



Post-implementation Review of IFRS 13 *Fair Value Measurement* Appendices (for reference only)

20 October 2017
Agenda Paper 5 Appendices

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Appendices:

- 1. Feedback on IFRS 13 PIR from CMAC/GPF June 2017 meeting**
- 2. Disclosure examples**

Appendix 1: Feedback from joint CMAC/GPF meeting in June

- Most useful Level 3 disclosures identified as:
 - description of valuation technique and inputs used;
 - quantitative information about significant unobservable inputs;
 - reconciliation of changes in the fair value measurement from beginning to end of reporting period;
 - description of sensitivity to reasonably possible change in assumptions;
 - the methods and assumptions used in preparing the sensitivity analyses;
 - quantitative information about transfers between Level 3 and Level 2; and
 - description of changes to valuation technique, and reasons.
- Although narrative description of valuation techniques was useful, CMAC members thought it was often long, boilerplate and unsuited for an average investor.

Appendix 1: Feedback from joint CMAC/GPF meeting in June - continued

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- Suggestions for improvements
 - use more tables and graphs in presentation, focussing on material items (the Board's work on Better Communications in Financial Reporting, including the Principles of Disclosure project could help);
 - more Level 2 disclosures;
 - provide more information about:
 - the range of values that was possible; and
 - where the input used by management sits within that range.

Appendix 2: Disclosure examples

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- Information IFRS 13 requires to be disclosed
- Examples of most discussed fair value disclosures

IFRS 13 disclosure requirements (for reference only)

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Disclosure requirements	Item measured at fair value						Item measured at cost, fair value disclosed		
	Recurring			Non-recurring			disclosed		
	L1	L2	L3	L1	L2	L3	L1	L2	L3
Fair value at end of reporting period	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reasons for the measurement				✓	✓	✓			
Level within fair value hierarchy	✓	✓	✓	✓	✓	✓	✓	✓	✓
Transfers between the levels in the hierarchy	✓	✓	✓						
Policy for determining when transfers between hierarchy have occurred	✓	✓	✓						
Description of valuation technique and inputs used		✓	✓		✓	✓		✓	✓
Changes to valuation technique and reasons		✓	✓		✓	✓		✓	✓
Quantitative information about significant unobservable inputs			✓			✓			
Reconciliation of opening and closing balance (including information on transfers in or out)			✓						
Unrealised gains/losses recognised in profit or loss			✓						
Description of valuation processes and policies			✓			✓			
Sensitivity to changes in unobservable inputs (narrative)			✓						
Sensitivity to reasonably possible change in assumptions (quantitative, for financial instruments only)			✓						
If highest and best use differs from current use, reasons why (non-financial assets only)	✓	✓	✓	✓	✓	✓	✓	✓	✓
If portfolio exception in paragraph 48 of the standard is applied (financial instruments only)	✓	✓	✓						

Recurring: IFRS Standards require or permit FVM at the end of each reporting period. FVM for financial instruments, property, plant & equipment, intangible assets, investment property and agricultural assets carried at fair value are recurring.

Non-recurring: IFRS Standards require or permit FVM in particular circumstances. FVM for assets held for sale and impaired assets are non-recurring.

Disclosure examples provided

- We provided some examples of most discussed disclosures about fair value measurements
- Fair value measurement hierarchy
 - Example 1 Financial Institution
 - Example 2 Financial Institution
 - Example 3 Investment Property
- Valuation techniques and significant unobservable inputs for Level 3 measurements
 - Example 1 Financial Institution
 - Example 2 Financial Institution
 - Example 3 Investment Property
- Reconciliation of changes in Level 3 measurements
 - Example 1 Financial Institution
 - Example 2 Financial Institution
 - Example 3 Investment Property
- Sensitivity analysis for Level 3 measurements
 - Example 1 Financial Institution
 - Example 2 Financial Institution
 - Example 3 Investment Property (voluntary disclosure)

Fair value measurement hierarchy

Example 1 (financial institution)

Assets and liabilities held at fair value by product type

	Assets			Liabilities		
	Valuation technique using			Valuation technique using		
	Quoted market prices (Level 1)	Observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Quoted market prices (Level 1)	Observable inputs (Level 2)	Significant unobservable inputs (Level 3)
	£m	£m	£m	£m	£m	£m
As at 31 December 2015						
Interest rate derivatives	–	228,751	2,675	–	(218,864)	(2,247)
Foreign exchange derivatives	2	54,839	95	(4)	(58,594)	(196)
Credit derivatives ^a	–	16,279	1,902	–	(16,405)	(219)
Equity derivatives	3,830	9,279	690	(2,870)	(14,037)	(1,545)
Commodity derivatives	2,510	6,801	56	(2,576)	(6,133)	(562)
Government and government sponsored debt	55,150	52,967	419	(15,036)	(5,474)	(1)
Corporate debt	352	11,598	2,895	(234)	(4,558)	(15)
Certificates of deposit, commercial paper and other money market instruments	82	503	–	(5)	(6,955)	(382)
Reverse repurchase and repurchase agreements ^b	–	49,513	–	–	(50,838)	–
Non-asset backed loans	–	1,931	16,828	–	–	–
Asset backed securities	–	12,009	770	–	(384)	(37)
Commercial real estate loans	–	–	551	–	–	–
Issued debt	–	–	–	–	(29,695)	(546)
Equity cash products	29,704	4,038	171	(8,943)	(221)	–
Funds and fund linked products	–	1,649	378	–	(1,601)	(148)
Physical commodities	87	156	–	–	–	–
Other ^c	42	971	9,185	(1,024)	(1,268)	(4,344)
Total	91,759	451,284	36,615	(30,692)	(415,027)	(10,242)
As at 31 December 2014						
Interest rate derivatives	–	308,706	1,239	(5)	(299,181)	(1,344)
Foreign exchange derivatives	4	74,358	108	(3)	(79,188)	(138)
Credit derivatives ^a	–	21,541	1,966	–	(21,958)	(409)
Equity derivatives	3,847	9,750	1,247	(3,719)	(13,780)	(2,092)
Commodity derivatives	6,012	10,946	185	(6,586)	(10,580)	(337)
Government and government sponsored debt	62,577	48,296	1,014	(11,563)	(14,002)	(346)
Corporate debt	151	22,036	3,061	–	(3,572)	(13)
Certificates of deposit, commercial paper and other money market instruments	78	921	–	(4)	(6,276)	(665)
Reverse repurchase and repurchase agreements	–	5,236	–	–	(5,423)	–
Non-asset backed loans	1	2,462	17,744	–	–	–
Asset backed securities	30	16,211	1,631	–	(67)	–
Commercial real estate loans	–	–	1,180	–	–	–
Issued debt	–	–	–	(10)	(40,592)	(749)
Equity cash products	40,252	7,823	171	(15,276)	(699)	–
Funds and fund linked products	–	2,644	631	–	(2,060)	(210)
Physical commodities	4	1,447	–	–	(363)	–
Other ^c	70	1,530	17,663	(2)	(22)	(13,297)
Total	113,026	533,907	47,840	(37,168)	(497,763)	(19,600)

Fair value measurement hierarchy

Example 2 (financial institution)

Carrying value of the financial instruments held at fair value¹

in € m.	Dec 31, 2016			Dec 31, 2015		
	Quoted prices in active market (Level 1)	Valuation technique observable parameters (Level 2)	Valuation technique unobservable parameters (Level 3)	Quoted prices in active market (Level 1)	Valuation technique observable parameters (Level 2)	Valuation technique unobservable parameters (Level 3)
Financial assets held at fair value:						
Trading assets	89,943	70,415	10,686	90,031	93,253	12,751
Trading securities	89,694	62,220	5,012	89,718	82,869	6,669
Other trading assets	248	8,195	5,674	313	10,384	6,082
Positive market values from derivative financial instruments	13,773	461,579	9,798	5,629	500,520	9,445
Financial assets designated at fair value through profit or loss	10,118	75,867	1,601	18,024	86,751	4,478
Financial assets available for sale	28,695	23,380	4,153	43,260	25,449	4,874
Other financial assets at fair value	28	3,618 ²	33	0	3,136 ²	0
Total financial assets held at fair value	142,558	634,860	26,271	156,943	709,109	31,549
Financial liabilities held at fair value:						
Trading liabilities	41,664	15,311	52	40,185	12,102	18
Trading securities	41,664	14,874	52	40,154	11,155	18
Other trading liabilities	0	437	0	30	947	0
Negative market values from derivative financial instruments	13,616	441,386	8,857	5,528	480,668	7,879
Financial liabilities designated at fair value through profit or loss	4	58,259	2,229	2	41,797	3,053
Investment contract liabilities ³	0	592	0	0	8,522	0
Other financial liabilities at fair value	0	4,647 ²	(848) ⁴	0	6,492 ²	(1,146) ⁴
Total financial liabilities held at fair value	55,283	520,195	10,290	45,715	549,581	9,805

¹ Amounts in this table are generally presented on a gross basis, in line with the Group's accounting policy regarding offsetting of financial instruments, as described in Note 1 "Significant Accounting Policies and Critical Accounting Estimates".

² Predominantly relates to derivatives qualifying for hedge accounting.

³ These are investment contracts where the policy terms and conditions result in their redemption value equaling fair value. See Note 42 "Insurance and Investment Contracts" for more detail on these contracts.

⁴ Relates to derivatives which are embedded in contracts where the host contract is held at amortized cost but for which the embedded derivative is separated. The separated embedded derivatives may have a positive or a negative fair value but have been presented in this table to be consistent with the classification of the host contract. The separated embedded derivatives are held at fair value on a recurring basis and have been split between the fair value hierarchy classifications.

Fair value measurement hierarchy

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Example 3 (investment property)

(US\$ Millions)	Dec. 31, 2016					Dec. 31, 2015				
	Level 1		Level 3			Level 1		Level 3		
			Level 2	Commercial properties	Commercial developments			Level 2	Commercial properties	Commercial developments
Core Office										
United States	\$	—	\$	—	\$ 16,142	\$	—	\$	—	\$ 17,354
Canada		—		—	4,015		—		—	3,924
Australia		—		—	2,112		—		—	2,504
Europe		—		—	583		—		—	1,071
Brazil		—		—	250		—		—	195
Opportunistic										
Opportunistic Office		—		—	5,645		—		—	2,357
Opportunistic Retail		—		—	4,214		—		—	887
Industrial		—		—	2,173		—		—	1,753
Multifamily		—		—	3,574		—		—	4,458
Triple Net Lease		—		—	4,790		—		—	4,608
Self-storage		—		—	1,592		—		—	—
Student Housing		—		—	609		—		—	—
Total	\$	—	\$	—	\$ 45,699	\$	—	\$	—	\$ 39,111
					\$ 3,085					\$ 2,488

Valuation techniques and significant unobservable inputs for Level 3 measurements

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Example 1(financial institution)

	Total assets £m	Total liabilities £m	Valuation technique(s)	Significant unobservable inputs	2015 Range		2014 Range		Units*
					Min	Max	Min	Max	
Derivative financial instruments ^b									
Interest rate derivatives	2,675	(2,247)	Discounted cash flows Option model	Inflation forwards	0.3	8	(0.5)	11	%
				Inflation volatility	36	197	40	300	bp vol
				IR – IR correlation	(55)	100	(88)	100	%
				FX – IR correlation	(20)	30	14	90	%
				Interest rate volatility	5	249	6	437	bp vol
Credit derivatives ^c	1,902	(219)	Discounted cash flows Correlation model	Credit spread	140	413	116	240	bps
				Credit correlation	26	41	36	90	%
			Comparable pricing	Credit spread	10	9,923	6	5,898	bps
				Price	80	102	64	100	points
Equity derivatives	690	(1,545)		Equity volatility	–	318	1	97	%
				Equity – equity correlation	(54)	100	(55)	99	%
				Equity – FX correlation	(100)	40	(80)	55	%
Non-derivative financial instruments									
Corporate debt	2,895	(15)	Discounted cash flows Comparable pricing	Credit spread	120	529	140	900	bps
				Price	1	114	–	104	points
Asset backed securities	770	(37)	Discounted cash flows	Conditional prepayment rate	–	25	–	5	%
				Constant default rate	–	2	–	9	%
			Comparable pricing	Loss given default	30	100	45	100	%
				Yield	5	58	3	11	%
				Credit spread	157	1,416	74	2,688	bps
				Price	1	114	–	100	points
Commercial real estate loans	551	–	Discounted cash flows	Loss given default	0	100	–	100	%
				Yield	–	–	4	8	%
				Credit spread	230	801	124	675	bps
Non-asset backed loans	16,828	–	Discounted cash flows	Loan spread	3	994	39	1,000	bps
Other ^d	1,855	(173)	Discounted cash flows	Loss given default	–	94	–	–	%
				Yield	7	12	8	9	%
			Comparable pricing	Price	–	103	–	133	points

Valuation techniques and significant unobservable inputs for Level 3 measurements

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Example 2 (financial institution)

Financial instruments classified in Level 3 and quantitative information about unobservable inputs

	Fair value				Dec 31, 2016	
in € m. (unless stated otherwise)	Assets	Liabilities	Valuation technique(s) ¹	Significant unobservable input(s) (Level 3)		Range
Financial instruments held at fair value – held for trading, designated at fair value and available-for-sale:						
Mortgage and other asset backed securities held for trading:						
Commercial mortgage-backed securities	294	0	Price based Discounted cash flow	Price Credit spread (bps)	0 % 119	103 % 2,000
Mortgage- and other asset-backed securities	1,071	0	Price based Discounted cash flow	Price Credit spread (bps) Recovery rate Constant default rate Constant prepayment rate	0 % 105 0 % 0 % 0 %	110 % 2,000 100 % 18 % 29 %
Total mortgage- and other asset-backed securities	1,365	0				
Debt securities and other debt obligations						
Held for trading	3,626	1,757	Price based	Price	0 %	169 %
Corporate, sovereign and other debt securities	3,373	52	Discounted cash flow	Credit spread (bps)	26	882
Available-for-sale	253					
Designated at fair value	0	1,705				
Equity securities	937	0	Market approach	Price per net asset value Enterprise value/EBITDA (multiple)	60 % 1	100 % 12
Held for trading	274	0				
Available-for-sale	633		Discounted cash flow	Weighted average cost capital	8 %	22 %
Designated at fair value	30					
Loans	7,571	0	Price based	Price	0 %	180 %
Held for trading	4,105	0	Discounted cash flow	Credit spread (bps)	180	4,612
Designated at fair value	980			Constant default rate	0 %	24 %
Available-for-sale	2,486			Recovery rate	25 %	80 %
Loan commitments	0	40	Discounted cash flow	Credit spread (bps)	0	481
				Recovery rate	30 %	99 %
			Loan pricing model	Utilization	0 %	100 %
Other financial instruments	2,974²	485³	Discounted cash flow	IRR	3 %	24 %
				Repo rate (bps)	178	214
Total non-derivative financial instruments held at fair value	16,474	2,282				

	Fair value				Dec 31, 2016	
in € m. (unless stated otherwise)	Assets	Liabilities	Valuation technique(s)	Significant unobservable input(s) (Level 3)	Range	
Financial instruments held at fair value:						
Market values from derivative financial instruments:						
Interest rate derivatives	5,587	3,446	Discounted cash flow	Swap rate (bps)	(0)	2,309
				Inflation swap rate	(1) %	16 %
				Constant default rate	0 %	15 %
				Constant prepayment rate	0 %	19 %
			Option pricing model	Inflation volatility	0 %	5 %
				Interest rate volatility	0 %	123 %
				IR - IR correlation	(12) %	99 %
				Hybrid correlation	(50) %	93 %
Credit derivatives	829	1,126	Discounted cash flow	Credit spread (bps)	0	8,427
				Recovery rate	0 %	100 %
			Correlation pricing model	Credit correlation	13 %	85 %
Equity derivatives	1,142	2,098	Option pricing model	Stock volatility	10 %	67 %
				Index volatility	10 %	44 %
				Index - index correlation	73 %	88 %
				Stock - stock correlation	8 %	88 %
				Stock Forwards	0 %	8 %
				Index Forwards	0 %	20 %
FX derivatives	1,654	1,780	Option pricing model	Volatility	(8) %	39 %
Other derivatives	586	(441) ¹	Discounted cash flow	Credit spread (bps)	—	—
			Option pricing model	Index volatility	5 %	110 %
				Commodity correlation	(21) %	85 %
Total market values from derivative financial instruments	9,798	8,008				

¹ Includes derivatives which are embedded in contracts where the host contract is held at amortized cost but for which the embedded derivative is separated.

¹ Valuation technique(s) and subsequently the significant unobservable input(s) relate to the respective total position.

² Other financial assets include € 1.6 billion of other trading assets, € 592 million of other financial assets designated at fair value and € 780 million other financial assets available for sale.

³ Other financial liabilities include € 444 million of securities sold under repurchase agreements designated at fair value and € 41 million of other financial liabilities designated at fair value.

Valuation techniques and significant unobservable inputs for Level 3 measurements

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Example 3 (investment property)

Consolidated properties	Primary valuation method	Dec. 31, 2016			Dec. 31, 2015		
		Discount rate	Terminal capitalization rate	Investment horizon (yrs.)	Discount rate	Terminal capitalization rate	Investment horizon (yrs.)
Core Office							
United States	Discounted cash flow	6.8%	5.6%	12	6.9%	5.7%	12
Canada	Discounted cash flow	6.2%	5.5%	10	6.1%	5.5%	10
Australia	Discounted cash flow	7.3%	6.1%	10	7.6%	6.2%	10
Europe	Discounted cash flow	6.0%	5.0%	12	6.0%	5.1%	12
Brazil	Discounted cash flow	9.3%	7.5%	10	9.3%	7.5%	10
Opportunistic Office	Discounted cash flow	9.9%	7.6%	7	11.5%	8.3%	6
Opportunistic Retail	Discounted cash flow	10.2%	8.1%	12	11.3%	8.5%	10
Industrial	Discounted cash flow	7.4%	6.6%	10	7.6%	6.8%	10
Multifamily⁽¹⁾	Direct capitalization	4.9%	n/a	n/a	5.1%	n/a	n/a
Triple Net Lease⁽¹⁾	Direct capitalization	6.1%	n/a	n/a	6.3%	n/a	n/a
Self-storage⁽¹⁾	Direct capitalization	6.2%	n/a	n/a	n/a	n/a	n/a
Student Housing⁽¹⁾	Direct capitalization	5.9%	n/a	n/a	n/a	n/a	n/a

⁽¹⁾ The valuation method used to value multifamily, triple net lease, self-storage, and student housing properties is the direct capitalization method. The rates presented as the discount rate relate to the overall implied capitalization rate. The terminal capitalization rate and investment horizon are not applicable.

Reconciliation of movements in Level 3 measurements

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Example 1 (financial institution)

Analysis of movements in Level 3 assets and liabilities											
	As at 1 January 2015 Em	Purchases Em	Sales Em	Issues Em	Settlements Em	Total gains and losses in the period recognised in the income statement		Total gains or losses recognised in OCI Em	Transfers		As at 31 December 2015 Em
						Trading income Em	Other income Em		In Em	Out Em	
Government and government sponsored debt	685	27	(119)	–	(109)	(6)	–	–	2	(160)	320
Corporate debt	3,026	62	(64)	–	(20)	(47)	–	–	5	(80)	2,882
Asset backed securities	1,610	1,365	(1,565)	–	(711)	58	–	–	5	(19)	743
Non-asset backed loans	273	520	(251)	–	(3)	(42)	–	–	11	(1)	507
Funds and fund linked products	589	–	(174)	–	(56)	(27)	–	–	12	(4)	340
Other	144	23	(19)	–	(9)	(14)	–	–	53	(23)	155
Trading portfolio assets	6,327	1,997	(2,192)	–	(908)	(78)	–	–	88	(287)	4,947
Commercial real estate loans	1,179	3,540	(3,878)	–	(342)	49	1	–	–	–	549
Non-asset backed loans ^a	17,471	192	(114)	–	(756)	(531)	(6)	–	–	–	16,256
Asset backed loans	393	1,098	(1,260)	–	2	8	–	–	15	–	256
Private equity investments	701	94	(200)	–	(3)	8	38	–	4	(132)	510
Other	161	66	(31)	–	(3)	(11)	5	–	26	(26)	187
Financial assets designated at fair value	19,905	4,990	(5,483)	–	(1,102)	(477)	38	–	45	(158)	17,758
Asset backed securities	1	–	–	–	–	–	–	–	–	(1)	–
Government and government sponsored debt	327	14	(36)	–	–	–	–	1	–	(212)	94
Other	985	65	(91)	–	(1,026)	–	549	419	27	–	928
Available for sale investments	1,313	79	(127)	–	(1,026)	–	549	420	27	(213)	1,022
Other^a	207	27	(89)	–	–	–	(5)	–	–	–	140
Trading portfolio liabilities	(349)	–	–	–	–	–	–	–	–	349	–
Certificates of deposit, commercial paper and other money market instruments	(666)	–	–	(216)	261	–	17	–	–	221	(383)
Issued debt	(748)	–	–	(16)	245	(4)	(8)	–	(38)	4	(565)
Other	(402)	–	–	–	(19)	(18)	75	–	–	10	(354)
Financial liabilities designated at fair value	(1,816)	–	–	(232)	487	(22)	84	–	(38)	235	(1,302)
Interest rate derivatives	(105)	1	218	–	(247)	203	–	–	243	117	430
Credit derivatives	1,557	273	(12)	–	(6)	(123)	–	–	(11)	7	1,685
Equity derivatives	(845)	111	(2)	(290)	103	34	–	–	(21)	52	(858)
Commodity derivatives	(152)	–	–	–	(66)	(6)	–	–	(388)	106	(506)
Foreign exchange derivatives	(30)	14	(1)	(7)	9	(14)	–	–	(73)	–	(102)
Net derivative financial instruments^a	425	399	203	(297)	(207)	94	–	–	(250)	282	649
Total	26,012	7,492	(7,688)	(529)	(2,756)	(483)	666	420	(128)	208	23,214

Reconciliation of movements in Level 3 measurements

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Example 2 (financial institution)

Reconciliation of financial instruments classified in Level 3

Dec 31, 2016

In € m.	Balance, beginning of year	Changes in the group of consolidated companies	Total gains/losses ¹	Purchases	Sales	Issuances ²	Settlements ³	Transfers into Level 3 ⁴	Transfers out of Level 3 ⁴	Balance, end of year
Financial assets held at fair value:										
Trading securities	6,669	(0)	143	1,736	(3,605)	0	(990)	1,589	(528)	5,012
Positive market values from derivative financial instruments	9,445	(60)	(88)	0	0	0	(1,290)	4,158	(2,367)	9,798
Other trading assets	6,082	66	56	2,196	(3,606)	735	(1,527)	2,616	(944)	5,674
Financial assets designated at fair value through profit or loss	4,478	(509)	40	2	(273)	131	(1,073)	86	(1,282)	1,601
Financial assets available for sale	4,874	(1)	255 ⁵	920	(630)	0	(1,377)	187	(74)	4,153
Other financial assets at fair value	0	0	0	0	0	0	0	33	0	33
Total financial assets held at fair value	31,549	(504)	405^{6,7}	4,853	(8,114)	866	(6,257)	8,669	(5,195)	26,271
Financial liabilities held at fair value:										
Trading securities	18	0	0	0	0	0	34	0	(0)	52
Negative market values from derivative financial instruments	7,879	(317)	620	0	0	0	(508)	3,316	(2,134)	8,857
Other trading liabilities	0	0	0	0	0	0	0	0	0	0
Financial liabilities designated at fair value through profit or loss	3,053	0	(75)	0	0	587	(729)	245	(851)	2,229
Other financial liabilities at fair value	(1,146)	0	135	0	0	0	3	(26)	187	(848)
Total financial liabilities held at fair value	9,805	(317)	680^{6,7}	0	0	587	(1,200)	3,534	(2,799)	10,290

¹ Total gains and losses predominantly relate to net gains (losses) on financial assets/liabilities at fair value through profit or loss reported in the consolidated statement of income. The balance also includes net gains (losses) on financial assets available for sale reported in the consolidated statement of income and unrealized net gains (losses) on financial assets available for sale and exchange rate changes reported in other comprehensive income, net of tax. Further, certain instruments are hedged with instruments in Level 1 or Level 2 but the table above does not include the gains and losses on these hedging instruments. Additionally, both observable and unobservable parameters may be used to determine the fair value of an instrument classified within Level 3 of the fair value hierarchy; the gains and losses presented below are attributable to movements in both the observable and unobservable parameters.

² Issuances relate to the cash amount received on the issuance of a liability and the cash amount paid on the primary issuance of a loan to a borrower.

³ Settlements represent cash flows to settle the asset or liability. For debt and loan instruments this includes principal on maturity, principal amortizations and principal repayments. For derivatives all cash flows are presented in settlements.

⁴ Transfers in and transfers out of Level 3 are related to changes in observability of input parameters. During the year they are recorded at their fair value at the beginning of year. For instruments transferred into Level 3 the table shows the gains and losses and cash flows on the instruments as if they had been transferred at the beginning of the year. Similarly for instruments transferred out of Level 3 the table does not show any gains or losses or cash flows on the instruments during the year since the table is presented as if they have been transferred out at the beginning of the year.

⁵ Total gains and losses on available for sale include a loss of € 94 million recognized in other comprehensive income, net of tax, and a gain of € 187 million recognized in the income statement presented in net gains (losses) on financial assets available for sale.

⁶ This amount includes the effect of exchange rate changes. For total financial assets held at fair value this effect is a gain of € 4 million and for total financial liabilities held at fair value this is a gain of € 50 million. The effect of exchange rate changes is reported in other comprehensive income, net of tax.

⁷ For assets positive balances represent gains, negative balances represent losses. For liabilities positive balances represent losses, negative balances represent gains.

Reconciliation of movements in Level 3 measurements

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Example 3 (investment property)

(US\$ Millions)	Year ended Dec. 31, 2016			Year ended Dec. 31, 2015		
	Commercial properties	Commercial developments	Total	Commercial properties	Commercial developments	Total
Balance, beginning of year	\$ 39,111	\$ 2,488	\$ 41,599	\$ 37,789	\$ 3,352	\$ 41,141
Changes resulting from:						
Property acquisitions	8,697	310	9,007	3,950	210	4,160
Capital expenditures	770	835	1,605	916	1,149	2,065
Property dispositions ⁽¹⁾	(876)	(13)	(889)	(2,393)	(1,517)	(3,910)
Fair value gains, net	290	251	541	1,583	430	2,013
Foreign currency translation	68	(213)	(145)	(1,746)	(342)	(2,088)
Transfers between commercial properties and commercial developments	562	(562)	—	911	(911)	—
Reclassifications of assets held for sale and other changes	(2,923)	(11)	(2,934)	(1,899)	117	(1,782)
Balance, end of year	\$ 45,699	\$ 3,085	\$ 48,784	\$ 39,111	\$ 2,488	\$ 41,599

⁽¹⁾ Property dispositions represent the carrying value on date of sale.

Sensitivity analysis for Level 3 fair value measurements

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Example 1 (financial institution)

Sensitivity analysis of valuations using unobservable inputs

	Fair value		Favourable changes		Unfavourable changes	
	Total assets £m	Total liabilities £m	Income statement £m	Equity £m	Income statement £m	Equity £m
As at 31 December 2015						
Interest rate derivatives	2,675	(2,247)	93	–	(103)	–
Foreign exchange derivatives	95	(196)	17	–	(17)	–
Credit derivatives ^a	1,902	(219)	66	–	(96)	–
Equity derivatives	690	(1,545)	167	–	(185)	–
Commodity derivatives	56	(562)	13	–	(13)	–
Government and government sponsored debt	419	(1)	4	–	(4)	–
Corporate debt	2,895	(15)	10	1	(5)	(1)
Certificates of deposit, commercial paper and other money market instruments	–	(382)	–	–	–	–
Non-asset backed loans	16,828	–	1,581	–	(1,564)	–
Asset backed securities	770	(37)	1	–	(1)	–
Commercial real estate loans	551	–	24	–	(1)	–
Issued debt	–	(546)	–	–	–	–
Equity cash products	171	–	–	17	–	(17)
Funds and fund linked products	378	(148)	1	–	(1)	–
Other ^b	9,185	(4,344)	154	318	(172)	(53)
Total	36,615	(10,242)	2,131	336	(2,162)	(71)
As at 31 December 2014						
Interest rate derivatives	1,239	(1,344)	70	–	(71)	–
Foreign exchange derivatives	108	(138)	36	–	(36)	–
Credit derivatives ^a	1,966	(409)	81	–	(229)	–
Equity derivatives	1,247	(2,092)	220	–	(220)	–
Commodity derivatives	185	(337)	46	–	(46)	–
Government and government sponsored debt	1,014	(346)	–	–	(2)	–
Corporate debt	3,061	(13)	26	(1)	(9)	(4)
Certificates of deposit, commercial paper and other money market instruments	–	(665)	3	–	3	–
Non-asset backed loans	17,744	–	1,164	–	(820)	–
Asset backed securities	1,631	–	46	1	(72)	(1)
Commercial real estate loans	1,180	–	20	–	(19)	–
Issued debt	–	(749)	–	–	–	–
Equity cash products	171	–	–	11	–	(11)
Funds and fund linked products	631	(210)	14	–	(14)	–
Other ^b	17,663	(13,297)	180	82	(156)	(55)
Total	47,840	(19,600)	1,906	93	(1,691)	(71)

Sensitivity analysis for Level 3 fair value measurements

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Example 2 (financial institution)

Breakdown of the sensitivity analysis by type of instrument¹

in € m.	Dec 31, 2016		Dec 31, 2015	
	Positive fair value movement from using reasonable possible alternatives	Negative fair value movement from using reasonable possible alternatives	Positive fair value movement from using reasonable possible alternatives	Negative fair value movement from using reasonable possible alternatives
Securities:				
Debt securities	213	137	212	158
Commercial mortgage-backed securities	13	12	12	11
Mortgage and other asset-backed securities	46	40	38	31
Corporate, sovereign and other debt securities	154	85	161	116
Equity securities	116	68	179	105
Derivatives:				
Credit	238	158	489	627
Equity	209	150	183	131
Interest related	429	187	364	147
Foreign Exchange	32	21	17	13
Other	143	92	161	100
Loans:				
Loans	377	227	539	261
Loan commitments	0	0	0	0
Other	0	0	0	0
Total	1,758	1,040	2,144	1,542

¹ Where the exposure to an unobservable parameter is offset across different instruments then only the net impact is disclosed in the table.

Sensitivity analysis for Level 3 fair value measurements

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Example 3 (investment property) ¹

The following table presents a sensitivity analysis to the impact of a 25 basis point movement of the discount rate and terminal capitalization or overall implied capitalization rate on fair values of the partnership's commercial properties for December 31, 2016, for properties valued using the discounted cash flow or direct capitalization method, respectively:

(US\$ Millions)	Dec. 31, 2016	
	Impact on fair value of commercial properties	
Core Office		
United States	\$	881
Canada		285
Australia		122
Europe		21
Brazil		9
Opportunistic		
Opportunistic Office		200
Opportunistic Retail		373
Industrial		63
Multifamily		174
Triple Net Lease		188
Self-storage		62
Student Housing		25
Total	\$	2,403

1 – IFRS 13 does not require entities to provide numerical sensitivity analysis for non-financial instruments – this entity has provided it voluntarily

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