assets classified as AFS securities in 2014

## Empirical findings

### Evidence from the mortgage REITS sector

More time after disclosure of OCI

	1-month cumulative abnormal return			4-month cumulative abnormal return			10-month cumulative abnormal return		
<b>DAFS<sub>t</sub></b>	<b>-0.428</b>	<b>-0.440</b>	<b>-0.341</b>	<b>-0.139</b>	<b>-0.326</b>	<b>-0.448</b>	<b>-0.409</b>	<b>-1.180</b>	<b>-1.409</b>
	(0.414)	(0.666)	(0.679)	(0.516)	(0.819)	(0.833)	(0.76)	(1.200)	(1.220)
<b>DEPS<sub>t</sub></b>		0.001	0.001		0.010*	0.010*		0.018**	0.019**
		(0.004)	(0.004)		(0.005)	(0.005)		(0.008)	(0.008)
<b>BTM<sub>t</sub></b>			-0.008			0.002			0.006
			(0.008)			(0.010)			(0.014)
<b>SIZE<sub>t</sub></b>			-0.000			-0.000			-0.000
			(0.000)			(0.000)			(0.000)
<b>Cons.</b>	-0.002	0.002	0.018	0.003	0.014	0.022	0.003	0.014	0.022
	(0.012)	(0.013)	(0.019)	(0.015)	(0.016)	(0.024)	(0.01)	(0.016)	(0.024)
<b>N</b>	273	251	251	273	251	251	273	251	251
<b>R<sup>2</sup></b>	0.004	0.002	0.007	0.000	0.013	0.022	0.000	0.013	0.022

No evidence that investors fail to incorporate the information content of OCI



## Conclusion

- Findings:
  1. investors are slow to react to the information content of unrealized gains and losses on AFS securities
  2. We can design a profitable trading strategy to exploit investors' delayed response to OCI information
  3. We document that financial analysts do not appear to be more able to rapidly process the information content of OCI in their forecasts
  4. We do not find a similar pattern on an industry for which OCI is more prominent, which is consistent with our argument that a lack of attention drives our results





# Contributions

1. Financial reporting for banks where OCI are material. It is also relevant for other sectors, e.g., insurance sector:
2. Our results are relevant for investors and the literature on investors' attention
3. Relevant results for regulators and standard setters: IASB agenda on performance reporting



**THANKS**

