Pension Perspectives: Q1 2013

IAS 19 revisions take effect; deficits likely stable in Q1

- Pensions
- Accounting
- Quarterly

Neil Dawson
+44-20-7986-7987
neil.dawson@citi.com

Sarah Deans
+44-20-7986-4156
sarah.deans@citi.com

- **IAS 19R arrives** — The new pension accounting rules have taken effect from Q1 2013. The changes get rid of the expected return on pension assets in the P&L, with interest on the net deficit to be charged. The corridor rule option, which has kept some companies' pension deficits off balance sheet, has also been removed. We have analysed company disclosures on the impact of the changes; those with greatest impact to the P&L include Alcatel-Lucent, FirstGroup, Fiat, and Stagecoach Group. Those with the largest balance sheet impact include PostNL, KPN, Lufthansa, and IAG.

- **UK funding stable** — The FTSE 350 pension funding ratio remained stable at around 91% in Q1, with increasing inflation expectations offset by strong asset performance (both pension assets and liabilities rose 6% in the quarter). The picture in Europe is less clear, as a shortage of Euro denominated corporate bonds rated AA or better has resulted in lower visibility on pension discount rates for Eurozone schemes. The range of Eurozone discount rate assumptions will continue to be wide.

- **UK regulation** — The UK Pensions Regulator is to be given a new objective, ensuring that pension funding does not obstruct growth investments. While the final wording for the objective is yet to be finalised, this is likely a mild positive for pension exposed UK companies. However, proposals to permit smoothing of pension asset and liability values in deficit valuations have been scrapped.

- **Most exposed** — We update our screens for corporate pension exposure, highlighting those companies most exposed to pension risk in Japan and the USA as well as in the UK and Europe. Most exposed UK and European companies include Fiat (pension liabilities 478% of market cap), IAG (389%), FirstGroup (374%), Go Ahead Group (277%), and KPN (253%).

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

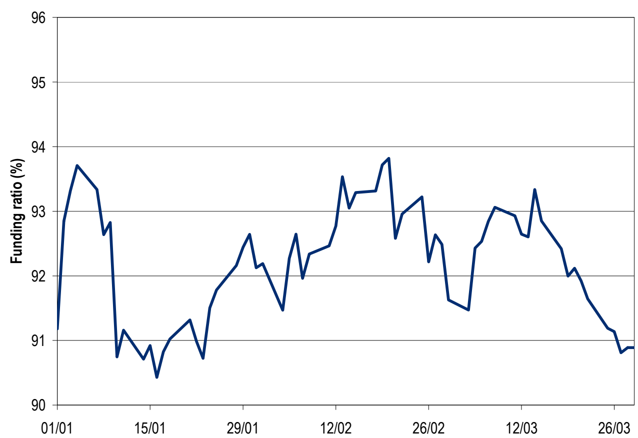
Contents

FTSE 350 funding ratio remains at 91%

IAS 19 revisions takes effect; deficits likely stable in Q1

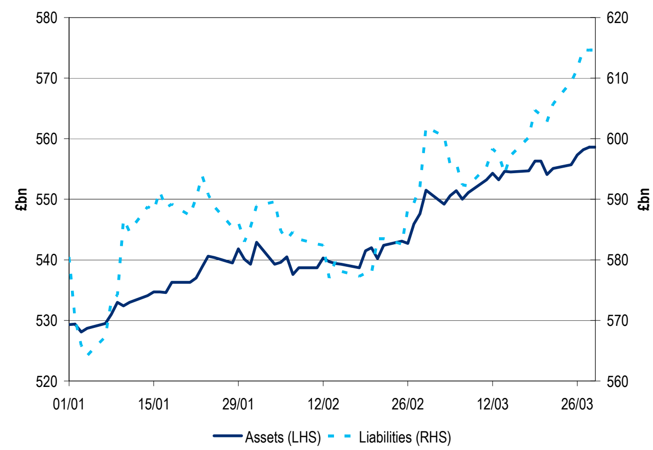
The FTSE 350 funding ratio did not change significantly in Q1, according to actuarial firm Hewitt. This is shown in Figure 1, with the ratio (assets/liabilities) falling 40bps to 90.9% in the first quarter of this year. The FTSE 350 deficit ended the quarter at £56bn. Both pension assets and pension liabilities grew by 6% in Q1, with assets reaching £559bn and liabilities £615bn, as shown in Figure 2.

Figure 1. FTSE 350 pension funding ratio stagnant through Q1 2013



Source: Hewitt, Citi Research. Funding level defined as assets/liabilities.

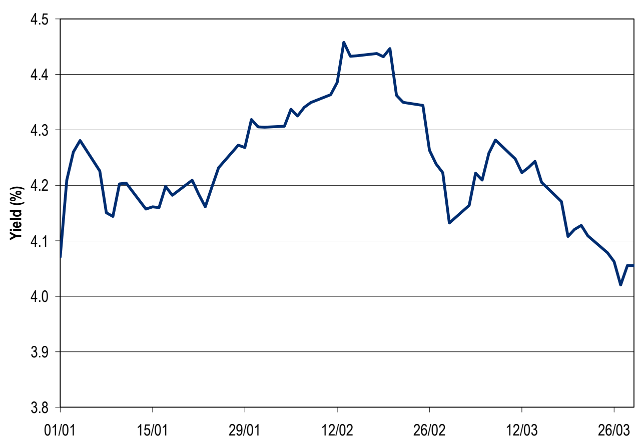
Figure 2. FTSE 350 pension assets and liabilities grew 6% in the quarter



Source: Hewitt, Citi Research

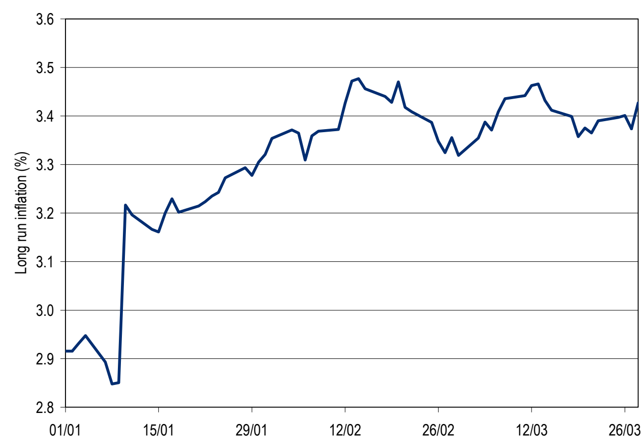
UK pension discount rates are unlikely to have changed significantly in the quarter. The iBoxx £ AA 15+ corporate index yield was 4.06% at end March, down a basis point from 4.07% at end 2012. Notably, the index yield has been between 4.0% and 4.1% at the end of the past three quarters, having previously fallen more than 100bps in the year to September 2012. The index yield rose as high as 4.46% in the quarter (Figure 3), the highest level since May 2012, although since quarter end the yield has fallen to 3.87% (23 April).

Figure 3. iBoxx £ AA 15+ corporate bond yield Q1 2013



Source: DataStream

Figure 4. Long-run implied UK RPI inflation Q1 2013



Source: Bank of England

UK long-run implied inflation rose rapidly in Q1, reaching 3.43%

The chart for UK inflation expectations (Figure 4) paints a different picture, with a significant jump in the Bank of England's long-run implied RPI inflation figures from 2.84% to 3.43% during Q1, a rise of 59bps. The biggest driver of this was the decision not to amend the RPI calculation in January, but underlying inflation expectations also appear to have risen, given the continuing rise through the quarter. This is likely the main driver for the 6% rise in liability values, given that discount rates didn't move materially.

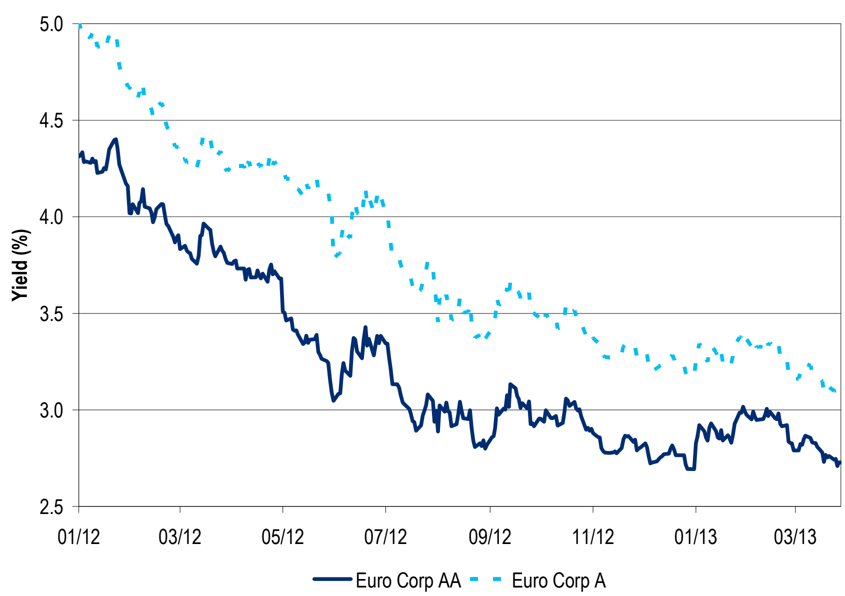
Uncertainty over Eurozone discount rate

It is becoming more difficult to analyse the movements in Euro area pension deficits, because of uncertainty over the discount rate applicable to Euro denominated pension liabilities. As we outlined in last quarter's *Pension Perspectives*, there is a shortage of long duration AA-rated bonds denominated in Euros, and as such companies are increasingly reliant on yield curves derived by actuarial advisors.

The IASB was asked to provide further guidance on this issue, with a proposal tabled by IASB staff that companies be permitted to refer to single-A bonds and make a credit risk adjustment, but the IASB does not appear willing to make specific pronouncements. The IASB noted that IFRS rules require reference to the yields on "high quality" corporate bonds of appropriate currency and duration, and do not give a definitive credit rating equivalent to "high quality", which is therefore a question of management judgement. Due to the lack of bonds making up with iBoxx € AA 10+ index (10 bonds from 8 issuers at last count), and the very low yield on this index (2.73% at end Q1), it no longer represents a useful indication of Euro area discount rate assumptions. Indeed, some companies (eg Wacker Chemie), noted a move away from referencing iBoxx in 2012 annual reports. Wacker instead stated it had derived a discount rate using Bloomberg data on all bonds rated at least AA- (or equivalent) by one of the three big rating agencies.

iBoxx € corporate AA 10+ index yield below 3%, no longer followed by most companies

Figure 5. iBoxx € Corp 10+ AA and single-A indices, 2012 to date



Source: DataStream

Figure 5 shows the yield on the iBoxx € corporate 10+ indices for AA and single-A bonds. On an absolute basis the yield on the single-A (3.10% at end 31 March, 3.17% at 31 December 2012) may be closer to the assumptions made by companies than the AA yield (Q1 – 2.73%, Q4 2012 – 2.69%). However, this may

be coincidence, particularly as the average duration of the benchmark is 11 years, likely lower than the average duration of pension scheme liabilities. For example, UBS' disclosures under IAS 19 revised (see page 9) included the average duration of its pension liabilities, which was 15-18 years.

We expect Euro area discount rate assumptions to remain in a relatively wide range, with little comfort available on the validity of assumptions (at least based on the level of disclosure commonly provided to date).

We include screens for corporate pension exposure in the UK, Europe, US and Japan in Appendix 2, page 13.

Analysis of IAS 19 changes

Pension accounting changes mandatory for EU companies from FY13/14

The changes to IFRS pension accounting rules (IAS 19) are mandatory for accounting periods beginning on or after 1 January 2013. Therefore, all EU companies must adopt the revised rules for FY13/14 financial statements, including quarterly/interim reports[1]. In anticipation of companies reporting under the revised IAS 19 rules, we provide a brief reminder of the key changes (a more detailed description of the IAS 19 changes can be found in Appendix 1, page 11), and provide analysis of the companies likely to report the largest impact from making the changes. There are two key changes; the pension P&L cost calculation has been simplified, and the corridor method has been abolished, meaning all pension deficits will be on balance sheet.

P&L change – higher pension financial charges

Pension financial expense now calculated as interest on net deficit…

At its simplest the P&L change is a rethink of how companies calculate the P&L cost of financing the pension deficit.

Previously companies were allowed to take credit for expected returns on assets in the P&L, as well as charging interest on the gross liabilities. Most companies' assumptions for expected returns were higher than the interest rate charged on the liabilities, and therefore many companies, even those with significant pension deficits, reported net financial income from pensions, which increased earnings.

… meaning no credit for asset returns in the P&L

Companies are not allowed to take the expected return credit under IAS 19R, and instead must charge an interest cost against the pension deficit on the balance sheet. Conceptually this is akin to the interest charged in the P&L on bonds or other financial debt.

Balance sheet change – all deficits on balance sheet

Old IAS 19 allowed companies a choice in accounting for pension deficits. One permitted method was to report the difference between the pension assets and liabilities (the deficit or surplus) on the balance sheet at each reporting date. The difference between the P&L charge and the actual mark-to-market movement in the pension deficit was reported in Other Comprehensive Income (OCI). An alternative acceptable method, known as the "corridor rule", allowed companies to recognise only a portion of those pension gains and losses above a hurdle; this resulted in off balance sheet pension deficits. This has a knock-on (usually positive) P&L impact for affected companies; they will no longer report amortisation of actuarial losses in the P&L.

[1] In practice this means companies will apply IAS 19R for the first quarterly/interim report of the first financial year starting on or after 1 January 2013.

Company analysis – P&L changes

Stoxx 600 companies most affected by IAS 19 P&L changes

Figure 6 shows companies which have disclosed that the impact of IAS 19 adoption would reduce profit before tax (PBT) by at least 5%. In most cases, the company disclosures (taken from annual reports) are for the most recent financial year. In some cases companies disclosed the impact on unfinished financial years; in these cases we used consensus PBT forecasts. The net impact on the P&L is the sum of the impact from changing the pension financial expense calculation and the removal of the corridor method, with the associated amortisation of actuarial gains and losses. In some cases, companies with large unrecognised actuarial losses actually reported a positive impact to PBT from IAS 19R adoption. For example, airlines Lufthansa and IAG both reported that 2012 pre-tax profit/loss would have been c. 24% higher/lower using IAS 19R.

Figure 6. Stoxx 600 companies with biggest impact on profit before tax from IAS 19 changes (m)

Company	RIC	Curr	Last YE	Price (local)	Mkt cap	Pension liabilities	Pension assets	Pension deficits	IAS 19 impact YE	IAS 19 impact	Profit before tax	Impact on PBT %
Alcatel-Lucent	ALUA.PA	EUR	12/12	1.06	2,474	30,104	28,796	2,541	12/12	744	-1,587	-46.9%
FirstGroup	FGP.L	GBP	03/12	2.17	1,047	3,910	3,397	268	03/13	70	178	-39.3%
Fiat SpA	FIA.MI	EUR	12/12	4.51	5,642	26,972	20,048	6,924	12/12	470	2,036	-23.1%
Stagecoach Group	SGC.L	GBP	04/12	3.01	1,736	2,265	1,974	124	04/13	44	208	-21.0%
Philips	PHG.AS	EUR	12/12	20.89	19,990	23,670	22,791	2,026	12/13	355	1,830	-19.4%
Babcock	BAB.L	GBP	03/12	10.72	3,881	3,040	2,783	266	03/13	44	307	-14.3%
Balfour Beatty	BALF.L	GBP	12/12	2.54	1,749	3,151	2,813	338	12/12	10	75	-13.3%
BAE Systems	BAES.L	GBP	12/12	3.82	12,397	25,157	19,454	4,555	12/12	173	1,369	-12.6%
BT Group	BT.L	GBP	03/12	2.84	22,357	40,989	38,541	2,448	03/12	295	2,445	-12.1%
Air France-KLM	AIRF.PA	EUR	12/12	7.42	2,228	16,260	16,830	-570	12/12	130	-1,094	-11.9%
Daily Mail & General Trust	DMGOa.L	GBP	09/12	7.06	2,628	2,089	1,765	324	09/12	24	206	-11.4%
Lafarge SA	LAFP.PA	EUR	12/12	47.68	13,696	5,306	4,074	1,234	12/12	91	921	-9.9%
Smiths Group	SMIN.L	GBP	07/12	12.34	4,856	3,945	3,348	597	07/12	36	366	-9.9%
Debenhams Plc	DEB.L	GBP	09/12	0.86	1,074	641	584	57	09/13	15	155	-9.7%
Julius Baer Gruppe AG	BAER.VX	CHF	12/12	35.05	7,986	1,988	1,823	166	12/12	35	374	-9.4%
Lindt & Sprungli	LISN.S	CHF	12/12	41,810	8,876	466	1,273	9	12/12	32	362	-8.8%
Carillion	CLLN.L	GBP	12/12	2.88	1,238	2,353	2,012	351	12/12	15	180	-8.2%
Booker	BOK.L	GBP	03/12	1.21	2,086	575	556	19	03/12	7	91	-7.9%
Rheinmetall AG	RHMG.DE	EUR	12/12	35.61	1,410	1,975	1,054	921	12/12	18	239	-7.5%
Electrolux	ELUXb.ST	SEK	12/12	172.90	53,430	21,966	18,793	3,173	12/12	235	3,478	-6.8%
TNT Express	TNTE.AS	EUR	12/12	5.86	3,183	508	463	45	12/12	3	47	-6.4%
Croda International	CRDA.L	GBP	12/12	25.78	3,500	878	712	166	12/12	15	253	-5.9%
RSA Insurance Group	RSA.L	GBP	12/12	1.12	4,013	6,492	6,218	274	12/12	28	479	-5.8%

Source: Company reports, DataStream, Reuters, FactSet, Citi Research. Market data as of 23 April 2013. [1]Based on consensus profit before tax for the period IAS 19 impact disclosed. [2]Disclosure of impact for half year; amount doubled for comparison to full year profit.

Impact of IAS 19R likely worked into consensus for most companies

At this point almost all companies surveyed have provided quantitative disclosure of the impact of IAS 19 adoption, and we therefore expect that analysts should have increasingly incorporated the impact into forecasts, particularly where companies have provided guidance for 2013 in Q4 2012 results.

The presentation of pension expenses differs among European companies (in the US pension expense is required to be a single line within staff costs). Best practice, in our view, is that the pension financial cost is included within finance costs, ie below the operating profit/EBIT line. However, some companies include all pension expenses within EBIT (in line with US GAAP), and therefore in some cases operating margins have benefitted from net pension financial income. We expect most companies will include the pension financial income/expense within finance costs under IAS 19R, as this will not be an income unless there is a pension surplus recognised.

Some companies, for example QinetiQ, Siemens, Skandinaviska Enskilda Banken, and UBS, chose to early adopt IAS 19R in 2012. We analyse the additional disclosures provided on page 9 by comparing UBS' 2011 and 2012 annual reports.

Company analysis – balance sheet changes

16 Stoxx 600 companies book value falling by >10% from IAS 19R

Figure 7 shows the Stoxx 600 (ex-banks) companies which have reported an expected reduction in total shareholders' equity (referred to as Net Asset Value or NAV below) of at least 10% at 31 December 2012 from the changes to IAS 19. As the change in accounting policy is required to be applied retrospectively companies will revise the 2012 balance sheet once the new rules are adopted in 2013.

Figure 7. Stoxx 600 companies (ex banks) with biggest impact on shareholders' equity from IAS 19 changes (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Pension deficit/ (surplus)	Balance sheet deficit/ (surplus)	Shareholders' equity (NAV)	Reduction in NAV (post-tax)	Revised NAV	Reduction % NAV	Reduction % mkt cap
PostNL	PTNL.AS	EUR	12/12	1.63	717	528	-1,301	1,080	-1,370	-290	-126.9%	-191.0%
KPN NV	KPN.AS	EUR	12/12	2.70	3,859	1,555	175	2,461	-1,127	1,334	-45.8%	-29.2%
Lufthansa	LHAG.DE	EUR	12/12	14.65	6,738	6,472	2,076	8,298	-3,500	4,798	-42.2%	-51.9%
IAG	ICAG.MC	EUR	12/12	3.16	5,857	1,212	-1,187	5,055	-2,077	2,978	-41.1%	-35.5%
Fiat SpA	FIA.MI	EUR	12/12	4.51	5,642	6,924	2,585	13,173	-4,800	8,373	-36.4%	-85.1%
Air France-KLM	AIRF.PA	EUR	12/12	7.42	2,228	-570	-2,415	4,980	-1,300	3,680	-26.1%	-58.3%
Deutsche Post	DPWGn.DE	EUR	12/12	17.50	21,158	4,990	1,908	12,164	-3,100	9,064	-25.5%	-14.7%
Electrolux	ELUXb.ST	SEK	12/12	172.90	53,430	3,173	-1,335	19,824	-4,100	15,724	-20.7%	-7.7%
Lonza Group AG	LONN.VX	CHF	12/12	61.50	3,358	495	58	2,406	-430	1,976	-17.9%	-12.8%
Thales*	TCFP.PA	EUR	12/12	32.72	6,621	1,925	801	4,586	-703	3,884	-15.3%	-10.6%
Daimler AG	DAIGn.DE	EUR	12/12	40.90	43,667	9,726	1,826	45,510	-6,400	39,110	-14.1%	-14.7%
Volvo AB	VOLVb.ST	SEK	12/12	89.75	190,999	14,140	895	86,914	-10,000	76,914	-11.5%	-5.2%
Clariant AG	CLN.VX	CHF	12/12	12.80	3,969	683	240	3,040	-344	2,696	-11.3%	-8.7%
Givaudan AG	GIVN.VX	CHF	12/12	1,138	10,729	474	-88	3,680	-413	3,267	-11.2%	-3.8%
NCC AB	NCCb.ST	SEK	12/12	147.70	16,007	196	-1,272	8,988	-1,000	7,988	-11.1%	-6.2%
Continental AG	CONG.DE	EUR	12/12	86.46	17,293	2,312	1,188	9,145	-1,000	8,145	-10.9%	-5.8%

Source: Company reports, DataStream, Reuters, Citi Research. Market data as of 23 April 2013. NAV = shareholders' equity including minority interests. *Pre-tax impact disclosed, calculation of post-tax impact tax deducts tax at relevant national statutory tax rate.

PostNL could have negative book equity based on disclosure of IAS 19R impact

Of the companies in Figure 7, PostNL and Lufthansa made particularly notable announcements. PostNL, following the withdrawal of UPS' offer for TNT Express (which PostNL owns 30% of), announced that the revised IAS 19 and the impairment of PostNL's interest in TNT Express would leave PostNL with negative consolidated shareholders' equity. The company's policy is to delay paying out a cash dividend until it is in a positive consolidated net equity position, and has certainty of a BBB+/Baa1 credit rating. The company now expects to achieve these criteria in 2016.

Lufthansa suspended dividend in plan to strengthen capital

Lufthansa announced a suspension of its dividend, citing a number of reasons, including strengthening equity capital in view of the changes to IAS 19[2]. Other reasons included reduced operating profits and the ongoing restructuring program. Lufthansa's disclosure suggests the company would have had shareholders' equity of €4.8bn at end 2012 if IAS 19R had been applied, the lowest year end level since 2005.

Deutsche Post raised €2bn debt to improve pension funding

Other companies have also taken relevant action on pensions recently. As we discussed in last quarter's *Pension Perspectives*, Deutsche Post raised a total of €2bn through debt and convertible issuance in December 2012, which was used to double pension assets in its German scheme to c. €4bn. The additional contribution reduced the overall pension deficit to €5.0bn at end 2012, which reduced the impact

2 See investor-relations.lufthansagroup.com, 19 February 2013.

of recognising the full deficit on balance sheet, as Deutsche Post reported the impact of recognising all actuarial losses as €3.1bn. Deutsche Post follows a number of US companies in issuing long-term debt to secure pension funding, but is the first company we are aware of to issue a convertible with this intention. Other US companies which have taken similar action include CXS Corp, Kroger, NiSource, and Raytheon.

Deutsche Post hosted investor event focusing on pensions

Deutsche Post also recently hosted a capital markets day focusing on pensions and other provisions. The company provided more detail on its pension exposure, and outlined the relevant accounting and regulatory rules. The presentation is available on the company's website[3]. Notably, Deutsche Post highlighted that in Germany tax deductions are granted on pension expenses, rather than on cash contributions. The company also noted that it has an open defined benefit plan in Germany (it is not legally permitted to switch to defined contribution).

SAS Group restructured pension scheme and changed year end, delaying IAS 19R adoption

SAS Group also has considerable exposure to the IAS 19 corridor rule changes, although the company has taken action to reduce this. (SAS does not appear in the above screen as it is not a component of the Stoxx 600). The company took two main actions which reduced and delayed the impact of adoption IAS 19R. Firstly, it signed new collective agreements with flight staff, replacing the majority of defined benefit plans with defined contribution plans, and removing early retirement rights. The company noted that this is due to reduce gross pension obligations by 60%. The company also changed its financial year end, moving to an October year end in 2012 (from December). This means SAS Group will begin to apply IAS 19R from 1 November 2013, rather than from 1 January 2013. SAS Group reported pro-forma unrecognised actuarial losses of SEK 7.9bn at Q1 2013 (period to 31 January 2013), compared to total shareholders' equity of SEK 36bn, implying IAS 19R would reduce book value by 22%.

Impact on banks

Reported book value of some European banks affected by IAS 19 changes

Changes in book value are particularly important for banks, given the market focus on the metric. Therefore, we have focused on the impact of IAS 19 changes on the reported book value of European banks. Three banks decided to cease using the corridor option ahead of mandatory IAS 19R adoption in 2013 (this is permitted under "old" IAS 19). These were Banco Espirito Santo, which removed the corridor rule in Q4 2011 (reducing book value by €551m, or 8%), Skandinaviska Enskilda Banken, which adopted IAS 19R in 2012 (reducing end-2012 book value by SEK 7.9bn, or 10%), and UBS, which also adopted IAS 19R in 2012 (reducing book value by CHF 4bn, or 7%). Of the Stoxx Europe 600 (SX7P) banks, a number still use the corridor rule at end 2012, and the impact of IAS 19R adoption is set out in Figure 8. This is based on disclosures made by the banks in 2012 annual reports.

[3] See www.dp-dhl.com/en/investors.html.

Figure 8. Stoxx Europe 600 (SX7P) banks with biggest unrecognised impact on shareholders' equity from IAS 19 changes (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Pension deficit/ (surplus)	Balance sheet deficit/ (surplus)	Shareholders' equity (NAV)	Reduction in NAV (post-tax)	Revised NAV	Reduction % NAV	Reduction % mkt cap
Lloyds Banking Group PLC	LLOY.L	GBP	12/12	0.51	36,379	957	-1,748	44,684	-2,100	42,584	-4.7%	-5.8%
Barclays PLC	BARC.L	GBP	12/12	2.98	38,370	1,311	-2,050	62,957	-2,500	60,457	-4.0%	-6.5%
Banco Santander	SAN.MC	EUR	12/12	5.58	58,795	7,370	2,842	84,326	-3,051	81,275	-3.6%	-5.2%
Julius Baer Gruppe AG*	BAER.VX	CHF	12/12	35.05	7,986	166	-47	4,874	-163	4,711	-3.3%	-2.0%
Svenska Handelsbanken AB	SHBa.ST	SEK	12/12	273.60	173,622	-766	-4,673	106,897	-3,047	103,850	-2.9%	-1.8%
Swedbank AB	SWEDa.ST	SEK	12/12	151.20	171,159	4,853	1,165	106,224	-3,000	103,224	-2.8%	-1.8%
Commerzbank	CBKGk.DE	EUR	12/12	1.08	6,284	784	80	27,034	-700	26,334	-2.6%	-11.1%
UniCredit Group	CRDI.MI	EUR	12/12	3.92	22,701	5,429	3,909	66,453	-1,200	65,253	-1.8%	-5.3%
Societe Generale*	SOGN.PA	EUR	12/12	26.76	20,880	1,093	277	54,097	-534	53,563	-1.0%	-2.6%
Nordea	NDA1V.HE	EUR	12/12	8.62	35,291	298	47	28,216	-258	27,958	-0.9%	-0.7%
KBC	KBC.BR	EUR	12/12	29.27	12,205	426	321	15,961	-81	15,880	-0.5%	-0.7%
DNB ASA	DNB.OL	NOK	12/12	88.25	143,742	3,424	3,098	128,035	-565	127,470	-0.4%	-0.4%
BNP Paribas SA*	BNPP.PA	EUR	12/12	41.06	51,007	2,084	1,538	94,422	-364	94,058	-0.4%	-0.7%
Danske Bank A/S	DANSKE.CO	DKK	12/12	105.20	106,107	-671	-906	138,234	-200	138,034	-0.1%	-0.2%
Banco de Sabadell SA*	SABE.MC	EUR	12/12	1.56	4,605	199	239	9,261	29	9,289	0.3%	0.6%

Source: Company reports, DataStream, Reuters, Citi Research. Market data as of 23 April 2013. NAV = shareholders' equity including minority interests. *Pre-tax impact disclosed, calculation of post-tax impact tax deducts tax at relevant national statutory tax rate.

Company analysis – revised disclosure requirements

UBS provided new disclosures required under IAS 19R in 2012

As discussed on page 12, the changes to IAS 19 included more significant disclosure requirements. As UBS adopted IAS 19R prior to publication of its 2012 annual report, we compared the disclosures to highlight the new information available. The key new information included:

- Significantly more detailed descriptions of the major plans, as well as the relevant local regulatory rules in each major jurisdiction.
- Disclosure of the average duration of the pension benefits (UBS disclosed duration of 15.7 years for Swiss plans and 18.2 years for international plans), and detailed analysis of the expected timing of future benefit payments.
- Sensitivity analysis of the impact of changing key assumptions (eg discount rate) on the pension liability (this disclosure has been provided by some companies in the past, but was not an explicit requirement prior to IAS 19R).
- Splitting the fair value of assets between those quoted in an active market (ie Level 1 valuation) and those where the fair value is not based on an active market price (ie Level 2 or Level 3). This should result in more useful information on alternative investments (as these are often grouped into the "other" category under current rules without further explanation).

Overall the revised disclosure requirements should help investors get a clearer idea about the level of risk arising from pension exposure; both in terms of the regulatory risk arising from the jurisdiction in which the liabilities are located and the risk from pension asset allocation.

Other Pension Developments

New objective for UK pension regulator

Smoothing proposals not pursued; new regulator objective to support corporate growth and investment

In last quarter's *Pension Perspectives* we noted that the UK government announced two consultations relating to pensions in the December 2012 Autumn Statement. Firstly, whether the UK Pensions Regulator should be explicitly required to consider the long-term affordability of deficit recovery plans to companies; and secondly if companies should be allowed to smooth asset and liability values in deficit valuations.

In the UK Budget on 20 March the Chancellor provided an update on these proposals. On smoothing it was noted that stakeholder feedback did not reveal a strong case for changing legislation to permit smoothing, and the government would therefore not pursue this measure. However, it was decided that The Pensions Regulator (TPR) would get a new objective, to help "shift the balance of regulation in favour of private sector investment and growth"[4].

Wording to be finalised; possible conflict with other regulator objectives

The new objective will require TPR to "support scheme funding arrangements that are compatible with sustainable growth for the sponsoring employer" while remaining consistent with TPR's other objectives, protecting pensions and reducing the risk of compensation payments by the Pension Protection Fund (PPF). The precise wording has not yet been finalised, but is expected to be published "later in spring 2013".

We are unclear how significant a move this will be for pension scheme valuations taking place in 2013 and beyond. On one hand, it appears that an additional objective will tip the scales in corporates favour (to some unknown extent) in deficit funding negotiations. However, we believe that TPR already considers employer affordability, as insolvent employers are likely to result in PPF compensation, which TPR is tasked with minimising.

Pension regulator has not commented on implications for deficit contributions

In response to the budget announcement, TPR noted that they regulate according to the legislative framework set out by the government, and will make the changes required as soon as possible once the relevant legislation is published. TPR has not yet provided guidance as to the likely impact of its new objective, but has stressed that current rules provide companies a degree of flexibility in deficit valuations and contribution schedules. TPR's annual funding statement, which provides guidance to scheme trustees based on the current economic conditions, is also due to be published in the near future.

[4] Source: UK Budget report, hmt.gov.uk, 20 March 2013.

Appendix 1: More detail on IAS 19 changes

There are two main changes to IAS 19, one to the P&L calculation of pension expense and one to the balance sheet presentation of deficits. There are also a number of new disclosure requirements, which we expand on here.

P&L change

Formerly companies benefitted from expected returns on pension assets in the P&L…

Previously companies were allowed to take credit for expected returns on assets in the P&L, as well as charging interest on the gross liabilities. Most companies' assumptions for expected returns were higher than the interest rate charged on the liabilities, and therefore many companies, even those with significant pension deficits, reported net financial income from pensions, which increased earnings.

… now they must simply charge interest on the net deficit position

Companies are not allowed to take the expected return credit under IAS 19R, and must instead charge an interest cost against the pension deficit on the balance sheet. Conceptually this is akin to the interest charged in the P&L on bonds or other financial debt.

Simple examples of the old and new IAS 19 P&L financial income/expense calculations are shown in Figure 9 and Figure 10. Figure 9 shows the old calculation, with net financial income of €130m made up of an expected return on plan assets of €630m (based on 7% return), and interest on plan liabilities of €500m (using a 5% discount rate). In Figure 10 the interest expense is calculated on the deficit, using the same 5% discount rate, and therefore arriving at a net financial expense of €50m.

The P&L difference between the two examples is €180m. An alternative way of reaching this figure is to set the expected return on plan assets equal to the discount rate, ie deducting 2% on €9bn of plan assets[5].

Figure 9. Calculation under old IAS 19

	EUR m
Opening pension assets	9,000
Expected return on assets	7.0%
P&L income from pension assets	**630**
Opening pension liabilities	10,000
Discount rate	5.0%
Interest expense on pension liabilities	**-500**
Net pension financial income / (expense)	**130**

Source: Citi Research

Figure 10. Calculation under revised IAS 19

	EUR m
Opening pension assets	9,000
Opening pension liabilities	10,000
Opening pension deficit	1,000
Discount rate	5.0%
Interest expense on pension deficit	**-50**
Net pension financial income / (expense)	**-50**

Source: Citi Research

The pension financial expense is a non-cash item but so is everything related to defined benefit pensions in the P&L (although ongoing cash contributions are often similar to pension service cost). Deficit recovery payments can be lumpy, companies have discretion over the exact timing of such payments, and a portion of these payments is in effect debt repayment, which does not go in the P&L.

There are two things that drive the scale of the impact. One is the size of the pension assets relative to the company (ie companies with large funded pension schemes are more affected). The other is the spread between the expected return and pension interest rate. If the expected return and discount rate are the same or

5 This alternative method, applying the discount rate to plan assets, will not arrive at the correct financial expense where a company has an unrecognised surplus due to application of the asset ceiling rules, as the unrecognised surplus is reflected in the balance sheet deficit.

very similar (usually due to conservative asset allocation) then the impact will not be large even if the scheme is large.

Balance sheet change

"Corridor rule" permitted actuarial losses to be recognised over time, with balance sheets not presenting the actual deficit

Old IAS 19 allowed companies a choice in accounting for pension deficits. One permitted method was to report the difference between the pension assets and liabilities (the deficit or surplus) on the balance sheet at each reporting date. The difference between the P&L charge and the actual mark-to-market movement in the pension deficit was reported in Other Comprehensive Income (OCI). An alternative acceptable method, known as the "corridor rule", allowed companies to recognise only a portion of those pension gains and losses above a hurdle; this resulted in off balance sheet pension deficits.

As a result of the new rules, those companies which had previously applied the corridor will no longer have a P&L charge for the amortisation of actuarial losses. This is a difference to US rules, as under US GAAP companies must recognise the full deficit on balance sheet, but can initially recognise actuarial losses in OCI. However, under US GAAP these losses must subsequently be amortised/recycled into the P&L, which is not permitted under IAS 19R.

Other changes

The other relevant change to IAS 19 relates to the costs of administrating pension schemes. These costs (excluding the asset management costs which are deducted from the return on assets) are now recognised in the P&L as incurred. Previously there was a choice between deduction from the return on plan assets or inclusion in the pension liability. This may make companies more sensitive to the costs of running pension schemes.

New disclosure requirements

Some new information, but IASB has watered down initial proposals

The new standard will require companies to disclose information:

- To explain the characteristics of the pension plans
- To identify amounts in the financial statements arising from those plans
- To describe how the pension plans affect the amount, timing and variability of the company's future cash flows

The standard goes on to provide some specific requirements, as well as examples of these principles-based disclosures. For example, the new standard will require a sensitivity analysis, showing how the pension liability would be affected by reasonably possible changes in each significant actuarial assumption. Sensitivity analyses are already provided by many companies, particularly in the UK, but are not currently required. In addition, the new requirement for more information about asset-liability matching strategies may be helpful in assessing potential volatility in deficits or required cash contributions.

More information about cash contributions would be useful

We are disappointed that the IASB has not asked companies to disclose more specific information about expected future cash contributions. This was proposed earlier in the project, but was not included in the final standard.

Appendix 2: Corporate pension exposure screens

For screens including all index constituents email neil.dawson@citi.com

We include three screens to assess a company's exposure to pension risk. This quarter we include pension screens for the US and Japan, as well as the UK and Europe. We use the most recent annual report for pension data and current prices for market caps. Differing company year-ends reduce the comparability of the data. The three screens are:

- **Pension liabilities compared to market cap** – This is our primary screen. Companies with the largest pension liabilities are generally most at risk of large changes in pension deficits due to changes in discount rate, inflation, mortality assumptions and asset returns[6]. This screen captures companies which may have small pension deficits or surpluses but are exposed to significant pension risk due to the scheme size.

- **Pension deficits compared to market cap** – This screen indicates which companies have the largest net liability relating to pensions and therefore largest potential cash outflows in forthcoming years. Pension deficits can be volatile from quarter to quarter so may have changed significantly since the last annual report. Note that the pension deficits shown below are gross of any associated tax asset. For valuation purposes (e.g. in Enterprise Value or DCF calculations) we prefer to take the net-of-tax pension deficit, but these figures are not disclosed consistently by all companies.

- **Pension fund equity exposure compared to market cap** – We compare the value of equities held in the pension fund to the market cap of the company. This indicates which companies might be most exposed via the pension fund to a decline in equities, and indicates riskier asset allocation. A large equity holding relative to the company's market cap should (theoretically) increase the beta of the company's share price.

This screening is a crude tool for identifying pension risk. It does not identify the extent to which pension risks have been mitigated, e.g. through asset-liability matching techniques. Further, companies may have special circumstances that affect the nature and risks of the pension liabilities, such as specific regulatory treatment of pensions or employee risk-sharing arrangements. Nevertheless, companies appearing on these screens have potential material exposure to pension risk that we believe warrants further investigation.

[6] Assuming the pension liabilities are backed by assets.

UK – FTSE 350

FTSE 350 companies most exposed to pension risk: IAG, FirstGroup, Go-Ahead Group, BAE Systems, and Invensys

Figure 11. FTSE 350 pension liabilities as a percentage of market cap (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Liabilities	Liabilities as % Mkt Cap
IAG	ICAG.MC	EUR	12/12	3.16	5,857	22,784	389%
FirstGroup[1]	FGP.L	GBP	03/12	2.17	1,047	3,910	374%
Go-Ahead Group[1]	GOG.L	GBP	06/12	15.46	665	1,843	277%
BAE Systems	BAES.L	GBP	12/12	3.82	12,397	25,157	203%
Invensys	ISYS.L	GBP	03/12	3.51	2,859	5,801	203%
Carillion	CLLN.L	GBP	12/12	2.88	1,238	2,353	190%
Kier Group	KIE.L	GBP	06/12	12.65	504	941	187%
BT Group	BT.L	GBP	03/12	2.84	22,357	40,989	183%
Balfour Beatty	BALF.L	GBP	12/12	2.54	1,749	3,151	180%
RSA Insurance Group	RSA.L	GBP	12/12	1.12	4,013	6,492	162%
WS Atkins	ATKW.L	GBP	03/12	8.98	899	1,330	148%
Dairy Crest Group	DCG.L	GBP	03/12	4.48	612	846	138%
Phoenix Group	PHNX.L	GBP	12/12	6.40	2,431	3,344	138%
Aviva	AV.L	GBP	12/12	3.03	8,936	11,675	131%
Stagecoach Group[1]	SGC.L	GBP	04/12	3.01	1,736	2,265	130%
Interserve	IRV.L	GBP	12/12	4.76	619	799	129%
Mitchells & Butlers	MAB.L	GBP	09/12	3.28	1,347	1,698	126%
QinetiQ	QQ.L	GBP	03/12	1.87	1,214	1,139	94%
De La Rue	DLAR.L	GBP	03/12	9.15	912	843	92%
Marks and Spencer	MKS.L	GBP	03/12	4.11	6,628	6,096	92%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. [1]Companies participate in Railways Pension Scheme where liability is limited by duration of franchise agreements, but we have included 100% of reported liabilities.

Largest deficits: BAE Systems, Carillion, WS Atkins, FirstGroup, and Synthomer

Figure 12. FTSE 350 pension deficits as a percentage of market cap (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Liabilities	Assets	Deficits	Deficits as % Mkt Cap
BAE Systems[1]	BAES.L	GBP	12/12	3.82	12,397	25,157	19,454	4,555	37%
Carillion	CLLN.L	GBP	12/12	2.88	1,238	2,353	2,012	351	28%
WS Atkins	ATKW.L	GBP	03/12	8.98	899	1,330	1,079	251	28%
FirstGroup[2]	FGP.L	GBP	03/12	2.17	1,047	3,910	3,397	268	26%
Synthomer	SYNTS.L	GBP	12/12	1.87	637	358	204	154	24%
GKN Plc	GKN.L	GBP	12/12	2.64	4,309	3,737	2,759	978	23%
IAG	ICAG.MC	EUR	12/12	3.16	5,857	22,784	21,572	1,212	21%
Dixons Retail	DXNS.L	GBP	04/12	0.37	1,345	992	730	262	19%
Morgan Advanced	MGAMM.L	GBP	01/12	2.47	694	567	432	135	19%
Balfour Beatty	BALF.L	GBP	12/12	2.54	1,749	3,151	2,813	338	19%
TUI Travel Plc	TT.L	GBP	09/12	3.18	3,559	1,991	1,343	648	18%
John Menzies	MNZS.L	GBP	12/12	6.86	416	325	257	68	16%
Interserve	IRV.L	GBP	12/12	4.76	619	799	698	101	16%
Evraz Group	EVRE.L	USD	12/12	1.58	3,563	1,112	538	574	16%
De La Rue	DLAR.L	GBP	03/12	9.15	912	843	698	146	16%
Invensys	ISYS.L	GBP	03/12	3.51	2,859	5,801	5,409	426	15%
Whitbread	WTB.L	GBP	03/12	25.04	4,490	1,940	1,341	599	13%
Dairy Crest Group	DCG.L	GBP	03/12	4.48	612	846	766	80	13%
Smiths Group	SMIN.L	GBP	07/12	12.34	4,856	3,945	3,348	597	12%
Kier Group	KIE.L	GBP	06/12	12.65	504	941	883	58	11%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. Deficits reflect unrecognised surplus due to application of asset ceiling. [1]BAE Systems attributes portion of deficit to other companies; we include 100% of assets and liabilities but include the adjusted deficit as reported. [2]Company participates in Railways Pension Scheme where liability is limited by duration of franchise agreements. We have included 100% of assets and liabilities but include adjusted deficit as reported.

Most exposed to equities in pension fund: Go-Ahead Group, IAG, Kier Group, FirstGroup, and Stagecoach Group

Figure 13. FTSE 350 equity exposure from pension funds (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Assets	Equities %	Bonds %	Other %	Exposure *
Go-Ahead Group[1]	GOG.L	GBP	06/12	15.46	665	1,576	70%	5%	24%	167%
IAG	ICAG.MC	EUR	12/12	3.16	5,857	21,572	36%	42%	22%	132%
Kier Group	KIE.L	GBP	06/12	12.65	504	883	72%	26%	2%	126%
FirstGroup[1]	FGP.L	GBP	03/12	2.17	1,047	3,397	27%	26%	47%	88%
Stagecoach Group[1]	SGC.L	GBP	04/12	3.01	1,736	1,974	73%	13%	14%	83%
BAE Systems	BAES.L	GBP	12/12	3.82	12,397	19,454	52%	39%	9%	82%
Carillion	CLLN.L	GBP	12/12	2.88	1,238	2,012	48%	50%	2%	78%
Balfour Beatty	BALF.L	GBP	12/12	2.54	1,749	2,813	42%	48%	10%	67%
WS Atkins	ATKW.L	GBP	03/12	8.98	899	1,079	51%	44%	6%	61%
Interserve	IRV.L	GBP	12/12	4.76	619	698	45%	46%	9%	51%
QinetiQ	QQ.L	GBP	03/12	1.87	1,214	1,108	53%	34%	13%	48%
RSA Insurance Group	RSA.L	GBP	12/12	1.12	4,013	6,218	27%	79%	-5%	41%
De La Rue	DLAR.L	GBP	03/12	9.15	912	698	51%	41%	8%	39%
John Menzies	MNZS.L	GBP	12/12	6.86	416	257	60%	26%	14%	37%
Mitchells & Butlers	MAB.L	GBP	09/12	3.28	1,347	1,610	30%	66%	4%	36%
BT Group	BT.L	GBP	03/12	2.84	22,357	38,541	21%	38%	41%	36%
Dixons Retail	DXNS.L	GBP	04/12	0.37	1,345	730	66%	28%	6%	36%
Tullett Prebon	TLPR.L	GBP	12/12	2.54	553	204	92%	0%	8%	34%
Lloyds Banking Group	LLOY.L	GBP	12/12	0.51	36,379	30,367	41%	40%	19%	34%
Smiths Group	SMIN.L	GBP	07/12	12.34	4,856	3,348	46%	14%	40%	32%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. *Value of equity assets in pension fund as percentage of market cap. [1]Companies participate in Railways Pension Scheme where liability is limited by duration of franchise agreements, but we have included 100% of reported assets.

Europe – MSCI Europe ex UK

MSCI Europe ex UK companies most exposed to pension risk: Fiat, KPN, Lufthansa, Peugeot, and Akzo Nobel

Figure 14. MSCI Europe ex UK pension liabilities as a percentage of market cap (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Liabilities	Liabilities as % Mkt Cap
Fiat SpA	FIA.MI	EUR	12/12	4.51	5,642	26,972	478%
KPN NV	KPN.AS	EUR	12/12	2.70	3,859	9,771	253%
Lufthansa	LHAG.DE	EUR	12/12	14.65	6,738	15,057	223%
Peugeot SA	PEUP.PA	EUR	12/12	5.45	1,933	4,183	216%
Akzo Nobel	AKZO.AS	EUR	12/12	45.69	10,885	16,464	151%
RWE AG	RWEG.DE	EUR	12/12	26.27	16,092	22,331	139%
ThyssenKrupp AG	TKAG.DE	EUR	09/12	13.64	7,018	8,961	128%
Salzgitter AG	SZGG.DE	EUR	12/12	29.25	1,758	2,193	125%
Philips	PHG.AS	EUR	12/12	20.89	19,990	23,670	118%
EDF	EDF.PA	EUR	12/12	16.28	30,100	35,042	116%
Commerzbank	CBKGk.DE	EUR	12/12	1.08	6,284	7,273	116%
ATOS	ATOS.PA	EUR	12/12	51.55	4,418	4,309	98%
Delta Lloyd	DLL.AS	EUR	12/12	13.99	2,473	2,411	97%
ING Groep NV	ING.AS	EUR	12/12	6.13	23,488	22,079	94%
Thales	TCFP.PA	EUR	12/12	32.72	6,621	5,557	84%
Lonza Group AG	LONN.VX	CHF	12/12	61.50	3,358	2,623	78%
Finmeccanica	SIFI.MI	EUR	12/11	4.20	2,428	1,798	74%
Deutsche Post	DPWGn.DE	EUR	12/12	17.50	21,158	14,748	70%
Michelin	MICP.PA	EUR	12/12	62.20	11,355	7,563	67%
Baloise Holding AG	BALN.VX	CHF	12/12	90.05	4,608	3,030	66%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. IAG excluded from MSCI Europe ex UK as included in FTSE 350.

Largest deficits: Salzgitter, Fiat, ThyssenKrupp, Lufthansa, and Delta Lloyd

Figure 15. MSCI Europe ex UK pension deficits as a percentage of market cap (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Liabilities	Assets	Deficits	Deficits as % Mkt Cap
Salzgitter AG	SZGG.DE	EUR	12/12	29.25	1,758	2,193	11	2,182	124%
Fiat SpA	FIA.MI	EUR	12/12	4.51	5,642	26,972	20,048	6,924	123%
ThyssenKrupp AG	TKAG.DE	EUR	09/12	13.64	7,018	8,961	2,082	6,879	98%
Lufthansa	LHAG.DE	EUR	12/12	14.65	6,738	15,057	9,177	6,472	96%
Delta Lloyd	DLL.AS	EUR	12/12	13.99	2,473	2,411	69	2,342	95%
EDF	EDF.PA	EUR	12/12	16.28	30,100	35,042	14,408	20,634	69%
Peugeot SA	PEUP.PA	EUR	12/12	5.45	1,933	4,183	3,305	890	46%
RWE AG	RWEG.DE	EUR	12/12	26.27	16,092	22,331	15,511	6,820	42%
KPN NV	KPN.AS	EUR	12/12	2.70	3,859	9,771	8,216	1,555	40%
Volkswagen AG	VOWG.DE	EUR	12/12	141.00	66,602	31,185	7,288	23,897	36%
Aegon	AEGN.AS	EUR	12/12	4.74	9,338	6,029	2,747	3,282	35%
Swiss Life Holding	SLHN.VX	CHF	12/12	137.60	4,572	2,666	1,213	1,453	32%
Solvay SA	SOLB.BR	EUR	12/12	104.55	8,856	4,731	1,931	2,801	32%
Thales	TCFP.PA	EUR	12/12	32.72	6,621	5,557	3,632	1,925	29%
AXA SA	AXAF.PA	EUR	12/12	13.65	32,605	17,947	9,164	8,793	27%
Baloise Holding AG	BALN.VX	CHF	12/12	90.05	4,608	3,030	2,069	1,211	26%
UniCredit Group	CRDI.MI	EUR	12/12	3.92	22,701	9,139	3,710	5,429	24%
ArcelorMittal	ISPA.AS	USD	12/12	9.08	19,755	12,934	8,281	4,706	24%
Deutsche Post	DPWGn.DE	EUR	12/12	17.50	21,158	14,748	9,758	4,990	24%
Daimler AG	DAIGn.DE	EUR	12/12	40.90	43,667	23,933	14,207	9,726	22%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. Deficits reflect unrecognised surplus due to application of asset ceiling.

Most exposed to equities in pension fund: KPN, Fiat, Peugeot, Lufthansa, and Lonza

Figure 16. MSCI Europe ex UK equity exposure from pension funds (m)

Company	RIC	Curr	Year End	Price (local)	Mkt cap	Assets	Equities %	Bonds %	Other %	Exposure *
KPN NV	KPN.AS	EUR	12/12	2.70	3,859	8,216	40%	39%	21%	85%
Fiat SpA	FIA.MI	EUR	12/12	4.51	5,642	20,048	22%	48%	30%	78%
Peugeot SA	PEUP.PA	EUR	12/12	5.45	1,933	3,305	33%	67%	0%	56%
Lufthansa	LHAG.DE	EUR	12/12	14.65	6,738	9,177	33%	43%	24%	45%
Lonza Group AG	LONN.VX	CHF	12/12	61.50	3,358	2,130	43%	34%	23%	27%
ING Groep NV	ING.AS	EUR	12/12	6.13	23,488	22,869	26%	64%	10%	25%
Baloise Holding AG	BALN.VX	CHF	12/12	90.05	4,608	2,069	52%	21%	27%	23%
Capgemini SA	CAPP.PA	EUR	12/12	34.70	5,556	2,153	57%	39%	4%	22%
Akzo Nobel	AKZO.AS	EUR	12/12	45.69	10,885	15,378	15%	72%	13%	21%
RWE AG	RWEG.DE	EUR	12/12	26.27	16,092	15,511	21%	55%	24%	20%
ArcelorMittal	ISPA.AS	USD	12/12	9.08	19,755	8,281	45%	47%	7%	19%
Thales	TCFP.PA	EUR	12/12	32.72	6,621	3,632	34%	51%	15%	19%
Philips	PHG.AS	EUR	12/12	20.89	19,990	22,791	15%	72%	12%	17%
Michelin	MICP.PA	EUR	12/12	62.20	11,355	5,195	36%	45%	19%	16%
ATOS	ATOS.PA	EUR	12/12	51.55	4,418	3,908	18%	73%	9%	16%
Lafarge SA	LAFP.PA	EUR	12/12	47.68	13,696	4,074	53%	41%	6%	16%
Alstom	ALSO.PA	EUR	03/12	30.25	9,317	4,097	35%	53%	12%	15%
Aegon	AEGN.AS	EUR	12/12	4.74	9,338	2,747	52%	39%	8%	15%
EDF	EDF.PA	EUR	12/12	16.28	30,100	14,408	31%	62%	7%	15%
UBS	UBSN.VX	CHF	12/12	14.86	58,593	25,566	31%	51%	18%	14%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. *Value of equity assets in pension fund as percentage of market cap. IAG excluded from MSCI Europe ex UK as included in FTSE 350.

USA – S&P 500

S&P 500 companies most exposed to pension risk: US Steel, Goodyear, ALCOA, Northrop, and Ford

Figure 17. S&P 500 pension liabilities as a percentage of market cap (USD m)

Company	RIC	Year End	Price (local)	Mkt cap	Liabilities	Liabilities as % Mkt Cap
US Steel Corp	X.N	12/12	16.18	2,335	11,347	486%
Goodyear Tire	GT.O	12/12	12.21	2,998	9,976	333%
ALCOA	AA.N	12/12	8.12	8,684	14,751	170%
Northrop Corp	NOC.N	12/12	71.49	16,834	27,746	165%
Ford Motor	F.N	12/12	13.36	52,495	82,827	158%
JC Penney	JCP.N	02/13	15.45	3,395	5,345	157%
Lockheed Martin	LMT.N	12/12	97.06	31,240	46,017	147%
Raytheon	RTN.N	12/12	57.39	18,730	24,657	132%
Boeing	BA.N	12/12	88.18	66,780	75,895	114%
Xerox Corp	XRX.N	12/12	8.44	10,363	11,741	113%
Textron Inc	TXT.N	12/12	25.72	7,004	7,053	101%
Allegheny Tech	ATI.N	12/12	27.53	2,958	2,952	100%
Computer Science	CSC.N	03/12	45.21	6,939	6,016	87%
Hewlett-Packard	HPQ.N	10/12	19.65	38,200	32,334	85%
Pitney Bowes	PBI.N	12/12	14.71	2,964	2,487	84%
The AES Corp	AES.N	12/12	13.15	9,807	8,019	82%
Ryder System	R.N	12/12	53.31	2,766	2,207	80%
Gannett	GCI.N	12/12	19.98	4,585	3,573	78%
Fedex Corp	FDX.N	05/12	93.17	29,523	22,187	75%
PG&E	PCG.N	12/12	47.56	20,901	15,541	74%

Source: Citi Research

Largest deficits: Goodyear, US Steel, Lockheed Martin, ALCOA, and Raytheon

Figure 18. S&P 500 pension deficits as a percentage of market cap (USD m)

Company	RIC	Year End	Price (local)	Mkt cap	Liabilities	Assets	Deficits	Deficits as % Mkt Cap
Goodyear Tire	GT.O	12/12	12.21	2,998	9,976	6,454	3,522	117%
US Steel Corp	X.N	12/12	16.18	2,335	11,347	8,659	2,688	115%
Lockheed Martin	LMT.N	12/12	97.06	31,240	46,017	30,924	15,093	48%
ALCOA	AA.N	12/12	8.12	8,684	14,751	11,043	3,708	43%
Raytheon	RTN.N	12/12	57.39	18,730	24,657	17,450	7,207	38%
Ford Motor	F.N	12/12	13.36	52,495	82,827	64,108	18,719	36%
Boeing	BA.N	12/12	88.18	66,780	75,895	56,178	19,717	30%
Northrop Corp	NOC.N	12/12	71.49	16,834	27,746	22,962	4,784	28%
Xerox Corp	XRX.N	12/12	8.44	10,363	11,741	9,004	2,737	26%
Allegheny Tech	ATI.N	12/12	27.53	2,958	2,952	2,220	732	25%
The AES Corp	AES.N	12/12	13.15	9,807	8,019	5,595	2,424	25%
Dow Chemical	DOW.N	12/12	31.66	38,249	26,840	17,725	9,115	24%
Consol Edison	ED.N	12/12	62.50	18,305	13,406	9,135	4,271	23%
Gannett	GCI.N	12/12	19.98	4,585	3,573	2,552	1,021	22%
Ryder System	R.N	12/12	53.31	2,766	2,207	1,613	594	21%
General Dynamics	GD.N	12/12	67.10	23,755	12,114	7,227	4,887	21%
DuPont	DD.N	12/12	52.49	48,242	29,179	19,399	9,780	20%
Intl Paper	IP.N	12/12	47.69	21,158	14,424	10,282	4,142	20%
Motorola Solutions Inc	MSI.N	12/12	61.75	16,815	10,075	6,788	3,287	20%
Textron Inc	TXT.N	12/12	25.72	7,004	7,053	5,715	1,338	19%

Source: Citi Research

Most exposed to equities in pension fund: US Steel, Goodyear, JC Penney, Washington Post, and Northrop

Figure 19. S&P 500 equity exposure from pension funds (USD m)

Company	RIC	Year End	Price (local)	Market Cap	Pension Assets	Equities %	Bonds %	Other %	Exposure *
US Steel Corp	X.N	12/12	16.18	2,335	8,659	53%	25%	21%	198%
Goodyear Tire	GT.O	12/12	12.21	2,998	6,454	49%	41%	9%	106%
JC Penney	JCP.N	02/13	15.45	3,395	5,035	48%	43%	9%	71%
Washington Post	WPO.N	12/12	437.36	3,247	2,071	87%	13%	0%	55%
Northrop Corp	NOC.N	12/12	71.49	16,834	22,962	33%	38%	28%	45%
Raytheon	RTN.N	12/12	57.39	18,730	17,450	46%	30%	24%	43%
Textron Inc	TXT.N	12/12	25.72	7,004	5,715	52%	29%	19%	42%
ALCOA	AA.N	12/12	8.12	8,684	11,043	33%	50%	17%	42%
Ryder System	R.N	12/12	53.31	2,766	1,613	65%	31%	4%	38%
Ford Motor	F.N	12/12	13.36	52,495	64,108	31%	48%	22%	38%
Lockheed Martin	LMT.N	12/12	97.06	31,240	30,924	34%	41%	25%	34%
Computer Science	CSC.N	03/12	45.21	6,939	4,714	49%	46%	5%	33%
Xerox Corp	XRX.N	12/12	8.44	10,363	9,004	38%	43%	19%	33%
Allegheny Tech	ATI.N	12/12	27.53	2,958	2,220	43%	41%	16%	32%
Hewlett-Packard	HPQ.N	10/12	19.65	38,200	25,557	45%	46%	9%	30%
Consol Edison	ED.N	12/12	62.50	18,305	9,135	60%	31%	9%	30%
Gannett	GCI.N	12/12	19.98	4,585	2,552	51%	35%	14%	28%
Pitney Bowes	PBI.N	12/12	14.71	2,964	2,093	37%	55%	8%	26%
Motorola Solutions Inc	MSI.N	12/12	61.75	16,815	6,788	64%	34%	2%	26%
Fedex Corp	FDX.N	05/12	93.17	29,523	17,334	43%	51%	6%	25%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. *Value of equity assets in pension fund as percentage of market cap

Japan – Nikkei 225

Nikkei 225 companies most exposed to pension risk: Fujitsu, Panasonic, TEPCO, NEC, and Pioneer

Figure 20. Nikkei 225 pension liabilities as percentage of market cap (JPY bn)

Company	RIC	Year End	Price (local)	Mkt cap	Liabilities	Liabilities as % Mkt Cap
Fujitsu	6702.T	03/12	421	871	1,871	215%
Panasonic	6752.T	03/12	704	1,627	2,294	141%
TEPCO	9501.T	03/12	450	721	1,004	139%
NEC	6701.T	03/12	284	738	930	126%
Pioneer	6773.T	03/12	205	66	76	116%
Meidensha Corp	6508.T	03/12	282	64	64	99%
Mitsui Chemicals	4183.T	03/12	203	203	194	96%
Sharp	6753.T	03/12	348	406	349	86%
Nisshinbo Holdings	3105.T	03/12	660	115	98	85%
Mitsubishi Chemical Holdings	4188.T	03/12	447	659	561	85%
Nippon Suisan Kaisha Ltd*	1332.T	03/12	193	53	45	85%
Fuji Electric Co Ltd	6504.T	03/12	337	241	203	84%
Oki Electric Industry Co Ltd	6703.T	03/12	188	137	107	78%
NTN Corp	6472.T	03/12	245	130	97	75%
Hitachi	6501.T	03/12	620	2,995	2,210	74%
Toshiba	6502.T	03/12	526	2,228	1,607	72%
Furukawa Electric Co Ltd	5801.T	03/12	238	168	114	68%
Yamaha Corp	7951.T	03/12	979	190	128	68%
Fujifilm Holdings	4901.T	03/12	2,023	975	651	67%
Mitsumi Electric*	6767.T	03/12	534	47	30	64%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. *English annual report disclosures unavailable, data not checked.

Biggest deficits: Meidensha, Fujitsu, TEPCO, Pioneer, and Furukawa Electric

Figure 21. Nikkei 225 pension deficits as percentage of market cap (JPY bn)

Company	RIC	Year End	Price (local)	Mkt cap	Liabilities	Assets	Deficits	Deficits as % Mkt Cap
Meidensha Corp	6508.T	03/12	282	64	64	18	46	71%
Fujitsu	6702.T	03/12	421	871	1,871	1,352	519	60%
TEPCO	9501.T	03/12	450	721	1,004	583	421	58%
Pioneer	6773.T	03/12	205	66	76	46	30	46%
Furukawa Electric Co Ltd	5801.T	03/12	238	168	114	43	71	42%
Nippon Suisan Kaisha Ltd*	1332.T	03/12	193	53	45	23	22	42%
NEC	6701.T	03/12	284	738	930	628	302	41%
Nisshinbo Holdings	3105.T	03/12	660	115	98	52	47	40%
West Japan Railway	9021.T	03/12	4,700	910	345	7	338	37%
Maruha Nichiro Holdings Inc*	1334.T	03/12	192	95	53	18	35	37%
Dai-ichi Life	8750.T	03/12	130,800	1,296	665	210	456	35%
Panasonic	6752.T	03/12	704	1,627	2,294	1,721	572	35%
Unitika Ltd*	3103.T	03/12	65	37	14	1	13	35%
Toshiba	6502.T	03/12	526	2,228	1,607	829	778	35%
NTN Corp	6472.T	03/12	245	130	97	52	45	35%
Yamaha Corp	7951.T	03/12	979	190	128	69	59	31%
Kansai Electric Power	9503.T	03/12	1,247	1,114	350	3	347	31%
Showa Shell Sekiyu	5002.T	12/11	749	282	105	17	88	31%
Hitachi	6501.T	03/12	620	2,995	2,210	1,297	913	30%
Toyo Seikan Kaisha Ltd*	5901.T	03/12	1,278	259	152	76	76	29%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. *English annual report disclosures unavailable, data not checked.

Asset allocation disclosures not required under Japan GAAP; therefore relatively little data available

Figure 22. Nikkei 225 equity exposure from pension funds (JPY bn)*

Company	RIC	Year End	Price (local)	Mkt cap	Pension Assets	Equities %	Bonds %	Other %	Exposure*
Panasonic	6752.T	03/12	704	1,627	1,721	36%	41%	23%	38%
Fujifilm Holdings	4901.T	03/12	2,023	975	571	27%	35%	38%	16%
Toshiba	6502.T	03/12	526	2,228	829	42%	33%	25%	16%
Mitsubishi Electric	6503.T	03/12	891	1,913	683	41%	40%	19%	15%
Hitachi	6501.T	03/12	620	2,995	1,297	30%	45%	25%	13%
Sony	6758.T	03/12	1,625	1,643	707	28%	51%	21%	12%
NTT	9432.T	03/12	4,850	5,749	1,970	30%	58%	12%	10%
TDK	6762.T	03/12	3,330	419	135	31%	31%	38%	10%

Source: dataCentral, DataStream, Company annual reports. Market data as of 23 April 2013. *Asset allocation disclosures are not required under Japanese GAAP so limited data is available. We have included companies where data is available and equity exposure is at least 10% of market cap. [1]Value of equity assets in pension fund as percentage of market cap.

Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Research product ("the Product"), please contact Citi Research, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

Citi Research Equity Ratings Distribution

	12 Month Rating			Relative Rating		
Data current as of 31 Mar 2013	**Buy**	**Hold**	**Sell**	**Buy**	**Hold**	**Sell**
Citi Research Global Fundamental Coverage	48%	39%	12%	7%	87%	7%
% of companies in each rating category that are investment banking clients	53%	49%	43%	65%	49%	51%

Guide to Citi Research Fundamental Research Investment Ratings:
Citi Research stock recommendations include an investment rating and an optional risk rating to highlight high risk stocks.
Risk rating takes into account both price volatility and fundamental criteria. Stocks will either have no risk rating or a High risk rating assigned.
Investment Ratings: Citi Research investment ratings are Buy, Neutral and Sell. Our ratings are a function of analyst expectations of expected total return ("ETR") and risk. ETR is the sum of the forecast price appreciation (or depreciation) plus the dividend yield for a stock within the next 12 months. The Investment rating definitions are: Buy (1) ETR of 15% or more or 25% or more for High risk stocks; and Sell (3) for negative ETR. Any covered stock not assigned a Buy or a Sell is a Neutral (2). For stocks rated Neutral (2), if an analyst believes that there are insufficient valuation drivers and/or investment catalysts to derive a positive or negative investment view, they may elect with the approval of Citi Research management not to assign a target price and, thus, not derive an ETR. Analysts may place covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and / or trading in the company's securities (e.g. trading suspension). As soon as practically possible, the analyst will publish a note re-establishing a rating and investment thesis. To satisfy regulatory requirements, we correspond Under Review and Neutral to Hold in our ratings distribution table for our 12-month fundamental rating system. However, we reiterate that we do not consider Under Review to be a recommendation.
Relative three-month ratings: Citi Research may also assign a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the geographic and industry sector over a 3 month period. The relative call may highlight a specific near-term catalyst or event impacting the company or the market that is anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) will indicate the most and least preferred stocks in the universe of stocks under consideration, explaining the basis for this short-term view. This three-month view may be different from and does not affect a stock's fundamental equity rating, which reflects a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls correspond to a buy recommendation and least preferred calls correspond to a sell recommendation. Any stock not assigned to a most preferred or least preferred call is considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we correspond NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we do not consider NRR to be a recommendation.

Prior to October 8, 2011, the firm's stock recommendation system included a risk rating and an investment rating. **Risk ratings,** which took into account both price volatility and fundamental criteria, were: Low (L), Medium (M), High (H), and Speculative (S). **Investment Ratings** of Buy, Hold and Sell were a function of the Citi Research expectation of total return (forecast price appreciation and dividend yield within the next 12 months) and risk rating. Additionally, analysts could have placed covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and/or trading in the company's securities (e.g. trading suspension). Stocks placed "Under Review" were monitored daily by management and as practically possible, the analyst published a note re-establishing a rating and investment thesis. For securities in developed markets (US, UK, Europe, Japan, and Australia/New Zealand), investment ratings were:Buy (1) (expected total return of 10% or more for Low-Risk stocks, 15% or more for Medium-Risk stocks, 20% or more for High-Risk stocks, and 35% or more for Speculative stocks); Hold (2) (0%-10% for Low-Risk stocks, 0%-15% for Medium-Risk stocks, 0%-20% for High-Risk stocks, and 0%-35% for Speculative stocks); and Sell (3) (negative total return). For securities in emerging markets (Asia Pacific, Emerging Europe/Middle East/Africa, and Latin America), investment ratings were:Buy (1) (expected total return of 15% or more for Low-Risk stocks, 20% or more for Medium-Risk stocks, 30% or more for High-Risk stocks, and 40% or more for Speculative stocks); Hold (2) (5%-15% for Low-Risk stocks, 10%-20% for Medium-Risk stocks, 15%-30% for High-Risk stocks, and 20%-40% for Speculative stocks); and Sell (3) (5% or less for Low-Risk stocks, 10% or less for Medium-Risk stocks, 15% or less for High-Risk stocks, and 20% or less for Speculative stocks).

Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to

review by Research Management. Your decision to buy or sell a security should be based upon your personal investment objectives and should be made only after evaluating the stock's expected performance and risk.

NON-US RESEARCH ANALYST DISCLOSURES
Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Ltd	Neil Dawson; Sarah Deans

OTHER DISCLOSURES

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Research does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of Citi Research to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

Important Disclosures for Morgan Stanley Smith Barney LLC Customers: Morgan Stanley & Co. LLC (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Research research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to Citi Research research reports.
Important disclosure regarding the relationship between the companies that are the subject of this Citi Research research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.
For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.
This Citi Research research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of Citi Research. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in **Australia** through Citi Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the

Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in **Germany** by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A, Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 100-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02. The Product is made available in Korea by Citibank Korea Inc., which is regulated by the Financial Services Commission and the Financial Supervisory Service. Address is Citibank Building, 39 Da-dong, Jung-gu, Seoul 100-180, Korea. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) (“CGMM”) to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to ‘wholesale clients’ only as defined by s5C(1) of the Financial Advisers Act 2008 (‘FAA’) through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. (“CGMSPL”), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold//Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gasset, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14

and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different Citi Research ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority.

Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to Citi Research's Products can be found at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product.

With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs) and other product that is made available through other distribution channels only to certain categories of clients to satisfy legal or regulatory requirements, Citi Research concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual Citi Research analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. Citi Research simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by Citi Research analysts to clients may vary depending on various factors such as the client's individual preferences as to the frequency and manner of receiving communications from analysts, the client's risk profile and investment focus and perspective (e.g. market-wide, sector specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.

Citi Research product may source data from dataCentral. dataCentral is a Citi Research proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.