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BHP Billiton (BIL)

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One thing that EAR has observed in recent times is that commodity stocks tend to behave like commodities. Mean reversion on most TOP 40 commodity stocks tends to be persistent over various trading intervals. In the previous equity trading note, EAR suggested some trading opportunities; i.e. respective long and short positions on Anglo American Plc, with reference to a mean reversion strategy on the price. Generally, there is an expectation that commodity prices mean revert over some time and it appears share prices of mining companies that tend to "dig" for various commodities tend to mean revert as well. This is not to suggest that the two are linked as the factors driving commodity prices and share prices may differ.

On this particular trading note, EAR's focus turns to BHP. The interest around one of the largest diversified commodity miners in the world was drawn by the persistent mean reversion over weekly trading intervals. In observing intra-day data on BHP's share price over various weeks between April and May 2017, EAR identified that the Hurst (H) on BHP's share price pointed to some strong mean reversion levels – consistently so. During periods that were characterised by some degree of normal trading conditions for BHP's share price, EAR observed that the degree of mean reversion proved to be strong. For instance, BHP's Hurst would range between 0.27 and 0.31 under conditions gravitating towards "market normality[1]" (during a given trading week). Trading periods that suggested some excess volatility in BHP's price proved to reflect some relatively weaker degree of mean reversion.

[1] EAR assesses a price or return gravitating towards normality or normal market conditions through among others observing both the skewness and the excess volatility/volatility of volatility indicators (i.e. kurtosis).

An interesting observation around BHP's share price is the link to its share price returns. On a consistent basis, BHP's share price was negatively skewed for various periods; with only a few periods during which some positive skewness prevailed. EAR's research further reveals that intra-day prices, given the strong degree of mean reversion, were concentrated on the higher side of the weekly average and therefore was favourable for investors/traders that took positions at levels below the mean (mainly "long only" investors). Whilst prices were concentrated at levels above the average or mean for most trading weeks, the negative skewness of the returns suggested that the higher prices gradually moved toward the lower side; thus, presenting opportunities for "short only" traders. However, the magnitude of the excess volatility in the intra-day returns for all observed periods was quite excessive. In some instances where BHP's share price would be positively skewed, the returns would be negatively skewed. However, there has been an instance when both the prices and returns were skewed toward the same direction. Clearly, this share was trading under "bumpy" market conditions, albeit it would revert to some average level.

Trading BHP

EAR's understanding of the behaviour of BHP's price is that on a consistent basis, it tends to favour traders that short the stock. This is informed by EAR's analysis of the biasness of the prices and the consequent returns. This further suggests that any entry point at a high price (or the upper range as shown in the table below) would better serve some short positions. Taking into account the consistent mean reversion of the price, it means that "long only" investors can also benefit from BHP, however, the relative opportunities are limited and therefore one has to take a long position with some serious caution. EAR further cautions that BHP does not present opportunities for extended holding periods, particularly for long only traders/investors. This implies that any trader taking a long position on BHP will need to monitor the position and tradability very closely with the intention of closing the position much quicker.

Table 1: Target Prices – BIL

Possible high	R 203.31
Expected price (average)	R 198.86
Expected mid-price	R 198.93
Possible low	R 194.39

Source: Bloomberg and EAR's Workings

The table above suggests that BHP's price over the next trading week may range between R194.39 and R203.31, given a 95% probability. Although the lower price level could be R194.39, EAR expects BHP's price to trade at levels below this probable low price only 5% of the time in the next trading week. Therefore traders need to be mindful that going short on the stock beyond this lower range may not be as favourable. For long only traders, the current price presents an opportunity to long the stock, but as indicated, the holding period may have to be short. Even so, any trader taking a long position on BHP is not likely to have the luxury of taking their eyes off the position due to the frequency of negative returns that tend to characterise this particular stock. EAR urges traders not to target the expected price (average) in executing a mean reversion strategy. Although there is a strong and persistent mean reversion via the Hurst (H) on BHP; EAR believes any entry price outside the price range of R198.86 and R200.14 may provide entry/trigger points for long and short traders with long only traders targeting an entry price below R198.86 and short position traders targeting an entry price of above R200.14.

In the absence of violent stock (BHP) volatility levels, there is some 97% chance that the opening price on Monday, the 5th of June, may be higher than the closing price (R194.83) of Friday (02 June 2017). However, there is some 3% chance that the opening price on Monday might be lower than Friday's closing price. EAR believes that should the price trade far below the low of R194.39 (as there is a 5% chance that BHP may trade below this level); traders may consider placing tighter stop losses.

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