15 February 2013 | 20 pages

Property & Casualty Insurance (GICS) | Insurance - Property & Casualty (Citi)
Europe | United Kingdom

Catlin Group Ltd (CGL.L)

- Company Update
- Estimate Change

Reiterating the Buy case

- **Reiterating the Buy case**: Following strong performance in 2012, we think Catlin's underperformance since its results (-5%) represents a buying opportunity because:
  - **Catlin hasn't received adequate credit for delivering consistent growth at attractive underlying underwriting margins**.
  - **Historical concerns over Catlin's reserves and capital seem exaggerated**.
  - **Forecast returns suggest Catlin's 25% valuation discount is unjustified**.
- **Overlooked positives in Catlin's performance:** The market saw higher profit related staff costs as disappointing. Our forecasts have been little changed as these have been offset by expected better underwriting profitability (89% 2013E COR), based on the following positives from the results:
  - The **u/w result was stronger than expected** (90% COR) and was based on good underlying profitability (50.6% attritional) and sustainable reserve releases.
  - The **renewals update was positive** and Catlin is well-positioned to benefit from pricing momentum in US casualty lines (+5% in 2012).
  - **Commission income from third-party capital was surprisingly strong**
  - **Catlin's capital position remains solid** (ie mid point of target range), supporting both the group's growth (est 10% in 2013) and its attractive 6.1% dividend yield.
- **Best value among Lloyd's insurers and attractive yield**: Catlin trades on 1.17x 2013E NTA, which offers upside given our forecast 14% 2013 RONTA and reflects a 25% discount to peers (avg 1.45x NTA and avg 14% RONTA). Catlin also looks cheap on 9x 2013E PE, compared with peers on avg 11x. The focus on income/capital mgt in the sector suggests Catlin's 6% yield should be attractive.
- **Updating forecasts and valuation**: We have made minimal (~1%) changes to our 2013-14 EPS forecasts and our target price of 567p remains unchanged.

Buy	**1**
Price (14 Feb 13)	£5.11
Target price	£5.67
Expected share price return	11.0%
Expected dividend yield	6.2%
Expected total return	**17.2%**
Market Cap	£1,848M
	US$2,872M

Price Performance
(RIC: CGL.L, BB: CGL LN)

Catlin Group Ltd (USD)

Year to 31 Dec	2011A	2012A	2013E	2014E
Profit Before Tax ($M)	71.0	339.0	410.1	426.7
Diluted EPS (¢)	10.6	83.2	89.6	93.7
Diluted EPS (Old) (¢)	10.6	84.6	90.4	92.2
PE (x)	74.6	9.5	8.9	8.5
DPS (¢)	44.9	46.0	50.5	53.5
Net Div Yield (%)	5.7	5.8	6.4	6.7
Embedded Value Per Share (¢)	955.9	1,006.1	1,054.9	1,104.3
Price / EVPS (x)	0.8	0.8	0.8	0.7

Thomas Dorner
+44-20-7986-9929
thomas.dorner@citi.com

Farooq Hanif
farooq.hanif@citi.com

Paul L Bradley
paul.l.bradley@citi.com

Fiscal year end 31-Dec	2011	2012	2013E	2014E
Valuation Ratios				
P/E adjusted (x)	74.6	9.5	8.9	8.5
P/E reported (x)	74.6	9.5	8.9	8.5
P/BV (x)	1.0	0.9	0.9	0.8
P/BV adjusted (x)	1.0	0.9	0.9	0.8
Dividend yield (%)	5.7	5.8	6.4	6.7
P/Embedded Value (x)	0.8	0.8	0.8	0.7
Per Share Data (US¢)				
EPS adjusted	10.6	83.2	89.6	93.7
EPS reported	10.6	83.2	89.6	93.7
BVPS	784.9	837.1	885.9	935.3
BVPS adjusted	784.9	837.1	885.9	935.3
DPS	44.9	46.0	50.5	53.5
Embedded Value per share	955.9	1,006.1	1,054.9	1,104.3
Profit & Loss (US$M)				
Pre-tax profit	**71**	**339**	**410**	**427**
Tax	11	10	-53	-55
Extraord./Min. int./Pref. div.	-44	-44	-44	-44
Reported net income	**38**	**305**	**313**	**327**
Adjusted earnings	38	305	313	327
Growth Rates (%)				
Pre-tax profit	-82.5	377.5	21.0	4.0
EPS adjusted	-88.5	681.6	7.7	4.6
Dividend	5.6	2.4	9.8	6.0
Balance Sheet (US$M)				
Total assets	**12,959**	**14,041**	**14,608**	**15,199**
Investments	8,388	8,774	9,131	9,502
Goodwill/intangibles	717	720	749	779
Other Assets	3,854	4,547	4,729	4,918
Separate Account Assets	0	0	0	0
Total liabilities	**9,661**	**10,529**	**10,926**	**11,344**
Life policy reserves	0	0	0	0
Non-life policy reserves	8,586	9,238	9,608	9,992
Total Debt	91	92	92	92
Other Liabilities	984	1,199	1,226	1,260
Separate Account Liabilities	na	na	na	na
Shareholders' funds	**3,298**	**3,512**	**3,682**	**3,855**
Profitability/Solvency Ratios (%)				
ROE adjusted	1.4	10.8	10.4	10.3
ROA adjusted	0.3	2.3	2.2	2.2
Total debt to capital	2.7	2.6	2.4	2.3
Total debt to equity	2.8	2.6	2.5	2.4

For further data queries on Citi's full coverage universe please contact Citi Research Data Services at CitiRsch.DataServices.Global@citi.com

Powered by: dataCentral

Reiterating the Buy case

We think Catlin's underperformance following its 2012 results represents a buying opportunity and reiterate our Buy recommendation based on three key points:

1. We don't think Catlin has received adequate credit for delivering consistent growth at attractive underlying underwriting margins.

2. We think historic concerns over Catlin's reserves and capital are exaggerated and recent performance on these metrics has been solid.

3. We think Catlin's forecast returns suggest its discounted P/B valuation compared with its peers is unjustified.

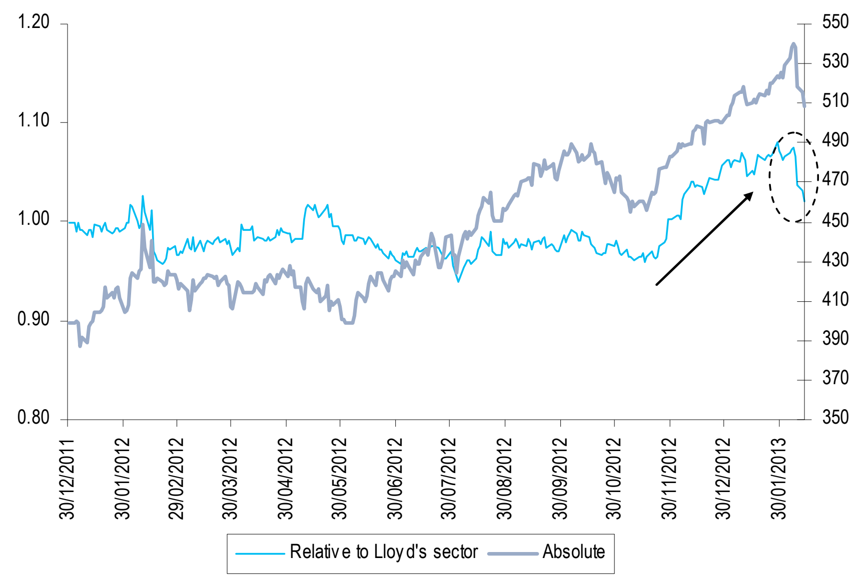
We have discussed the Buy case in detail in our recent report: Reinsurers / Lloyd's vehicles.

Recent underperformance provides opportunity

Catlin outperformed in 2012 and we think recent weakness is a buying opportunity

Catlin was the strongest-performing Lloyd's vehicle in 2012 (+26%) and outperformed its Lloyd's peers by 6%. However, since it reported FY 2012 results on Friday, 8th February, the shares have declined 5% and have now given up all their gains since the start of 2013. We believe the positive investment case remains intact and see this as an attractive entry point for investors. The chart below shows the correction in the absolute and relative performance of Catlin's shares since the FY 2012 results.

Figure 1. Catlin outperformed in 2012 but has underperformed since FY 2012 results



Source: Datastream; Citi Research

Higher corporate costs disappointing, but offset by improved u/w

The key disappointment at FY 2012 results was higher corporate expenses (2012: $155m vs 2011: $85m). These were driven by higher staff costs and, although these related to the significantly improved profitability of the group, these weren't adequately reflected in consensus. We have reflected higher level of costs in our forecasts (assuming staff costs at ~27% of profits before these costs).

Positives offsetting higher corp. costs:
1. strong 2012 COR
2. solid 2012 attritional loss ratio
3. continued price increases
4. higher over-rider commissions

However, our forecasts overall have remained largely unchanged since these have been offset by better than expected underwriting trends. The key positive factors affecting our expectations for Catlin's underwriting results are:

1. Better-than-expected 2012 **combined ratio** of 90% compared with 91% for consensus. We are now forecasting 89% COR for 2013.

2. The 2012 **attritional loss ratio** remained relatively stable at 50.8% and the consistency of this has led us to improve our forecast from 51.6% to 50.8%.

3. Catlin has continued to report **positive momentum in pricing**, including 4% price increases in 2012 and a further 2% increases so far in 2013, which should have a positive impact on u/w profitability

4. **Strong commission levels** from Catlin's special purpose syndicates (~$30m in 2013) should improve the group's expense ratio since this is where they are recognised.

We discuss these points in more detail throughout this report.

Reiterating the Buy case

We believe the Buy case for Catlin remains strong and think the underlying trends in its 2012 results confirm our reasons for being positive. Our Buy recommendation is based on three key reasons:

1. We don't think Catlin has received adequate credit for delivering consistent growth at attractive underlying underwriting margins.

2. We think historic concerns over Catlin's reserves and capital are exaggerated and recent performance on these metrics has been solid.

3. We think Catlin's forecast returns suggest its discounted P/B valuation compared with its peers is unjustified.

1. Consistent growth at attractive underlying margins

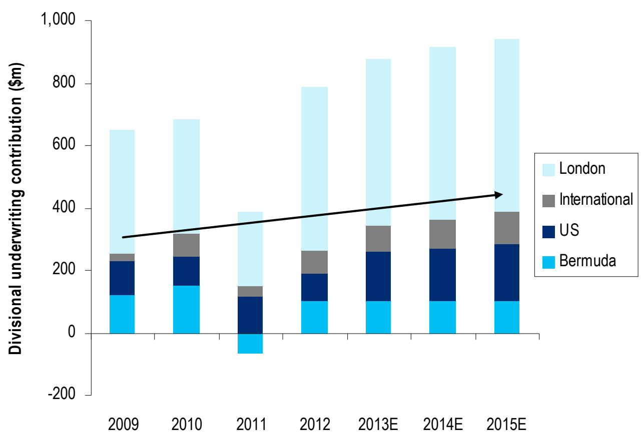
Consistent growth has increased the diversity of group earnings

Catlin again delivered top-line growth in 2012 (+10% GWP), which is consistent with its longer-term growth strategy (avg +8% GWP since 2008). This has improved the group's diversity of earnings through increasing the contribution from its international operations (~50% GWP and 33% u/w contribution in 2012). Consequently, the group's earnings have become less volatile and this should over time lower its cost of equity, although this hasn't yet been reflected in its valuation. We expect the underwriting contribution from Catlin's international businesses to continue to increase, as shown in the first chart below.

The underlying profitability of the business has improved

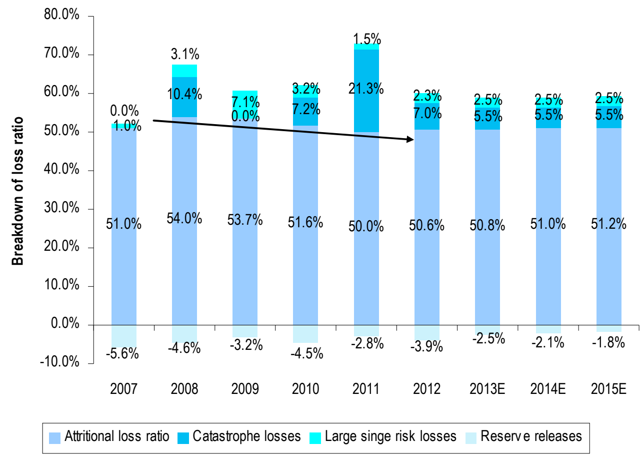
We believe it is extremely important that Catlin's growth has been achieved while improving the underlying profitability of the business. Its attritional loss ratio (ie excluding catastrophes and reserve releases) has improved from 54% in 2008 to 50.6% in 2012. This shows that Catlin has been able to grow while also improving its underlying profitability and should address the common perception that insurance companies only grow at the expense of profitability. The improvement in Catlin's attritional loss ratio is shown in the second chart below.

Figure 2. Increased u/w contribution from international hubs



Source: Company data; Citi Research

Figure 3. Attritional loss ratio shows improved underlying profitability



Source: Company data; Citi Research

Operational leverage and lower capital requirements could offer upside in future

We believe that Catlin's growth strategy could offer further upside in the future in the form of i) operational leverage from having already developed the group's global infrastructure (eg it has hubs in London, US, Europe and Asia), and ii) lower capital requirements driven by the greater diversity of earnings. Over time, we would expect these benefits of greater scale to have a positive impact on the group's valuation.

2. Historical concerns not proving an issue

The market has frequently worried over Catlin's reserving and capital position and, in our view, this has been an important driver of the group's discounted valuation. We believe 2012 results showed that both Catlin's reserving and capital positions are solid.

Catlin has made consistent reserve releases and ADC caps downside

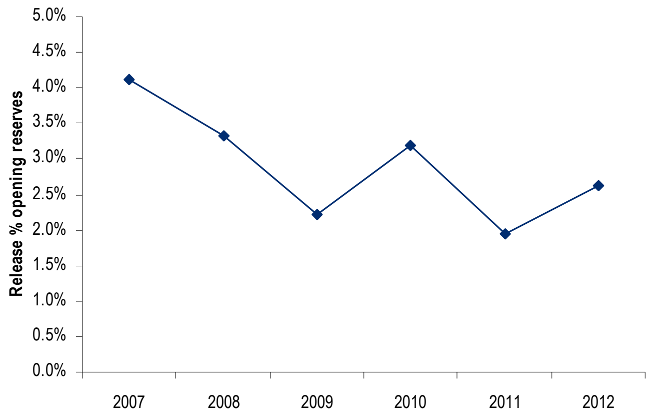
Catlin made $139m reserve releases, which are consistent with the group's longer-term trend (ie 2-4% of opening reserves) and should give reassurance that these are likely to be sustainable. It is also significant that the group's Adverse Development Cover protects it from deterioration in reserves relating to business written before 2010 (around ½ reserves) while allowing Catlin to benefit from any positive releases. This is a unique feature in the sector and should mitigate any concerns that over its longer tail casualty reserves. The chart below shows Catlin's reserve releases have been relatively consistent for several years.

Catlin's capital position can comfortably fund growth and attractive dividend

Catlin's capital position is also often cited as a reason for concern, although the group reported 14% economic capital buffer at 2012, which is in line with its stated 10-20% range. Catlin uses a more conservative methodology than peers for assessing its capital requirements and we show the longer-term trend in the chart below. Our analysis of the group's capital requirements suggests it has plenty of capital to fund its premium growth and attractive dividend (6% yield).

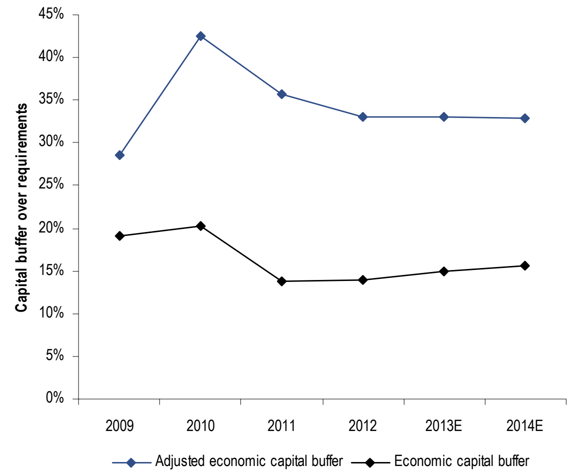
We discuss Catlin's reserving and capital position in more detail later in this report.

Figure 4. Catlin has seen consistent reserve releases



Source: Company data; Citi Research

Figure 5. Catlin's capital position supports growth and dividend



Note: Adjusted buffer includes subordinated debt and undrawn facilities
Source: Company data; Citi Research

3. Returns suggest discounted valuation is unjustified

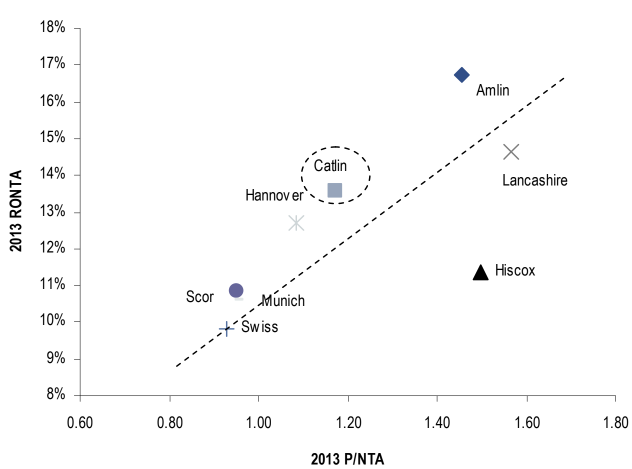
We think Catlin's 14% RONTA justifies a higher P/NTA than 1.17x

In our view, Catlin continues to offer one of the most compelling valuation cases among its Lloyd's peers. Catlin trades on 1.17x 2013E NTA, which is a ~25% discount to the average for its peers. However, we forecast 14% return on net tangible assets, which is in line with the peer group average (mainly driven by Hiscox's lower RONTA). Catlin also looks cheap on 9x 2013E PE compared with peers on avg 11x. The first chart below shows the relationship between Catlin's P/NTA and forecast RONTA.

Catlin's 6% yield is attractive given investor focus on income/capital mgt

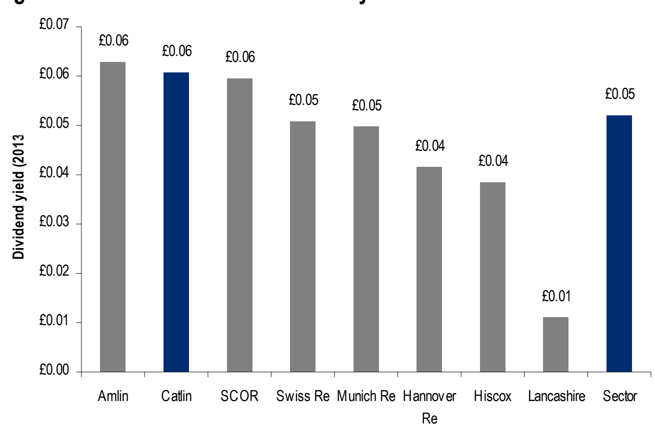
Catlin also offers an attractive dividend yield of 6%. We believe this is likely to be particularly attractive to investors in the current environment, given the growing focus on income and capital returns in the insurance sector. However, we do acknowledge that Catlin doesn't have the same capital management record as its peers, given the strong growth profile of the group. The second chart below shows that Catlin offers one of the most attractive yields among its peers.

Figure 6. Catlin looks undervalued on P/NTA given RONTA forecasts



Source: Citi Research

Figure 7. Catlin offers an attractive 6% yield



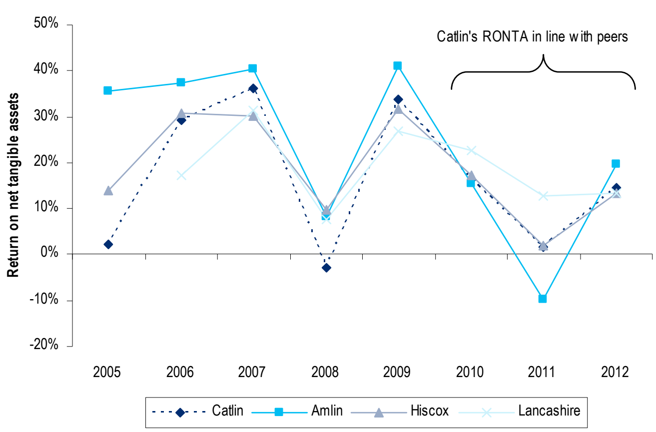
Note: Lancashire normally supplements its regular dividend with significant specials.
Source: Company data; Citi Research

Catlin's RONTA is in line with peers despite ongoing discount

In recent years Catlin's operating performance has converged with its peers, despite its discounted valuation. For example, Catlin tended to deliver weaker returns in years with severe catastrophes (eg 2005 and 2008), but its RONTA was actually in line with the rest of the sector in 2011 despite major catastrophes.

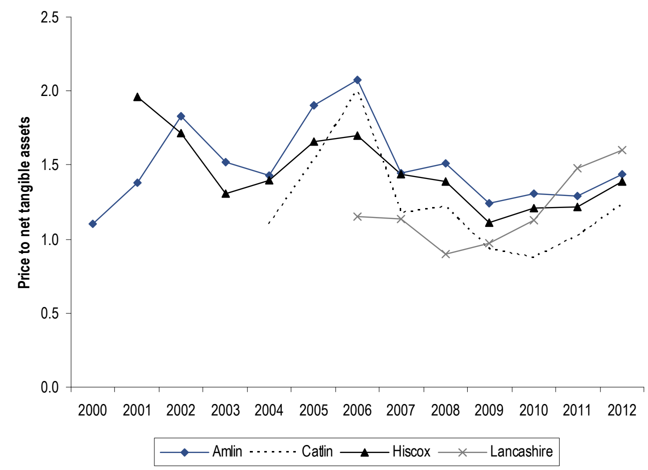
We see this as a benefit of risk management and increasingly diversified earnings, and suspect this is currently underappreciated by the market. The charts below show the convergence in Catlin and the sector's RONTA, and Catlin's persistent P/NTA discount compared with peers.

Figure 8. Catlin's recent RONTA has been in line with peers



Source: Company data; Citi Research

Figure 9. Catlin has consistently traded on a discounted P/NTA



Note: based on year end price / year end net tangible assets per share

Source: Company data; Citi Research

The table below shows the key valuation metrics for the Lloyd's/reinsurance sector.

Figure 10. Key valuation metrics for the peer group

						Valuation (2013E)				EPS			DPS			NTAPS			RONTA		
	Rec		Price	Target	ETR	P/E	P/NAV	P/NTA	Yield	2011	2012	2013	2011	2012	2013	2011	2012	2013	2011	2012	2013
Amlin	Buy	GBP	412	425	9.5%	9.3	1.26	1.46	6.3%	-30.3	48.0	44.1	23.0	24.4	25.8	243	264	283	-10%	20%	17%
Catlin	Buy	GBP	515	567	17.2%	9.2	0.94	1.17	6.1%	6.7	52.0	56.0	28.0	29.5	31.3	393	409	439	2%	15%	14%
Hiscox	Neutral	GBP	486	450	-3.7%	13.2	1.42	1.50	3.8%	5.3	40.3	36.8	17.0	43.3	18.7	306	328	325	2%	13%	11%
Lancashire	Buy	GBP	855	905	6.9%	11.1	1.57	1.57	1.1%	74.6	76.4	76.7	61.4	65.6	9.4	493	485	546	13%	13%	15%
						10.7	**1.30**	**1.42**	**4.3%**										**2%**	**15%**	**14%**
Hannover	Neutral	EUR	58.0	60.2	8.0%	9.2	1.08	1.09	4.1%	5.0	6.8	6.3	2.1	2.8	2.4	41	50	53	14%	17%	13%
Munich	Neutral	EUR	135.6	136.3	5.5%	9.0	0.84	0.95	5.0%	3.9	17.8	15.0	6.3	6.5	6.8	110	134	143	4%	15%	11%
Scor	Buy	EUR	21.8	23.5	13.5%	9.2	0.80	0.95	6.0%	1.8	2.1	2.4	1.1	1.2	1.3	20	22	23	9%	10%	11%
Swiss	Buy	CHF	73.0	78.7	12.9%	9.6	0.82	0.93	5.1%	6.8	9.3	7.6	3.0	6.0	3.7	70	77	79	11%	13%	10%
						9.2	**0.88**	**0.98**	**5.0%**										**9%**	**13%**	**11%**

Source: Company data; Citi Research. Priced as at close 13.2.13

Overlooked positives in Catlin's performance

Headlines distracted from positives:
1. strong u/w performance
2. positive renewals
2. high third party capital fees
3. solid capital position

Catlin's 2012 results disappointed the market due to a headline miss on profit before tax (actual $339m vs consensus $384m). Given the recent strong performance of the shares, it is not surprising that they have reacted negatively to this, although we think clearer guidance could have mitigated some of this impact. More importantly, we believe the headline miss has distracted the market from a number of important positive features in Catlin's FY 2012 results:

1. The **u/w result was actually stronger than expected** (90% COR) and was based on both good underlying profitability (50.6% attritional) and healthy reserve releases (3.9% of NEP).
2. Catlin gave a **positive update on renewals,** which received relatively little attention. Given its growing US business (21% premiums), Catlin is well positioned to benefit from pricing momentum in US casualty lines (+5% in 2012).
3. The **commission income from Catlin's special purpose syndicates** (~$30m in 2013) is a new positive and shows the benefits to shareholders from this third-party capital.
4. **Catlin's capital position remains solid** (14% surplus), supporting both the group's growth (est 10% in 2013) and its attractive 6% dividend yield.

1. Stronger-than-expected underwriting performance

Catlin's underwriting result was better than expected and it reported a strong 90% combined ratio (consensus 91%). It was particularly positive that this was based on both a solid underlying profitability and healthy reserve releases.

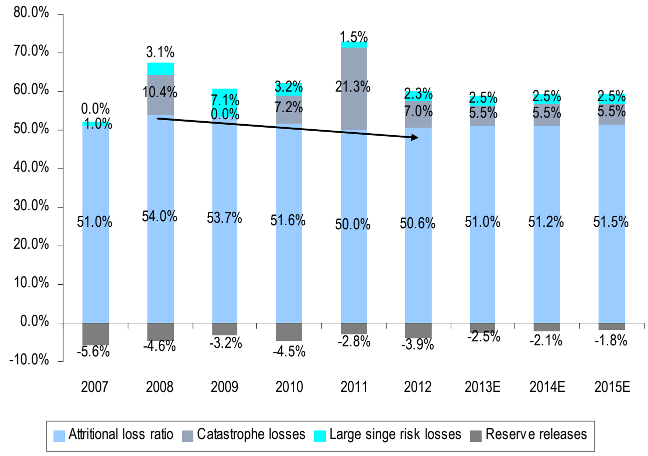
Attritional loss ratio highlights continued underlying profitability

Solid attritional loss ratio — Catlin's attritional loss ratio remained broadly stable at 50.6% (2011: 50.0%). This was a strong achievement given that net earned premiums were flat, which would have inflated this ratio given the underlying growth in the business. In our view, this evidences that the group has been able to deliver growth at attractive underlying margins. The attritional loss ratio was impacted by ~1% by losses from the Italian earthquake and US crops, although we consider these to be part of the normal course of business. The first chart below shows the consistent improvement in Catlin's attritional loss ratio since 2007 and also highlights that our forecasts assume these remain broadly stable. We also note that Catlin is the only Lloyd's company to consistently report its attritional loss ratio and we believe it hasn't yet received credit for this from the market.

Catlin's performance is more in line with peers than market seems to realise

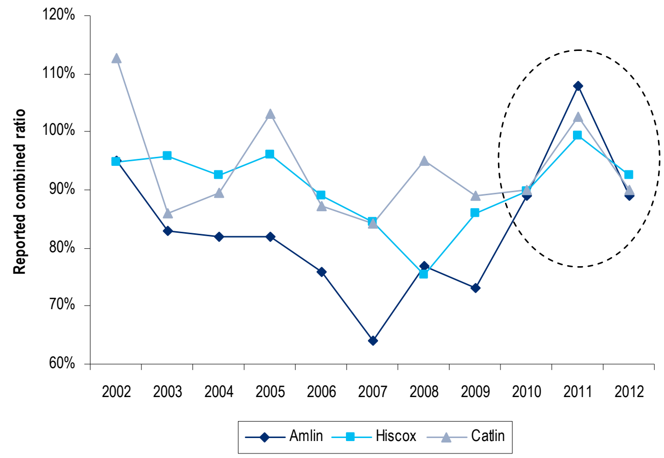
Recent underwriting performance in line with peers — Catlin has historically been more volatile in its underwriting performance compared with peers, particularly in years with strong catastrophe losses. However, we believe the market hasn't recognised that its more recent underwriting performance (ie since 2010) has actually been more in line with the performance of its peers. This is shown in the second chart below.

Figure 11. Improvement in attritional loss ratio shows quality of book



Source: Company data; Citi Research

Figure 12. Catlin's recent underwriting performance in line with peers



Note: based on 2012 forecasts. Hiscox includes corporate expenses in its COR
Source: Company data; Citi Research

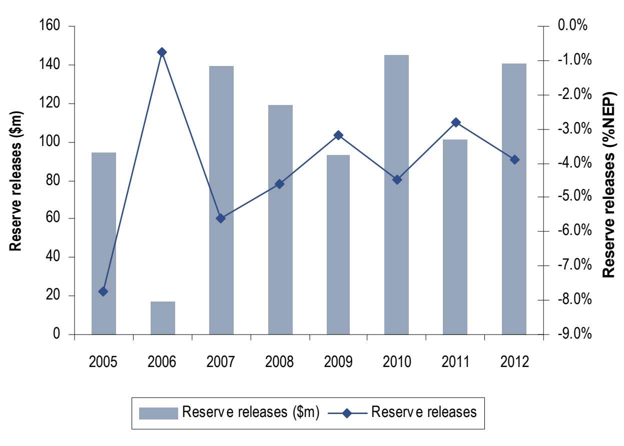
Healthy release should reassure that these will be an ongoing source of profits

Healthy reserve releases — Catlin increased its reserve releases to $139m or 3.9% NEP (2011: $101m or 2.8%), which were mainly driven by aviation and energy business across a number of years. We think the market has been cautious on the group's reserving and we see these release as reassuring, particularly in conjunction with the points on reserving below. The chart below shows Catlin's the longer term trend of releases. We note that these have been a relatively stable contributor to profits (ie 3-5% of earned premiums since 2008), despite the fact that Catlin reserves to actuarial best estimate. Consequently, we expect releases to be an ongoing contributor to the group's profitability, albeit at a gradually declining rate (in line with our forecasts for peers).

2012 initial loss estimates set in line with longer term trends

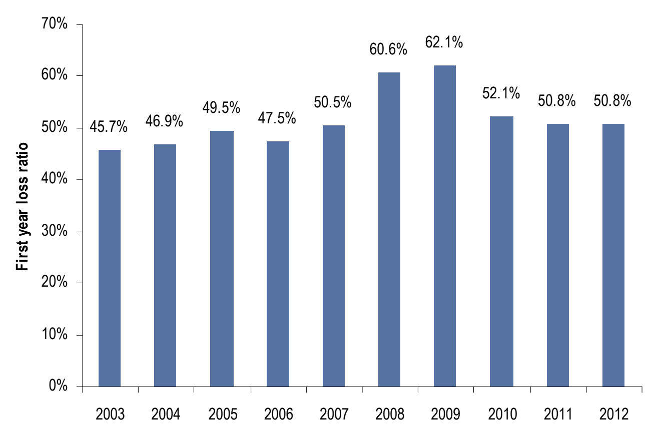
Reserve setting in line with longer term trends — Reviewing Catlin's initial reserve setting shows that this has been in line with the longer-term trend (ie 2012 accident year was set at 50.8%, in line with 2011). This should reassure that the group's strong attritional loss ratio isn't being achieved through more aggressive reserving. The longer-term trend of Catlin's initial loss ratio is shown in the second chart below.

Figure 13. Healthy reserve releases should reassure the market



Source: Company data; Citi Research

Figure 14. Reserving in line with historic trends



Note: initial loss estimate (excluding major losses) for each accident year
Source: Company data; Citi Research

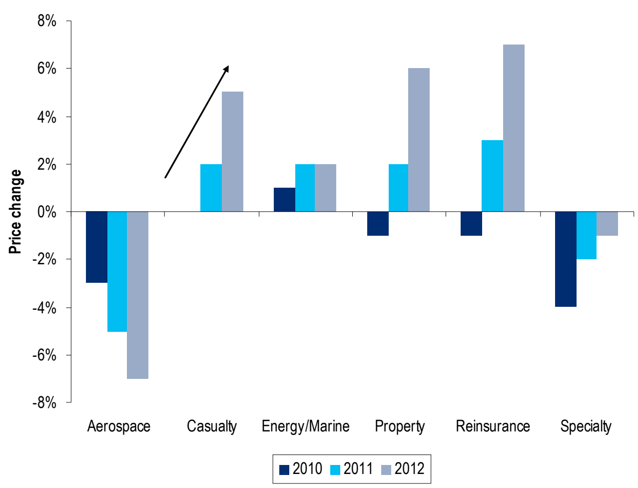
2. Positive renewal update and well positioned for casualty pricing

Catlin is well positioned to benefit from better casualty rates

Catlin didn't focus a lot on its renewals, although the headline figures were actually rather encouraging. Catlin achieved 2% price increases and 14% growth so far in 2013. As expected for a Lloyd's players, this puts its pricing towards the top end of what European Reinsurers have achieved (Munich +0.5%, Hannover +0.5%, Scor +2%). Commentary on individual lines of business was broadly consistent with peers: US property reinsurance rates were strong at renewals following Hurricane Sandy and, more importantly, there are signs of improvement in the US casualty market for which rates increased 5% in 2012. Given the growth in Catlin's US specialty business, this should be positive for the group. Note that Catlin's Adverse Development Cover has been extended to include 2010 business, which means the group is protected from any downside risks from its longer tail casualty reserves.

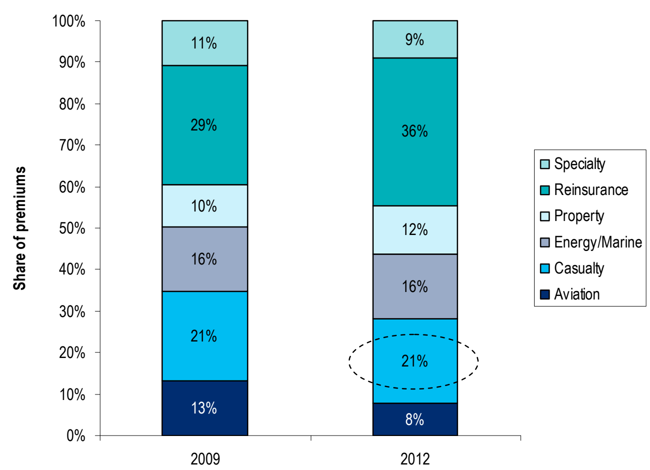
The chart below shows the steady improvement in casualty rates for Catlin, driven by improvements in the US market. The second chart shows that Catlin's business has ~20% exposure to Casualty (skewed towards shorter tail classes). This is slightly higher than peers and therefore suggests it is better positioned to benefit from improved pricing.

Figure 15. Casualty pricing has steadily improved



Source: Company data; Citi Research

Figure 16. Casualty is ~20% of premiums, which is higher than peers



Source: Company data; Citi Research

3. Commission income from special purpose syndicates is positive

Commissions from third party capital should improve 2013 COR by ~1%

One of the surprisingly positive features of Catlin's results was its disclosure of $14m commissions from its special purpose syndicates (SPS) backed by third-party capital. This reflects ½ year's over-rider commission from the SPS's and management indicated that this would increase substantially in 2013. We have estimated the calculation of this commission in the tables below. We expect this to increase to ~33% in 2013. Since these commissions are included within administrative expenses, this equates to a 1% improvement in the combined ratio.

Figure 17. We estimate ~$33m commission income for 2013

2012	$m
SPS capacity (net of brokerage)	220
SPS capacity (gross of 20% brokerage)	275
Overrider commission at 10%	28
1/2 year commission (as reported)	**14**
2013	**$m**
SPS capacity (net of brokerage)	267
SPS capacity (gross of 20% brokerage)	334
Overrider commission at 10% (estimated)	**33**

Source: Company data; Citi Research

Catlin has taken advantage of investor appetite for catastrophe risks

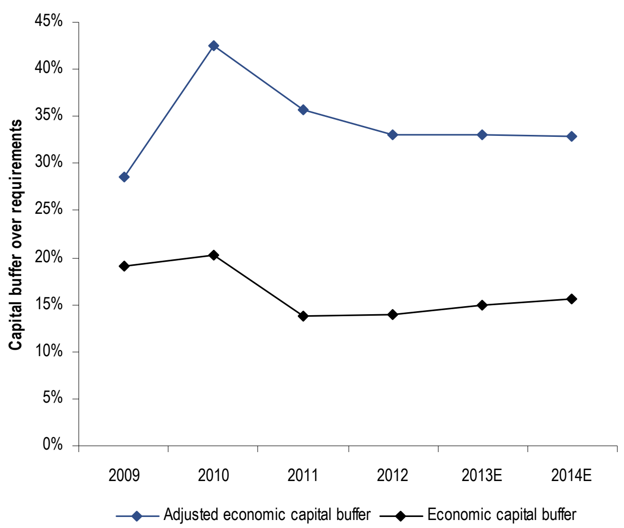
Use of third-party capital has been an increasing theme in the Lloyd's sector and the re/insurance market more generally. This form of capital leverages shareholder returns through up-front fees as well as profit commissions (which take ~3 years to be recognized given Lloyd's accounting). It also potentially allows Lloyd's insurers to increase its business in the event of a market change without raising capital from shareholders.

4. Solid capital position supports growth and dividend

Catlin's capital position is more conservatively assessed than peers

Catlin's 14% economic capital buffer was in line with our expectations and in line with the company's target of 10-20%. As Catlin indicated at its recent investor day, it applies a more conservative methodology than many of its peers in estimating this, since it excludes subordinated debt and undrawn banking facilities. The first chart below shows the significant improvement in capital position if we include the benefit of these other forms of capital. The second table shows our roll forward of Catlin's capital position, showing that we believe it can fund both its growth and attractive dividend yield.

Figure 18. Catlin's capital position was in line with 10-20% guidance



Note: Adjusted buffer includes subordinated debt and undrawn facilities

Source: Company data; Citi Research

Figure 19. Capital position supports growth and attractive dividends

	2009	2010	2011	2012	2013E	2014E	2015E
NTA	2,066	2,236	2,099	2,305	2,475	2,648	2,816
Pref shares	590	590	590	590	590	590	590
Available capital	**2,656**	**2,826**	**2,689**	**2,895**	**3,065**	**3,238**	**3,406**
Required economic capital	2,231	2,349	2,362	2,539	2,666	2,799	2,939
Change in required		5%	1%	7%	5%	5%	5%
Economic capital buffer	**19%**	**20%**	**14%**	**14%**	**15%**	**16%**	**16%**
Sub debt	97	93	91	92	92	92	92
Undrawn banking facilities	113	427	425	391	391	391	391
Adj capital	2,866	3,346	3,205	3,378	3,548	3,721	3,889
Adj econ. capital buffer	**28%**	**42%**	**36%**	**33%**	**33%**	**33%**	**32%**

Note: assumes 5% growth in required capital

Source: Company data; Citi Research

Forecasts and valuation

We have made the following changes to our earnings forecasts: 1. increased our underwriting result forecasts to reflect a lower attritional loss ratio (2013: 50.8% vs 51.6%) and the benefit of SPS fees (£30m benefit to expense ratio from 2013). 2. increased our assumption for employee expenses in line with experience in 2012. We expect these to remain at ~27% of profits before employee expenses. 3. The above factors broadly offset each other and consequently our net income forecasts remain broadly unchanged for 2013 and 2014.

Figure 20. Changes to forecasts

	Old			New			Change			Change		
Catlin P&L (USDm)	**2012E**	**2013E**	**2014E**	**2012A**	**2013E**	**2014E**	**2012**	**2013E**	**2014E**	**2012**	**2013E**	2014E
Gross written premium	4,980	5,250	5,520	4,972	5,350	5,670	-8	100	150	0%	2%	3%
Reinsurance premiums	-988	-1,039	-1,087	-1,138	-1,212	-1,283	-150	-173	-197	15%	17%	18%
Net premium written	3,992	4,211	4,433	3,834	4,138	4,387	-158	-73	-47	-4%	-2%	-1%
Net change in UPR	-364	-114	-106	-230	-155	-109	134	-41	-3	-37%	36%	3%
Net premiums earned	**3,628**	**4,097**	**4,328**	**3,604**	**3,983**	**4,278**	**-24**	**-114**	**-50**	**-1%**	**-3%**	**-1%**
Losses and loss expenses	-2,093	-2,356	-2,509	-2,020	-2,241	-2,431	73	114	78	-3%	-5%	-3%
Policy acquisition costs	-786	-886	-934	-796	-867	-930	-10	19	4	1%	-2%	0%
Net underwriting contribution	**749**	**856**	**884**	**788**	**875**	**917**	**39**	**18**	**33**	**5%**	**2%**	**4%**
U/W admin expenses	-421	-475	-502	-431	-446	-479	-10	29	23	2%	-6%	-5%
				0	0	0						
Net underwriting result	**328**	**381**	**382**	**357**	**428**	**438**	**29**	**48**	**56**	**9%**	**13%**	**15%**
Total investment return	**155**	**143**	**149**	**158**	**142**	**148**	**3**	**-2**	**-1**	**2%**	**-1%**	**-1%**
Employee incentives	-90	-100	-100	-155	-155	-155	-65	-55	-55	72%	55%	55%
FX	0	0	0	-15	0	0	-15	0	0			
Financing costs	-10	-10	-10	-14	-14	-14	-4	-4	-4			
Other income	0	0	0	8	9	10	8	9	10			
Other income/expenses	**-100**	**-110**	**-110**	**-176**	**-160**	**-159**	**-76**	**-50**	**-49**	**76%**	**45%**	**45%**
Profit before tax	**383**	**414**	**421**	**339**	**410**	**427**	**-44**	**-4**	**5**	**-11%**	**-1%**	**1%**
Tax	-45	-54	-55	10	-53	-55				-122%	-1%	1%
Net income	**338**	**360**	**367**	**349**	**357**	**371**	**11**	**-3**	**5**	**3%**	**-1%**	**1%**
Preference dividend	-44	-44	-44	-44	-44	-44	0	0	0	0%	0%	0%
Net attributable income	**294**	**316**	**323**	**305**	**313**	**327**	**11**	**-3**	**5**	**4%**	**-1%**	**1%**

Source: Company data; Citi Research

We have updated our valuation to reflect the 2012 earnings, which is shown in the table below. Our target price remains unchanged at 567p.

Figure 21. Catlin valuation ($m)

	Capital	ROC	COC	P/Book	Earnings	P/E	Valuation	Per share
London	1,737	14.5%	9.9%	1.51	251	10.4	2,619	469
Bermuda	350	12.4%	10.2%	1.23	44	9.9	431	77
USA	500	7.9%	9.6%	0.81	39	10.3	404	72
International	400	9.2%	9.3%	0.99	28	14.1	396	71
Total	**2,987**	**12.4%**	**9.8%**	**1.29**	**362**	**10.6**	**3,850**	**689**
Debt/Prefs							-682	-122
Valuation				**1.37**		**10.1**	**3,168**	**567**

Source: Company data; Citi Research

Figure 22. Catlin earnings forecasts

Catlin P&L (USDm)	2009	2010	2011	2012	2013E	2014E	2015E
Gross written premium	3,715	4,069	4,513	4,972	5,350	5,670	5,915
Reinsurance premiums	-547	-751	-678	-1,138	-1,212	-1,283	-1,337
Net premium written	3,168	3,318	3,835	3,834	4,138	4,387	4,578
Net change in UPR	-250	-99	-223	-230	-155	-109	-90
Net premiums earned	**2,918**	**3,219**	**3,612**	**3,604**	**3,983**	**4,278**	**4,488**
Losses and loss expenses	-1,682	-1,852	-2,530	-2,020	-2,241	-2,431	-2,575
Policy acquisition costs	-585	-684	-758	-796	-867	-930	-974
Net u/w contribution	**651**	**683**	**324**	**788**	**875**	**917**	**940**
Admin - non controlable	-61	-67	-68	-37	-40	-43	-45
Admin - controlable	-271	-289	-352	-394	-406	-436	-458
U/W admin expenses	**-333**	**-356**	**-420**	**-431**	**-446**	**-479**	**-503**
Net underwriting result	**318**	**327**	**-96**	**357**	**428**	**438**	**437**
Total investment return	**414**	**205**	**248**	**158**	**142**	**148**	**155**
Employee incentives	-86	-101	-84	-155	-155	-155	-155
Other admin expenses	-30	0	0	0	0	0	0
FV of derivatives	-31	-15	0	0	0	0	0
FX	30	3	9	-15	0	0	0
Financing costs	-16	-15	-10	-14	-14	-14	-14
Other income	4	2	4	8	9	10	11
Other income/expenses	**-129**	**-126**	**-81**	**-176**	**-160**	**-159**	**-158**
Profit before tax	**603**	**406**	**71**	**339**	**410**	**427**	**434**
Tax	-50	-25	11	10	-53	-55	-56
Minority interest	0	0	0	0	0	0	0
Net income	**553**	**381**	**82**	**349**	**357**	**371**	**377**
Preference dividend	-44	-44	-44	-44	-44	-44	-44
Net attributable income	**509**	**337**	**38**	**305**	**313**	**327**	**333**
EPS - diluted (cents)	**147.3**	**92.9**	**10.6**	**83.2**	**89.6**	**93.7**	**95.5**
EPS - diluted (p)	**94.5**	**58.0**	**6.7**	**52.0**	**56.0**	**58.6**	**59.7**
ROE	23.7%	12.5%	1.3%	11.3%	10.7%	10.6%	10.2%
RONTA	**33.8%**	**16.3%**	**1.7%**	**14.5%**	**13.6%**	**13.2%**	**12.6%**
DPS (cents)	**40.0**	**42.5**	**44.9**	**46.0**	**50.5**	**53.5**	**56.8**
DPS (p)	**25.0**	**26.5**	**28.0**	**29.5**	**31.3**	**33.1**	**35.1**
DPS growth	8%	6%	6%	5%	6%	6%	6%

Source: Company data; Citi Research

Figure 23. Catlin key metrics

KEY METRICS	2009	2010	2011	2012	2013E	2014E	2015E
Attritional loss ratio	**53.7%**	**51.6%**	**50.0%**	**50.6%**	**50.8%**	**51.0%**	**51.2%**
Catastrophe losses	0.0%	7.2%	21.3%	7.0%	5.5%	5.5%	5.5%
Large singe risk losses	7.1%	3.2%	1.5%	2.3%	2.5%	2.5%	2.5%
Reserve releases	-3.2%	-4.5%	-2.8%	-3.9%	-2.5%	-2.1%	-1.8%
Reported loss ratio	**57.6%**	**57.5%**	**70.0%**	**56.0%**	**56.3%**	**56.8%**	**57.4%**
Policy acquisition costs	20.1%	21.2%	21.0%	22.1%	21.8%	21.7%	21.7%
Admin - group controlable	9.3%	9.0%	9.7%	10.9%	10.2%	10.2%	10.2%
Admin - non controlable	2.1%	2.0%	1.9%	1.0%	1.0%	1.0%	1.0%
UW admin expenses	11.4%	11.0%	11.6%	11.9%	11.2%	11.2%	11.2%
Expense ratio	**31.5%**	**32.2%**	**32.6%**	**34.0%**	**33.0%**	**32.9%**	**32.9%**
Combined ratio	**89.1%**	**89.8%**	**102.6%**	**90.0%**	**89.2%**	**89.8%**	**90.3%**
COR (incl staff costs)	92.0%	92.9%	105.0%	94.3%	93.1%	93.4%	93.7%
Fixed income	3,867	4,575	6,019	5,603	5,827	6,060	6,303
Cash	3,296	3,244	2,178	2,597	2,701	2,809	2,921
Equities	530	200	181	574	603	633	664
Total investments	**7,693**	**8,021**	**8,388**	**8,774**	**9,131**	**9,502**	**9,888**
Investment return	**6.15%**	**2.70%**	**3.12%**	**2.02%**	**1.58%**	**1.59%**	**1.60%**

Source: Company data; Citi Research

Figure 24. Change in equity

Change in equity	2009	2010	2011	2012	2013E	2014E	2015E
Opening equity	**2,469**	**3,278**	**3,448**	**3,298**	**3,512**	**3,682**	**3,855**
Net income	509	337	38	305	313	327	333
Other comprehensive income	112	5	-42	32	0	0	0
Issuance of common shares for wellington		0	0	0	0	0	0
Equity raise	289	0	0	0	0	0	0
Issuance of preference shares	0	0	0	0	0	0	0
Stock compensation expense	22	23	11	32	25	25	25
Dividend	-115	-138	-150	-157	-167	-180	-191
Purchase of treasury stock	-8	-57	-7	2	0	0	0
Closing equity	**3,278**	**3,448**	**3,298**	**3,512**	**3,682**	**3,855**	**4,023**
Net tangible assets	**2,066**	**2,236**	**2,099**	**2,305**	**2,475**	**2,648**	**2,816**
NAV per share (cents)	768	833	785	837	886	935	983
NAV per share (p)	**474**	**541**	**506**	**518**	**548**	**579**	**609**
NTA per share (cents)	590	652	608	660	709	759	807
NTA per share (p)	**364**	**423**	**393**	**409**	**439**	**470**	**499**

Source: Company data; Citi Research

Catlin Group Ltd

Company description

Catlin is a property & casualty underwriter based in Bermuda which is expanding beyond its roots at Lloyd's of London, (where, through its 100% ownership of Syndicate 2003, it is the largest underwriting platform) to become a genuinely international wholesale company. The company is represented in the US, Europe and a fast-expanding network of offices in Asia.

Investment strategy

We rate Catlin Buy. Following the acquisition of Wellington in December 2006 Catlin is now a sizeable international P&C underwriter. The US, Bermudian and international hubs are producing organic growth and Catlin now has a large and well diversified underwriting portfolio. Catlin has significantly increased its underlying underwriting profitability and the greater profitability from its international operations should lower overall earnings volatility. We also believe that Catlin's Adverse Development Cover on 2009 and prior year reserves helps relieve some of the concern over its lower reserve releases. We view the current valuation as undemanding and believe that another year of solid trading performance could lead the shares to re-rate in line with sector multiples.

Valuation

In common with our general sector approach, we use our Value Perspective methodology to calculate a SOTP valuation for Catlin. Our approach assigns a target price/NTA multiple to each business based on consideration of return on capital vs. cost of capital, adjusted for 10-year forecast growth. We value the London business at 1.5x NTA reflecting its longstanding franchise. The Bermudan business is valued at 1.2x NTA given the faster growth but potentially higher volatility of this business. We value the US business on 0.8x NTA to reflect its improved profitability. The International businesses are valued at a discount to NTA to reflect concerns over the profitability of the business written, especially post central cost allocation. In order to recognize the potential earnings volatility, we apply a beta of 1.1 and derive a cost of capital of 9.8% for the group. Our SOTP model points to a fair value of 567p, which is where we set our target price.

Risks

The main positive risks to our target price are: i) our forecasts include an assumption for normalised catastrophe losses such that, should incurred losses be materially below our assumptions, this would lead to higher u/w profits; ii) a material increase in global pricing would lead to improved u/w profits and would likely be accompanied by a re-rating in valuation multiples; and iii) increased US/UK interest rates would lead to higher investment returns.

The main negative risks to our target price are: i) the group has significant exposure to business for which profitability is impacted by natural catastrophes (eg earthquakes) and this can lead to considerable volatility in earnings; ii) the group derives a large proportion of its revenues and holds a significant part of its NAV in non-sterling currencies (predominantly the USD) - consequently, earnings and NAV are exposed to weakness in these currencies; and iii) the group holds significant fixed income assets and, should corporate or sovereign defaults increase materially, this would have an adverse impact on returns.

Appendix A-1

Analyst Certification

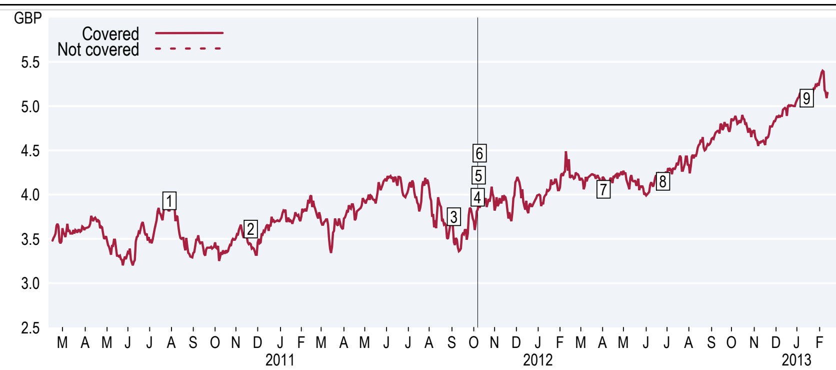
The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each 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

Catlin Group Ltd (CGL.L)

Ratings and Target Price History
Fundamental Research

Analyst: Thomas Dorner
Covered since November 16 2011



	Date	Rating	Target Price	Closing Price
1	29-Jul-10	1H	*4.40	3.82
2	22-Nov-10	1H	*4.00	3.44
3	5-Sep-11	1H	*4.25	3.46
4	7-Oct-11	Stock rating system changed		
5	8-Oct-11	*1	4.25	3.83
6	11-Oct-11	*2	*4.00	3.85
7	3-Apr-12	2	*4.28	4.19
8	26-Jun-12	*1	*4.78	4.20
9	15-Jan-13	1	*5.67	5.12

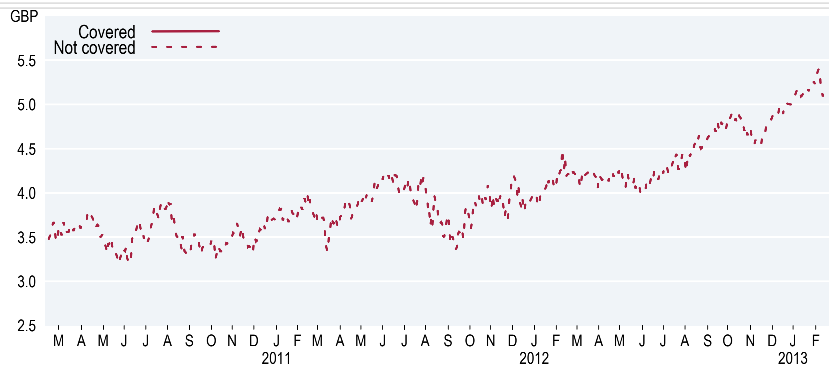
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

Catlin Group Ltd (CGL.L)

Ratings and Target Price History
Best Ideas Research
Relative Call (3 Month)

Analyst: Thomas Dorner
Covered since November 16 2011



* Indicates change

Rating/target price changes above reflect Eastern Standard Time

Thomas Dorner, Analyst, holds a long position in the securities of Lancashire Holdings.

Within the past 12 months, Citigroup Global Markets Inc. or its affiliates has acted as manager or co-manager of an offering of securities of Hannover Ruckversicherungs AG, Swiss Re.

Citigroup Global Markets Inc. or its affiliates has received compensation for investment banking services provided within the past 12 months from Munich Re, SCOR, Catlin Group Ltd, Hannover Ruckversicherungs AG, Swiss Re.

Citigroup Global Markets Inc. or an affiliate received compensation for products and services other than investment banking services from Munich Re, SCOR, Catlin Group Ltd, Hiscox Ltd, Hannover Ruckversicherungs AG, Swiss Re, Amlin Plc in the past 12 months.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as investment banking client(s): Munich Re, SCOR, Catlin Group Ltd, Hannover Ruckversicherungs AG, Swiss Re.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, securities-related: Munich Re, SCOR, Catlin Group Ltd, Hiscox Ltd, Hannover Ruckversicherungs AG, Swiss Re, Amlin Plc.

Citigroup Global Markets Inc. currently has, or had within the past 12 months, the following as clients, and the services provided were non-investment-banking, non-securities-related: Munich Re, SCOR, Catlin Group Ltd, Hiscox Ltd, Hannover Ruckversicherungs AG, Swiss Re, Amlin Plc.

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.

The Firm is a market maker in the publicly traded equity securities of Munich Re.

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 Dec 2012	**Buy**	**Hold**	**Sell**	**Buy**	**Hold**	**Sell**
Citi Research Global Fundamental Coverage	49%	38%	12%	7%	86%	7%
% of companies in each rating category that are investment banking clients	53%	49%	45%	60%	49%	55%

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	Thomas Dorner; Farooq Hanif; Paul L Bradley

OTHER DISCLOSURES

The subject company's share price set out on the front page of this Product is quoted as at 14 February 2013 12:33 PM on the issuer's primary market.

Citigroup Global Markets Inc. and/or its affiliates has a significant financial interest in relation to SCOR, Catlin Group Ltd. (For an explanation of the determination of significant financial interest, please refer to the policy for managing conflicts of interest which can be found at www.citiVelocity.com.)

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.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST