

**S&P DOW JONES  
INDICES**



# **The S&P/ASX Buy Write Index (XBW) Methodology**

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## **1.0 INTRODUCTION**

### **1.1 The S&P/ASX Buy Write Index**

This document sets out the methodology and framework for the construction and maintenance of the S&P/ASX Buy Write Index. The S&P/ASX Buy Write Index (XBW) is an investable benchmark index designed to track the performance of a buy-write strategy on the S&P/ASX 200. Launched in May 2004, the XBW was developed by the Australian Securities Exchange in cooperation with S&P Dow Jones Indices. The XBW can be used by investment managers to improve fund performance, reduce the volatility of portfolio returns and generate additional income when the outlook for the index is neutral to slightly bullish.

### **1.2 Partnership**

#### **1.2.1 S&P Dow Jones Indices**

S&P Dow Jones Indices is responsible for the calculation, maintenance and adjustments to the Buy Write Index. S&P Dow Jones Indices is an acknowledged global leader in index development and an essential part of the world's financial infrastructure. S&P Dow Jones Indices has played a leading role for over 90 years by providing investors with the independent benchmarks that they need to feel confident about their investment and financial decisions.

#### **1.2.2 Australian Securities Exchange Limited (ASX)**

ASX Group (ASX) is an umbrella brand developed to reflect the role of ASX Limited as the holding company of a group with a diverse range of market service activities linked by a common commitment to provide the infrastructure Australia needs to create a globally competitive capital market and a vibrant, robust economy.

ASX is a multi-asset class, vertically-integrated exchange group whose activities span primary and secondary market services, including the raising, allocation and hedging of capital flows, trading and price discovery (Australian Securities Exchange); central counterparty risk transfer (via subsidiaries of ASX Clearing Corporation); and securities settlement for both the equities and fixed income markets (via subsidiaries of ASX Settlement Corporation).

ASX functions as a market operator, clearing house and payments system facilitator. It also oversees compliance with its operating rules, promotes standards of corporate governance among Australia's listed companies and helps to educate retail investors.

### **1.3 The Buy Write Index Strategy**

1.3.1 This is an investment strategy that requires an investor to:

- 1) Buy (or hold) a portfolio of stocks that are benchmarked to the S&P/ASX 200 and simultaneously;

2) Sell (or write) the nearest out-of-the-money quarterly S&P/ASX 200 index call option (the XJO option).

1.3.2 The objective is to create and maintain a passive total return index that provides a performance benchmark for a buy-write strategy based on buying an S&P/ASX 200 stock portfolio and selling an XJO option that expires in the next quarter.

1.3.3 The Buy Write Index serves to meet the needs of investors who wish to:

- Generate additional income from a portfolio benchmarked to the S&P/ASX 200 Index;
- Gain a performance cushion against downside moves in the market;
- Reduce portfolio volatility; and,
- Implement a strategy for a neutral to slightly positive outlook for the index over the quarter.

## **2.0 COMPONENTS OF THE BUY WRITE INDEX**

### **2.1 The S&P/ASX 200 Index**

The S&P/ASX 200 index is a real-time, market capitalisation-weighted index that covers approximately 80% of the Australian equity market on a capitalisation basis.

The S&P/ASX 200 is an investable index and is recognised as the benchmark index for the Australian equity market, measuring the performance of the 200 largest index eligible stocks listed on ASX.

### **2.2 S&P/ASX 200 Index Options**

The index option used for the Buy Write Index is the XJO option. The underlying asset for the XJO option is the S&P/ASX 200 Index. XJO options are available up to six quarter months ahead (March, June, September, and December) and serial months up to two non-financial quarter months ahead. XJO options expire at 12 noon on the third Thursday of the contract month. XJO options are European style with cash settlement at expiry.

## 3.0 INDEX CONSTRUCTION

### 3.1 Approach

- 3.1.1 The S&P/ASX Buy Write Index measures the total rate of return of a buy write strategy applied to the S&P/ASX 200 Price Index with dividends reinvested. The buy-write strategy consists of:
- 1) Holding a 'long' position consisting of the S&P/ASX 200 Index portfolio and,
  - 2) 'Writing' the nearest out-of-the-money XJO call option with an expiry in the next quarter. The nearest out-of-the-money call option is determined using the S&P/ASX 200 Index OPIC (Opening Price Index Calculation) value at 10:20am.
- 3.1.2 The XBW buy write strategy requires that each XJO call option is held to expiry, which is at 12 noon on the third Thursday of the contract month. The call option is settled against the S&P/ASX 200 Index OPIC. The OPIC, or Opening Price Index Calculation, is calculated using the first traded price of each share within the index on the expiry date. The settlement obligation of the call option at expiry is the greater of 0 and the difference between the OPIC minus the strike price of the expiring call option. An adjustment to the S&P/ASX Buy Write Index is made each expiry to reflect the funds (if any) that need to be paid to settle the option contract.
- 3.1.3 Subsequent to the settlement of the expiring call option, a new call option is then written, or sold. The newly written option will expire in the next quarter and will have the nearest out-of-the-money strike relative to the OPIC at 10:20am. If necessary ASX will Quote Request the market in the relevant strike in order to determine the price of the newly written call option.
- 3.1.4 Writing a call option as part of a buy-write strategy generates option premium. The income from the premium cushions the portfolio from some downside risk in return for potential upside. The cap level on the upside is equal to the strike price of the option. The option premium is reinvested into shares of the index portfolio. This reinvestment adds to the accumulated value of the buy-write strategy.
- 3.1.5 Dividends paid on the constituent shares underlying the S&P/ASX 200 Index are also reinvested in the S&P/ASX 200 Index portfolio.

**4.0 INDEX CALCULATION**

**4.1 End of day calculation**

The XBW index is calculated daily, after the market close by S&P Dow Jones Indices, once the official closing level for the S&P/ASX 200 and the settlement price for the written option are established. The XBW calculation is:

$$XBW_t = \frac{XJO_t - Callvalue_t + Dividend_t + Rolloveradjustment_t}{XJO_{t-1} - Callvalue_{t-1}} \times XBW_{t-1}$$

where:

- $t$  is the current trading day
- $t-1$  is the preceding trading day.

- 4.1.1 **XBW:** The S&P/ASX Buy Write Index level.
- 4.1.2 **XJO Index:** The official closing level for the S&P/ASX 200 Price Index.
- 4.1.3 **Callvalue:** The call option is valued at the settlement price (also known as the margin price or market price) for the current trading day. The settlement price is calculated by the ASX Derivatives Pricing System and approved by the ASX Clearing Risk Operations.
- 4.1.4 **Dividend:** The implied dividend paid to the S&P/ASX 200 Price Index is expressed in index points and calculated as the excess return of the S&P/ASX 200 Accumulation index over and above the S&P/ASX 200 Price index.

$$Dividend_t = \left[ \frac{A_t}{A_{t-1}} - \frac{P_t}{P_{t-1}} \right] \times P_{t-1}$$

where:

- $t$  is the current trading day
- $t-1$  is the preceding trading day
- A is the S&P/ASX 200 Accumulation (or Total Return) index level
- P is the S&P/ASX 200 Price index level.

- 4.1.5 **Rolloveradjustment:** The rollover adjustment represents the net profit (loss) from writing the new call option and settlement of the expiring call option on the expiry date. Option expiry occurs on the third Thursday of each calendar quarter.

If the current trading day is not the option expiry date, the value of the Rolloveradjustment will be zero. If the current trading day is the option expiry date, two events occur; the settlement obligation from the expiring call option and the writing of an out-of-the-money call option.

Settlement obligations arise when the S&P/ASX 200 Index OPIC value is greater than the strike price of the expiring option. The loss from the expiring

call option is calculated as the lesser of zero and the strike price minus the OPIC value.

$$\text{Settlementobligation}_y = \min(0, \text{exerciseprice}_y - \text{OPIC}_t)$$

The rollover adjustment is therefore equal to the proceeds from writing the new call option plus any settlement obligations from the expiring option. Hence,

$$\text{Rolloveradjustment}_t = \text{Callvalue}_z + \min(0, \text{exerciseprice}_y - \text{OPIC}_t)$$

where:

- $t$  is the current trading day which is the expiry date of current option (y)
- $y$  is the current period call option
- $z$  is the next period call option.

## 4.2 The value of the index call options

- 4.2.1 There are three types of call option prices used in the construction of the XBW:
- 1) The price at which the newly written call option is deemed to have been sold.
  - 2) On non-expiry days, the option's settlement price.
  - 3) The value of the option, if any, at expiry.

## 4.3 Base Date and Base Value

The base value of the S&P/ASX Buy Write Index is 27,802.235 with a start date of 10<sup>th</sup> May 2004.



## 5.0 PERIODIC REVIEW OF COMPONENTS AND INDEX MAINTENANCE

The performance of the buy-write index is largely dictated by changes in the value of the S&P/ASX 200 Index, which is maintained and rebalanced to ensure that the index remains institutionally investable, tradeable and representative. Any changes that are made to the S&P/ASX 200 Index portfolio will impact the risk return attributes of that index portfolio over time, which will also impact the distribution of returns for the buy-write strategy.

Changes in the buy-write index level reflect changes in the total market capitalisation of the S&P/ASX 200 Index, dividend payments from S&P/ASX 200 index constituents and changes to the value of the option written over the index.

Adjustments to the index are made to ensure that the time series of the S&P/ASX 200 Index is consistent and reflective of the actual market capitalisation-weighted performance of the index portfolio:

- Corporate actions. Adjustments to the index are made intra-quarter in response to corporate actions that range from institutional placements and entitlement offers, through to scrip-based mergers and acquisitions and capital repayments.

Changes to the S&P/ASX 200 Index as a result of corporate actions are generally announced two-to-five business days in advance of index implementation whenever practical, bearing in mind that the timing of such events is occasionally uncertain.

- Quarterly rebalance of index constituents. The S&P/ASX 200 index is rebalanced quarterly to ensure the index constituents maintain adequate market capitalisation and liquidity. Quarterly rebalancing changes take effect on the third Friday of March, June, September and December.

Announcements concerning rebalancing of the S&P/ASX 200 Index are made on the first Friday of each rebalancing month and take effect after the close on the third Friday; therefore, two weeks notice is provided before the rebalancing takes effect. Any component changes to the S&P/ASX 200 Index automatically flow through to the S&P/ASX Buy Write Index and so a separate announcement for the S&P/ASX Buy Write Index is not released.

For more information regarding the maintenance and governance of the S&P/ASX 200 Index please refer to the S&P/ASX methodology paper that is available on the S&P Dow Jones Indices Web site at [www.spindices.com](http://www.spindices.com) under the Australia index section. The document will be posted under this section: <http://www.spindices.com/regional-exposure/asia-pacific/australia>

## **6.0 INDEX POLICY**

### **6.1 Holiday Schedule**

The XBW is calculated at the end of the day on all business days inclusive of state public holidays. The exchange is closed for trading on national public holidays and hence the index is not calculated on those days.

*A complete holiday schedule is available on the S&P Dow Jones Indices Web site at [www.spindices.com](http://www.spindices.com) under the Index Policies section.*

### **6.2 Recalculation Policy**

S&P Dow Jones Indices attempts to avoid incorrect data that affects the indices on a best efforts basis. Incorrect share calculations and corporate actions are corrected immediately. However, index values are typically not corrected retrospectively.

## 7.0 RESOURCES

7.1 ASX provides a variety of resources on the S&P/ASX Buy Write Index webpage, including: daily index values, domestic and international buy-write research papers, buy-write fact sheets, index options information and more. For more information visit:

<http://www.asx.com.au/products/s-and-p-asx-buy-write-index.htm>

## 8.0 GLOSSARY

S&P/ASX 200 Index OPIC (Opening Price Index Calculation)	XJO Options are cash settled against the S&P/ASX 200 Index.  The settlement price is obtained using the Opening Price Index Calculation (OPIC). The OPIC is based on the first traded price of each constituent stock in the index on the expiry day. If a constituent stock does not trade on the expiry day, the last traded price from the previous trading day will be used.
XBW Index	S&P/ASX 200 Buy Write Index
XJO Options	ASX index options over the S&P/ASX 200 index

## **9.0 DISCLAIMERS**

### **S&P Dow Jones Indices Disclaimer**

S&P Dow Jones Indices shall obtain information for inclusion in or for use in the calculation of the S&P/ASX buy write index from sources which S&P Dow Jones Indices considers reliable, but S&P Dow Jones Indices does not guarantee the accuracy and/or the completeness of the S&P/ASX buy write index or any data included therein and S&P Dow Jones Indices shall have no liability for any errors, omissions, or interruptions therein. S&P Dow Jones Indices makes no warranty, express or implied, as to results to be obtained by any person or any entity from the use of the S&P/ASX buy write index or any data included therein in connection with the trading of any products in respect of which S&P Dow Jones Indices grants any license to use any of the S&P/ASX buy write index, or for any other use. S&P Dow Jones Indices makes no express or implied warranties, and expressly disclaims all warranties of merchantability or fitness for a particular purpose or use with respect to the S&P/ASX buy write index or any data included therein. Without limiting any of the foregoing, in no event shall S&P Dow Jones Indices have any liability for any special, punitive, indirect, or consequential damages (including lost profits), even if notified of the possibility of such damages. In addition, (i) CBOE does not sponsor, endorse or promote the S&P/ASX Buy Write Index; (ii) CBOE has no relationship to the S&P/ASX Buy Write Index other than authorizing S&P Dow Jones Indices to grant a license to the ASXO to use the CBOE Buy Write Methodology; (iii) CBOE has no obligation to take the needs of ASXO or any other persons into consideration in maintaining or modifying the CBOE Buy Write Methodology; and (iv) CBOE has no obligations or liability in connection with the administration, marketing or trading of the S&P/ASX Buy Write Index or any investment product of any kind or character that is based thereon.

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## 10.0 APPENDIX A – Worked Examples of the Index Calculation

$$XBW_t = \frac{XJO_t - Callvalue_t + Dividend_t + Rolloveradjustment_t}{XJO_{t-1} - Callvalue_{t-1}} \times XBW_{t-1}$$

where:

t is the current trading day

t-1 is the preceding trading day.

Date	OPIC	Settle- ment Obligati on	Expiry Date	Strike Price	Price Index	Accum Index	C	D	R	P - C	Buy Write Index
15-Sep	-	-	18-Sep	5,400	4,817.7	31,732.5	0.10	3.8	-	4,817.6	42,713.40
16-Sep	-	-	18-Sep	5,400	4,750.8	31,296.6	0.10	0.7	-	4,750.7	42,126.46
17-Sep	-	-	18-Sep	5,400	4,722.2	31,112.5	0.00	0.7	-	4,722.2	41,879.95
18-Sep	4,541.65	-	18-Dec	4,550	4,607.3	30,358.7	300.00	0.5	300	4,307.3	40,865.37
19-Sep	-	-	18-Dec	4,550	4,804.1	31,655.9	411.90	0.1	-	4,392.2	41,671.80

where:

OPIC = Opening Price Index Calculation of the S&P/ASX 200

C = Callvalue

D = Dividend

R = Rolloveradjustment

P-C = Price Index - Callvalue.

### Examples

#### Non-expiry day

To work out the level of the index on the 16<sup>th</sup> September (non-expiry day):

$$XBW_t = \frac{XJO_t - Callvalue_t + Dividend_t + Rolloveradjustment_t}{XJO_{t-1} - Callvalue_{t-1}} \times XBW_{t-1}$$

As given by the above table, the closing level for the S&P/ASX 200 on the 16<sup>th</sup> September was 4750.8, the value of the call was 0.10 and the dividend was 0.7. The 16<sup>th</sup> September is not an expiry date, and therefore the Rolloveradjustment is equal to 0. Given that the level of the XBW on the day before was 42,713.4, the level of the XBW on the 16<sup>th</sup> September is:

$$42,126.46 = \frac{4750.8 - 0.10 + 0.7 + 0}{4817.7 - 0.10} \times 42,713.4$$

### Expiry Day

On the 18<sup>th</sup> September the closing level for the S&P/ASX 200 was 4607.3, the value of the call was 300.00 and the dividend was 0.5. Since 18<sup>th</sup> September is an expiry day, the rollover adjustment is equal to the Callvalue (300.00) plus the settlement obligation (0). The settlement obligation is 0 as the expiring option has expired worthless. The XBW Index return can be calculated as:

$$40,865.37 = \frac{4607.3 - 300 + 0.5 + 300}{4,722.2 - 0.00} \times 41,879.95$$