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## The unequalled power of equal weight investing

A deep dive into the drivers of equal weight outperformance

June 2016

*Applying an equal weight methodology to a portfolio is a simple 'smart beta' investment approach. Smart beta aims to achieve returns higher than, or minimise risk relative to, a traditional market capitalisation-weighted benchmark.*

*The use of smart beta is on the rise throughout developed markets as evidenced by the growth in the number of exchange traded funds which track smart beta indices. Globally smart beta is the fastest growing segment of the asset management industry as a whole.*

*VanEck Vectors Australian Equal Weight ETF (ASX code: MVW) commenced trading on ASX in March 2014 and since that time has significantly outperformed the S&P/ASX 200 Accumulation Index (S&P/ASX 200). MVW's performance has been achieved from:*

- its inherent contrarian trading strategy;*
- its higher relative exposure to smaller stocks, which have greater potential for growth, rather than over researched large stocks; and*
- its propensity to extract more returns when markets are rising and lose less when markets are falling.*

*The long term performance of the equal weight index that MVW tracks demonstrates better risk characteristics than the market capitalisation weighted S&P/ASX 200. That means the better performance is not the result of greater risk-taking, it is the result of better diversification in the smart beta approach compared to the market capitalisation equivalent.*

*As such, MVW is an ideal core portfolio holding to achieve a diversified Australian equities strategy.*

*Equal weight is well suited to the Australian equities market which is among the most highly concentrated in the world. This simple smart beta approach provides an attractive alternative and is a disruptor to actively managed funds in Australia benchmarked to the S&P/ASX 200.*

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## Introduction to 'passive investing', 'smart beta' and 'equal weight'

### Passive investing

Constructing a portfolio by following the composition of a specific reference index is known as 'passive investing' and it is becoming increasingly popular due to its low costs, transparency and performance against both market benchmarks and more expensive active funds.

Research from Morningstar and Bank of America Merrill Lynch shows that cumulative flows into passive funds is increasing while flows into active funds are flat or declining. A large beneficiary of these passive fund flows are listed exchange traded funds ('ETFs'), which are typically open-ended passive index-tracking funds. In December 2015, the total amount of assets invested in ETFs surpassed US\$3 trillion dollars globally after 23 consecutive months of positive net inflows (Source: ETFGI.com).

The first ETFs tracked market capitalisation indices and according to Hammond (2014) "cap-weighted indexing has become the prevailing form of equity index investing due to the ease with which managers could implement investment strategies". However as Hammond noted "the construction methodology behind traditional cap-weighted indices creates implicit biases that could potentially increase certain risks and reduce returns." These risks are concentration risk and exposure to overvalued securities. In Australia the traditional market capitalisation weighted index is the S&P/ASX 200 Accumulation Index (referred to in this paper as 'the S&P/ASX 200') and there are a number of passive funds which track this index and many other active funds that use it as a benchmark. This paper shows that the S&P/ASX 200 is potentially exposed to the risks Hammond highlights.

1. Concentration risk – The S&P/ASX 200 exposes investors to excessive concentration risk. The top 10 companies represent over 50% of the index. Four of the top five companies are banks. Financials make up over 40% of the index. This is problematic if bubbles form. Sector and stock concentration make sense if an investor is 'bullish' or confident the sector or stock will outperform but investors buying a fund that ostensibly contains 200 stocks would likely assume such a broad-based fund to be better diversified.
2. Exposure to overvalued securities – Weighting a fund's components according to market capitalisation can have a negative impact on performance. This is because when the market overvalues a stock its market capitalisation goes up. A fund tracking a traditional market capitalisation index buys more and more of the overpriced stock and loses money when the market corrects. Conversely, when the market undervalues a stock, the market cap based fund sells more and more of the underpriced stock, missing out on profit when the market corrects.

### Smart beta

Smart beta, sometimes referred to as strategic beta, according to Morningstar, "aim to enhance returns or minimise risks relative to a traditional market-capitalisation-weighted benchmark". The use of smart beta is on the rise as evidenced by the growth of ETFs which track smart beta indices. Morningstar demonstrates that globally, smart beta is growing faster than the broader exchange traded product market as well as the asset-management industry as a whole and they expect this trend to continue.

### Equal weight

Equal weighting securities in a portfolio is a simple form of smart beta investing. Rather than weighting stocks by size, an equal weight index gives all its constituents the same weight regardless of market capitalisation.

In order to understand the performance of equal weighting in Australia we analysed the returns, attribution, asset allocation and risk outcomes of the MVIS Australia Equal Weight Index (MVW Index) and the ETF that tracks it, the VanEck Vectors Australian Equal Weight ETF (ASX: MVW). We also illustrate how MVW could be used in either active or passive diversified portfolios to enhance returns without excessive risk. Our findings correspond to the academic research in the US, Europe and Australia. Appendix 1 contains a summary of the academic support for equal weight investing.

## The data: Investment returns

MVW was launched on ASX on 4 March 2014. To 30 April 2016 MVW has outperformed the S&P/ASX 200 by 6.49% p.a. over two years returning 8.86% p.a. compared to 2.37% p.a.

**Table 1: Performance of MVW to 30 April 2016**

	1 Month (%)	3 Months (%)	6 Months (%)	YTD (%)	1 Year (%)	2 Years (% pa)	Since MVW Inception (% pa)
VanEck Vectors Australian Equal Weight ETF	3.32	12.46	7.28	6.98	3.94	8.86	8.95
S&P/ASX 200	3.37	6.35	2.56	0.53	-4.93	2.37	3.10
Outperformance	-0.05	+6.10	+4.72	+6.46	+8.86	+6.49	+5.85

\*Inception date is 4 March 2014

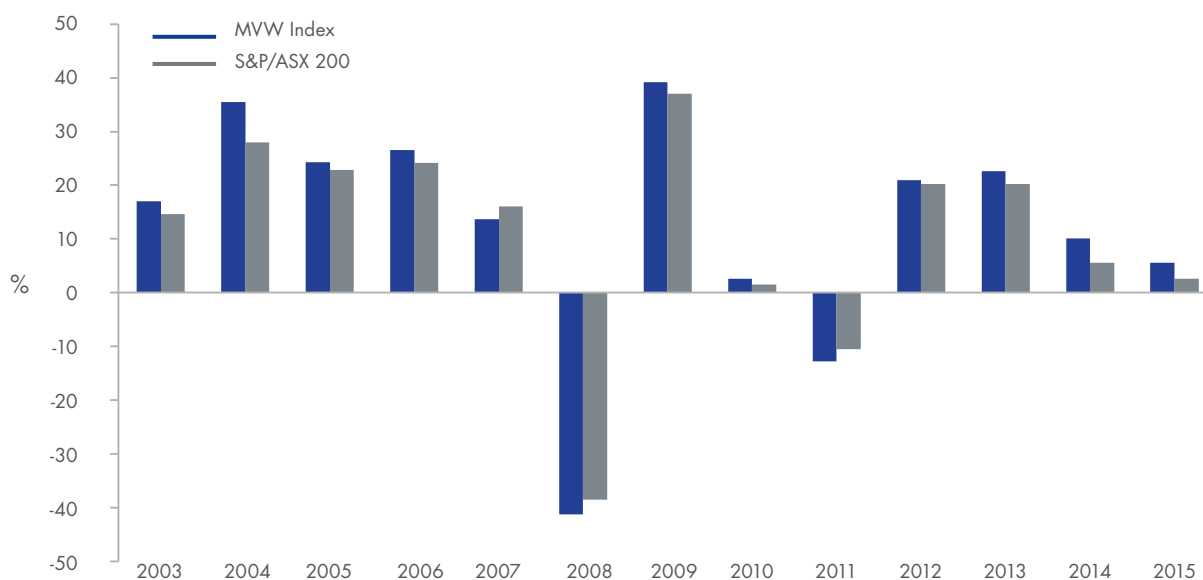
Source: Morningstar Direct, as at 30 April 2016. Results are calculated daily to the last business day of the month and assume immediate reinvestment of all dividends. MVW results are net of management costs but do not include brokerage costs of investing in MVW. Past performance is not a reliable indicator of future performance.

This is not a short term anomaly.

Chart 1 shows the MVW Index has outperformed the S&P/ASX 200 in ten out of the last 13 years.

**Chart 1: Calendar year returns MVW Index (MVMVWTRG) vs S&P/ASX 200**

**Annual Returns: 2003 to 2015**



Source: VanEck, FactSet, as at 31 December 2015. Results are calculated to the last business day of the month and assume immediate reinvestment of all dividends and exclude costs associated with investing in MVW. You cannot invest directly in an index. The above past performance information is not a reliable indicator of future performance of MVW.

## The data: Better returns without excessive risk

These returns have been achieved without excessive risk as demonstrated by an analysis of the Sharpe ratio of the MVW Index and the S&P/ASX 200.

The Sharpe ratio combines a return measure with a volatility measure to quantify the relationship between the returns and risk<sup>1</sup>. It provides a measure of risk-adjusted performance.

We have calculated 12 month Sharpe ratios starting with the period ended December 2003 and continuing at monthly intervals up to the period ended April 2016. We did this for both the MVW Index and for the S&P/ASX 200. In each case we used the RBA cash rate as the risk free rate.

There are 149 data points for each index. In 108 instances the MVW Index's Sharpe ratio is higher. The S&P/ASX 200's Sharpe ratio is higher in only 41 instances.

At the data points where the MVW Index had its biggest gap over the S&P/ASX 200, the excess is 2.37. The biggest gap the S&P/ASX 200 ever had over the MVW Index is 1.28.

The conclusion that can be drawn from the MVW Index having higher Sharpe ratios than the S&P/ASX 200 is that the MVW Index has a better risk/return trade-off. That is, the better return identified above is not the result of greater risk-taking.

Equal weight has delivered better returns without excessive risk.

Chart 2: MVW Index Sharpe ratio



Source: Morningstar Direct, as at 30 April 2016. Results are calculated daily to the last business day of the month and assume immediate reinvestment of all dividends. MVW results are net of management costs but do not include brokerage costs of investing in MVW. Past performance is not a reliable indicator of future performance

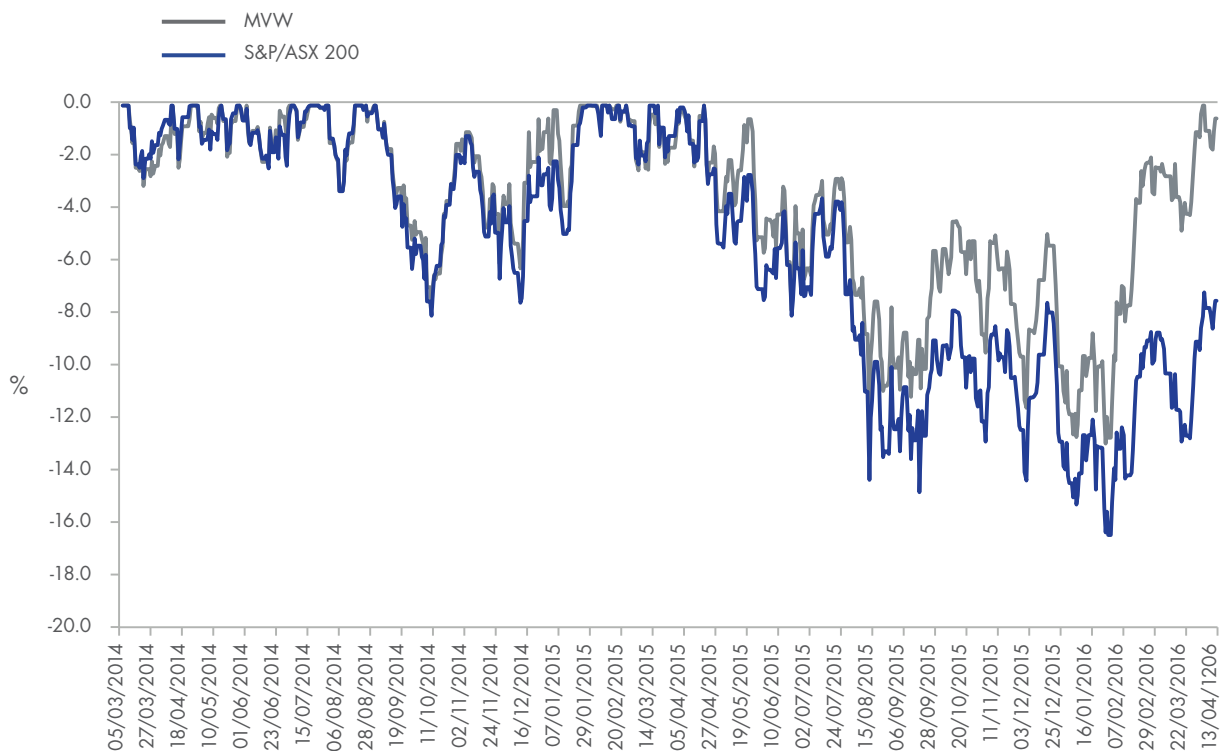
<sup>2</sup> The Sharpe ratio takes the excess return against a relevant risk-free and divides it by the standard deviation of the return.

To understand how a strategy has performed in difficult environments a risk measure called 'drawdown' can illustrate both the depth of a fall from historic highs and the pace of recovery to new heights. Drawdown is important due to the asymmetry of losses and gain, for example:

- a loss of 20%, requires a gain of 25% to recover the loss,
- a 50% loss requires a return of 100% to recover the loss.

Drawdown assists investors to determine and compare risk. [Chart 3](#) shows the drawdown of MVW versus the S&P/ASX 200. It shows MVW has not fallen as far as the broader market and it has recovered quicker.

**Chart 3: MVW drawdown since inception**



Inception date is 4 March 2014

Source: Morningstar Direct, as at 30 April 2016. Results are calculated daily to the last business day of the month and assume immediate reinvestment of all dividends. MVW results are net of management costs but do not include brokerage costs of investing in MVW.

Past performance is not a reliable indicator of future performance

## The data: Diversification

Diversifying a portfolio is a challenge in the Australian market because the market itself is so concentrated. The five largest companies constitute approximately 40% of the top 200, the 10 largest in excess of 50%. To make things worse, four of the five largest are banks that are highly correlated to each other.

In over a decade there has been little difference between the returns of the S&P/ASX 200 and the S&P/ASX 20 Accumulation Index. The correlation is 99.2%<sup>2</sup>. In other words, there are 180 stocks not doing much.

A way to measure diversification of a portfolio is to calculate a Herfindahl Index<sup>3</sup> which is a broadly used technique to quantify concentration and when taken inversely, diversification.

As at last rebalance<sup>4</sup>, the Herfindahl Index for the S&P/ASX 200 was 313. The equivalent measure for the MVW Index was 137. The MVW Index is therefore less than half as concentrated as the S&P/ASX 200. In other words, the MVW Index is 2.38 times more diversified than the S&P/ASX 200.

Diversifying your portfolio improves the trade-off between return and risk and is the foundation principle of Modern Portfolio Theory<sup>5</sup>.

MVW has benefited from its better diversification compared to the S&P/ASX 200. [Table 2](#) shows the attribution by sector of MVW since its inception by sector.

**Table 2: Total Attribution (%) by sector 31 March 2014 to 30 April 2016**

	Australian Equal Weight ETF			S&P/ASX 200			Attribution Analysis		
	Average Weight	Total Return	Contrib. To Return	Average Weight	Total Return	Contrib. To Return	Allocation Effect	Selection + Interaction	Total
<b>Total</b>	<b>100.00</b>	<b>17.60</b>	<b>17.60</b>	<b>100.00</b>	<b>3.29</b>	<b>3.29</b>	<b>3.90</b>	<b>10.42</b>	<b>14.32</b>
Consumer Discretionary	8.63	41.34	3.11	4.06	18.55	0.67	0.59	1.75	2.34
Consumer Staples	5.12	-25.78	-1.48	7.32	-5.37	-0.32	0.31	-1.17	-0.86
Energy	6.67	-34.37	-2.91	5.09	-37.51	-2.33	-0.76	0.44	-0.32
Financials ex-A-REITs	20.88	10.81	1.72	39.32	-0.44	-0.35	0.56	2.23	2.79
Health Care	5.71	51.25	2.61	5.55	40.99	1.84	0.14	0.48	0.61
Industrials	13.74	49.55	5.91	6.98	35.34	2.15	1.64	1.44	3.09
Information Technology	2.76	25.20	0.77	0.89	13.01	0.11	0.25	0.38	0.63
Materials	17.95	-4.12	-0.43	14.59	-21.28	-3.24	-0.58	3.50	2.92
A-REITs	9.48	46.40	4.48	5.84	46.16	2.37	1.55	0.06	1.61
Telecommunication Services	3.65	44.02	1.61	5.60	22.19	1.13	-0.17	0.56	0.39
Utilities	2.85	47.86	1.23	1.99	41.45	0.68	0.28	0.17	0.46
[N/A]	2.56	42.15	0.99	2.75	14.32	0.59	0.09	0.58	0.67



Table 2 above shows consistent with the Herfindahl Index results, MVW has benefited from having a more diversified sector exposure across all sectors of the Australian market.

Since inception, MVW has benefited most from being overweight:

- industrials (13.74% in MVW v 6.98% in S&P/ASX 200),
- materials (17.95% in MVW v 14.59 in S&P/ASX 200 but is underweight BHP and RIO), and
- overweight consumer discretionary (8.63% in MVW v 4.06% in S&P/ASX 200).

MVW has also benefited from being underweight financials. The S&P/ASX 200 has nearly 40% exposure to financials while MVW has only 20.88%.

<sup>2</sup> Source: Morningstar Direct, average 12 month correlation, calculated monthly for period 1 May 2007 to 30 April 2016.

<sup>3</sup> A Herfindahl Index is a measure of how concentrated a distribution is. It is often used for 'share of pie' exercises like the relative market shares for a particular product or portfolio weightings. The calculation is the sum of the squares of each stock's weighting, with the weightings expressed as a percentage multiplied by 100.

<sup>4</sup> As at 18 March 2016. For an equal weight portfolio the Herfindahl Index will only change when the number of stocks in the portfolio changes.

<sup>5</sup> Modern Portfolio Theory is a scientific approach to investment choice that seeks to maximise investment return relative to the amount of risk taken. It is the first formal statement of the trade-off between return and risk. Under this theory, whatever the appetite for risk, diversification will be a fundamental ingredient in any portfolio construction.

## The explanation: An inherent contrarian trading strategy

Thaler and De Bont (1985 & 1987) suggest that as markets “overreact” to unexpected and dramatic news events a strategy that buys past losers and sells past winners will outperform. MVW does this each quarter when the MVW Index ‘rebalances’ its constituents so that all stocks are ‘reset’ to be equally weighted. This process involves an inherent contrarian trading strategy as it requires MVW to:

1. Sell stocks that have risen more than average since the last rebalance; and
2. Buy stocks that have fallen since the last rebalance.

This strategy exploits short term mispricing. It is this rebalancing process underlying an equal weight strategy that is cited by Plyakha, Uppal and Vilkov (2012) as an equal weight portfolio’s highest source of alpha.

The MVW Index rebalances every three months, towards the ends of each calendar quarter (March, June, September and December) and each quarter MVW takes advantage of this contrarian trading strategy.

A review of the quarterly stock attribution of MVW compared to that of the S&P/ASX 200 since MVW’s inception demonstrates how MVW has benefited from contrarian trading. An extract of the data is provided in [Appendix 2](#) showing the top 10 contributors to and detractors from relative performance compared to the S&P/ASX 200.

### Examples of contrarian trading outperformance

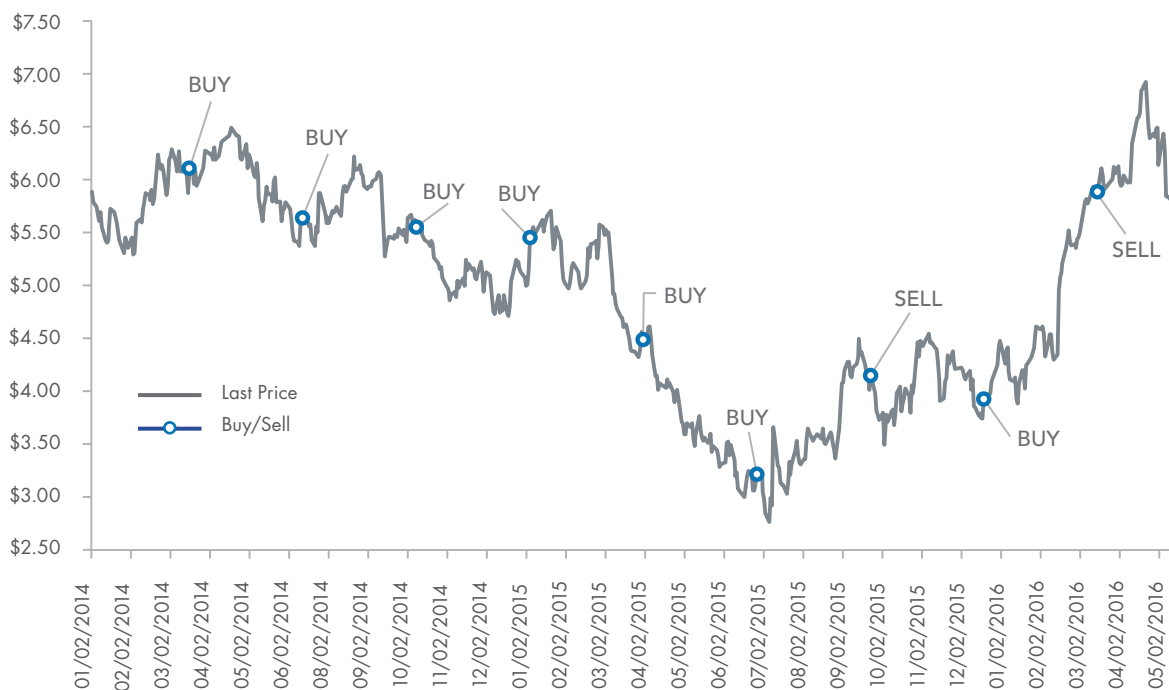
A few stocks stand out as examples of how outperformance has been achieved through MVW’s equal weight contrarian trading strategy versus a market capitalisation weighted strategy.

#### BlueScope Steel (BSL)

- [March 2014 to June 2015](#) - MVW continued to buy BlueScope Steel as its price fell from ~\$6.50 to ~\$3.00. A market capitalisation approach would have reduced BlueScope as its market capitalisation became smaller.
- [September 2015](#) - When the price increased by 20% in the September quarter of 2015 MVW sold some of the position it had been accumulating. A market capitalisation approach would have increased its BlueScope holding. In the September and December quarter BlueScope was among our best performing stocks.
- [December 2015](#) – BlueScope’s price weakened during the December 2015 quarter and MVW increased its holding. MVW benefited from this contra trade as BlueScope returned 40.48% in the first quarter of 2016.

Chart 4: BlueScope share price and MVW trades

## BSL trading in MVW



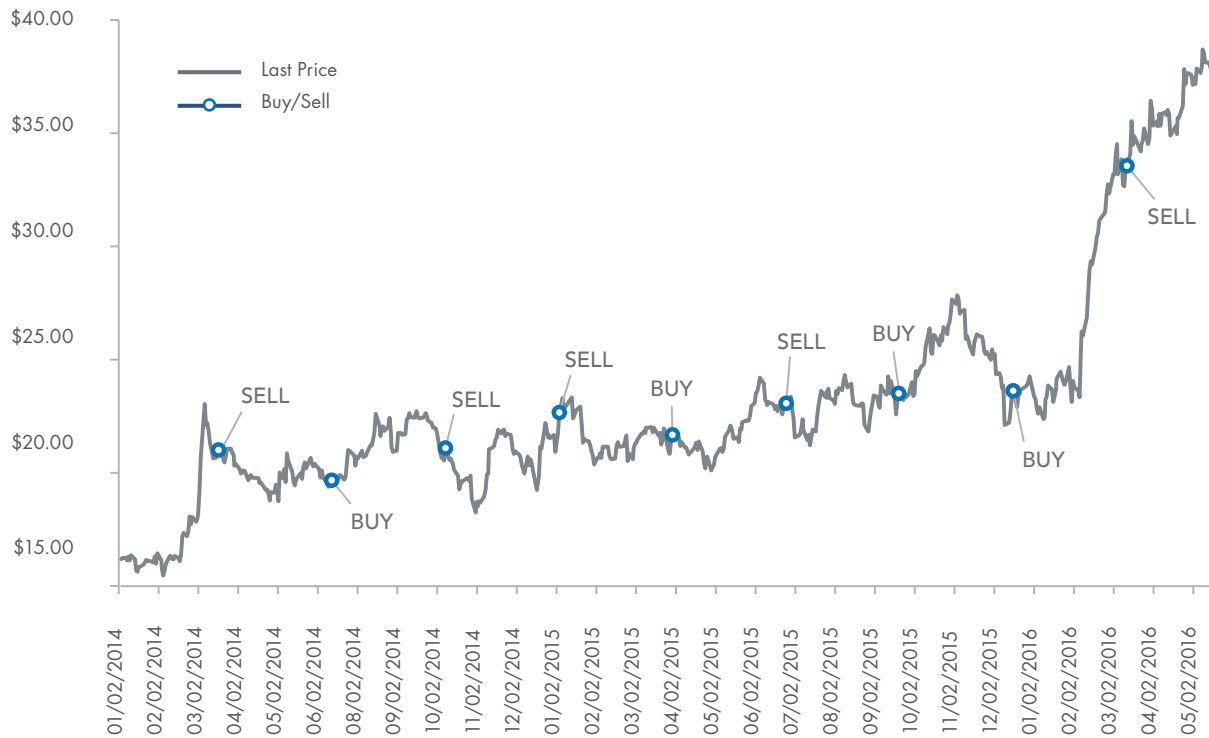
Source: Bloomberg, VanEck, 4 March 2014 to 20 May 2016

## CIMIC, previously Leightons Holdings (CIM)

- **June 2014 to December 2014** - After topping up CIMIC in June 2014, it was sold down in September and December despite retaining its value in a falling market. A market capitalisation approach would have increased CIMIC as its market capitalisation relative to the rest of the market was larger.
- **December 2015** – After a fall in November when a market capitalisation approach would have been reducing CIMIC, MVW bought more.
- **March 2016** – CIMIC rose over 45% and MVW benefited from the previous contra trade and its overweight position during the first quarter of 2016.

Chart 5: CIMIC share price and MVW trades

## CIM trading in MVW



Source: Bloomberg, VanEck, 4 March 2014 to 20 May 2016

### The explanation: Exposure to smaller stocks rather than to bigger stocks

Lajbcygier, Chen and Dempsey (2015) concluded that equally weighting a portfolio outperforms market capitalisation because of three factors:

1. Higher exposure to smaller stocks rather than to bigger stocks;
2. Higher exposure to so-called 'value stocks,' meaning those stocks with a high book-to-market ratio; and
3. Better market timing.

Appendix 2 illustrates that MVW has benefited from being overweight to smaller stocks which performed better than the broader market and from being underweight mega caps that underperformed the broader market.

To gain a further understanding of how the exposure to smaller stocks assists relative performance, table 3 shows the attribution of MVW by size of company since 31 March 2016.

**Table 3: Total Attribution (%) by stock size 31 March 2014 to 30 April 2016**

	MVW Index			S&P/ASX 200			Attribution Analysis			
	Average Weight	Total Return	Contrib. to Return	Average Weight	Total Return	Contrib. to Return	Allocation Effect	Selection Effect	Interaction Effect	Total
<b>Total</b>	<b>100.00</b>	<b>27.34</b>	<b>27.34</b>	<b>100.00</b>	<b>12.38</b>	<b>12.38</b>	--	<b>14.96</b>	<b>14.96</b>	<b>10.21</b>
> \$100 billion (Mega)	3.99	-9.50	-0.39	18.29	-9.08	-1.40	-14.30	-0.42	1.01	3.31
\$50 billion to 100 billion (Large)	5.37	4.94	0.28	25.09	4.12	1.32	-19.72	0.82	-1.04	1.38
\$10 billion to \$50 billion (Mid)	51.10	29.94	15.05	37.53	21.62	7.60	13.56	8.32	7.45	1.23
\$2 billion to \$10 billion (Small)	35.79	25.80	9.55	14.04	32.46	4.04	21.75	-6.66	5.51	3.77
< \$2 billion (Micro cap)	1.38	131.38	1.33	2.76	-4.39	-0.11	-1.37	135.76	1.44	0.36
[N/A]	2.37	51.98	1.51	2.29	37.57	0.92	0.08	14.40	0.59	0.16

Source Factset. A description of calculation information is in Appendix 2.

Table 3 shows that being underweight large and mega sized companies while being overweight mid and small size companies has benefited MVW's portfolio.

Compared to the S&P/ASX200, MVW is underweight only the largest sixteen stocks and the 111 stocks in the long tail of the S&P/ASX 200. The 111 minnows make a negligible contribution to the performance of the S&P/ASX 200 so their exclusion from MVW is not significant.

The remaining 57 holdings of MVW have a larger exposure than that of the market capitalisation weighted index. The companies which MVW is overweight can be former small caps that have grown, or large and mega companies that have fallen in size. Importantly these companies have much greater potential to be taken over than the large and mega caps. Table 4 shows how MVW has benefited from takeovers of its constituents since its inception.

**Table 4: Example of MVW takeovers**

Stock	Weight in MVW prior to takeover offer	Weight in S&P/ASX 200 prior to takeover offer	Average price MVW acquired shared for	Final takeover price	Final takeover date
David Jones	1.41%	0.15%	\$3.25	\$4.00	August 2014
Toll	1.37%	0.35%	\$5.26	\$9.04	May 2015
Recall	1.37%	0.14%	\$4.44	\$8.33	April 2016

Source: Factset, Van Eck. Weights are as at quarter end prior to takeover.

## The explanation: Better market timing

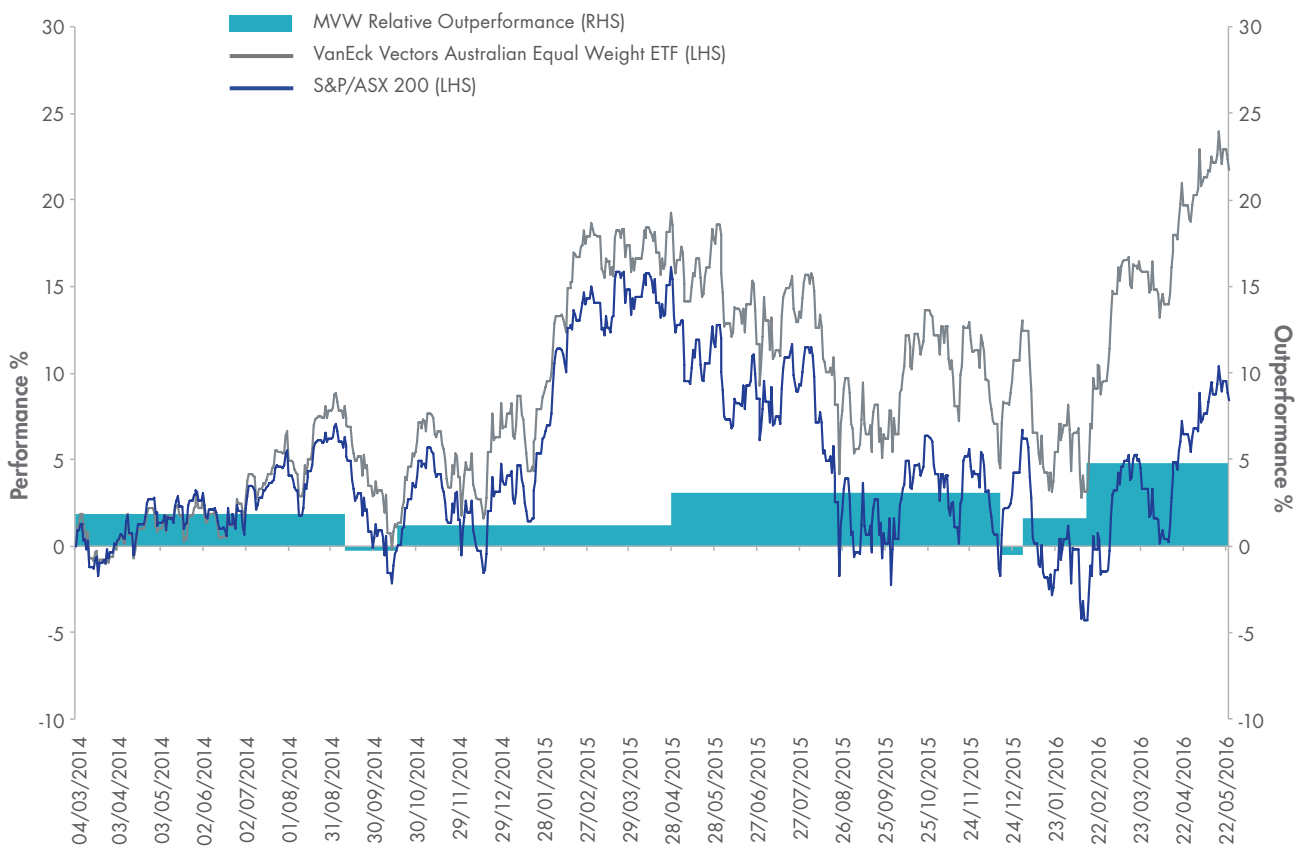
Lajbcygier, Chen and Dempsey (2015) illustrate that equal weighting outperforms market capitalisation due to market timing. What the paper means by ‘market timing’ is that equal weighting extracts better performance when markets are rising and loses less when markets are falling.

MVW has demonstrated this since its inception.

**Table 5: Performance of MVW during up and down markets (greater than +/- 5% move)**

	4 Mar 2014 to 9 Sept 2014	9 Sep 2014 to 16 Oct 2014	16 Oct 2014 to 27 Apr 2015	27 Apr 2015 to 15 Dec 2015	15 Dec 2015 to 31 Dec 2015	31 Dec 2015 to 14 Feb 2016	14 Feb 2016 to 24 May 2016
Type of market	Up	Down	Up	Down	Up	Down	Up
MVW (%)	8.11	-5.84	17.76	-11.55	7.17	-8.77	18.05
S&P/ASX 200 (%)	6.27	-5.61	16.57	-14.62	7.68	-10.34	13.28
Out/under performance (%)	+1.84	-0.23	+1.18	+3.07	-0.51	+1.58	+4.76

**Chart 6: MVW performance since inception and its relative performance during up and down markets (greater the +/- 5% move)**



Inception date is 4 March 2014

Source: Morningstar Direct, as at 31 March 2016. Results are calculated daily to the last business day of the month and assume immediate reinvestment of all dividends. MVW results are net of management costs but do not include brokerage costs of investing in MVW.

Past performance is not a reliable indicator of future performance

## Putting the theory into practice: Using MVW in a portfolio

Many investors diversify across asset classes in designing their portfolios to achieve a future need. In the 1986 article 'Determinants of Portfolio Performance', Brinson et al, demonstrated that the asset allocation decision was responsible for 93.6% of a diversified portfolio's return pattern over time. Subsequent studies have confirmed this (Donaldson et al, 2013). The asset allocation decision is responsible for around 90% of portfolios movements, while the remaining 10% comes from security selection and market-timing.

An informed understanding of risk and return of the various asset classes is important to the portfolio construction process. The Australian Government has provided investors with a practical guide to investing called "Investing between the flags" which highlights typical investment portfolios including 'conservative', 'balanced' and 'growth' mixes based on desired return outcomes, having regard to investors' different timeframes and levels of risk.

Tables 6, 7 and 8 show the returns of hypothetical portfolios based on the Australian government's typical portfolios. We use the traditional benchmark indices to represent the returns of each asset class within the portfolio. Then we replace the S&P/ASX 200 with the MVW Index for Australian equities. In each instance the portfolio with the MVW Index outperforms, however this comes with marginally higher standard deviation. Standard deviation is a common measure of the volatility of a portfolio.

As discussed earlier, the Sharpe ratio combines the return measure with a volatility measure to quantify the relationship between the returns and risk. It provides a measure of risk-adjusted performance. In each of the below, the portfolio with the MVW Index has a higher Sharpe ratio. The results below show making MVW the Australian equity allocation of a diversified portfolio delivers better returns without excessive risk compared to the S&P/ASX 200.

**Table 6: Conservative Portfolio (30% Shares, 70% Cash and Fixed Income)**

	Investment	Return (% p.a.)	Standard Deviation (%)	Sharpe ratio
5 Years	Traditional Portfolio	6.44	3.76	0.93
	Portfolio with MVW	6.98	3.79	1.06
10 Years	Traditional Portfolio	6.23	4.49	0.48
	Portfolio with MVW	6.51	4.71	0.51
Since Inception of MVW Index	Traditional Portfolio	7.27	4.14	0.70
	Portfolio with MVW	7.56	4.32	0.74

**Table 7: Balanced Portfolio (70% Shares, 30% Cash and Fixed Income)**

	Investment	Return (% p.a.)	Standard Deviation (%)	Sharpe ratio
5 Years	Traditional Portfolio	6.95	7.95	0.50
	Portfolio with MVW	8.18	8.05	0.65
10 Years	Traditional Portfolio	5.61	9.68	0.16
	Portfolio with MVW	6.21	10.21	0.21
Since Inception of MVW Index	Traditional Portfolio	8.27	8.92	0.44
	Portfolio with MVW	8.91	9.35	0.49

**Table 8: Growth Portfolio (85% Shares, 15% Cash and Fixed Income)**

	Investment	Return (% p.a.)	Standard Deviation (%)	Sharpe ratio
5 Years	Traditional Portfolio	7.09	9.61	0.43
	Portfolio with MVW	8.57	9.74	0.58
10 Years	Traditional Portfolio	5.18	11.78	0.09
	Portfolio with MVW	5.89	12.44	0.14
Since Inception of MVW Index	Traditional Portfolio	8.49	10.85	0.38
	Portfolio with MVW	9.24	11.38	0.43

Inception date of MVW Index is 31 December 2002. MVW Index was launched on 29/11/2013

Source: Morningstar Direct, Performance period ending 30 April 2016. Results are calculated monthly and assume immediate reinvestment of all dividends. You cannot invest in an index. Past performance is not a reliable indicator of future performance. Rebalanced at the end of each calendar year.

Indices used to approximate investments: Cash – RBA target cash rate, International Bonds – Barclays Global Aggregate Bond Index A\$ Hedged, Australian Bonds – Bloomberg AusBond Composite 0+ years, International Equities – MSCI World ex Australia Index, Australian Equities – S&P/ASX 200, MVW Index.

## Putting the theory into practice: Disrupting active management

The above analysis assumes investors achieve their exposures to assets classes via passive index funds.

In practice most investors will use MVW with another active Australian equity portfolio or use it as a core to replace an existing active manager.

Smart (or strategic) beta strategies, such as the equal weight strategy, has been identified as “a disruptive financial innovation with the potential to significantly affect the business of traditional active management. They provide an important component of active management via simple, transparent, rules-based portfolios delivered at lower fees.” (Kahn and Lemmon, 2016)

Australian investors who only access Australian equities via an active fund manager risk not only underperforming MVW, but underperforming the market as a whole. Active managers generally charge a higher fee than passive funds due to the additional costs of research and identification of mispricing opportunities. Sometimes returns are good, sometimes they are not. For investors, picking an active fund manager that outperforms the S&P/ASX 200 in Australia is difficult. According to the latest S&P Dow Jones SPIVA® Australia scorecard, less than half of Australian equities funds outperformed the S&P/ASX 200 over one year. Over five years less than 30% outperform.

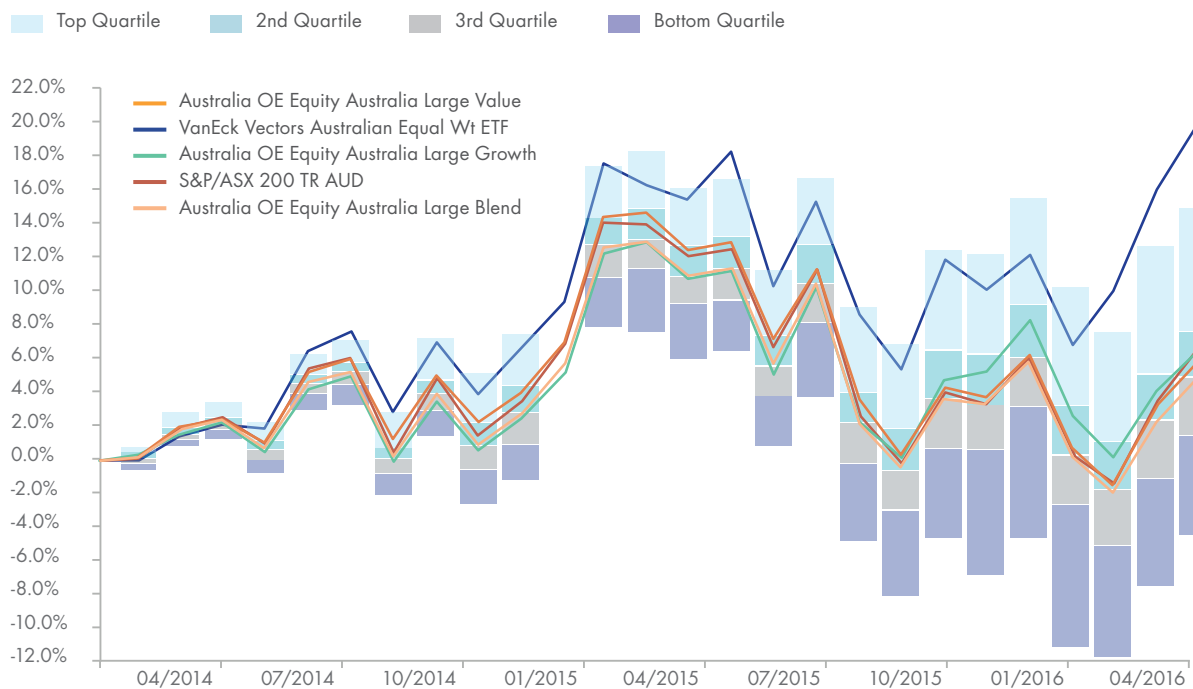
Chart 7 compares MVW’s performance to the Australian Equity funds in Morningstar’s universe and it demonstrates MVW is consistently placed in the top 10% of all those funds.



**Chart 7: MVW's performance relative to 504 Australian open ended funds (Morningstar universe)**

**MVW Return Relative to Australian Large Value, Growth and Blend**

Time Period: 05/03/2014 to 30/04/2016



Inception date is 4 March 2014

Source: Morningstar Direct, as at 31 March 2016. Results are calculated daily to the last business day of the month and assume immediate reinvestment of all dividends. MVW results are net of management costs but do not include brokerage costs of investing in MVW.

Past performance is not a reliable indicator of future performance

The consistent, long term outperformance of MVW's simple process can be seen by taking the performance of the MVW Index and adjusting it for the impact of MVW's management costs of 0.35% p.a. Tables 9, 10 and 11 show that the MVW Index outperforms the median and mean of Australian equity fund managers in Morningstar's Large Growth Universe, Large Value Universe and Large Blend Universe.

Table 9: Long term performance vs growth peers

Morningstar Australia OE Equity Large Growth Universe	3 years (% p.a.)	5 years (% p.a.)	7 years (% p.a.)	10 years (% p.a.)
S&P/ASX 200 <sup>†</sup>	5.00	6.47	9.55	4.52
Fund Manager Median <sup>*</sup>	5.26	5.79	8.63	4.24
Fund Manager Mean <sup>*</sup>	5.68	6.31	9.28	4.39
MVW Index adjusted for fees <sup>#</sup>	9.78	9.53	12.63	5.71

Table 10: Long term performance vs value peers

Morningstar Australia OE Equity Large Growth Universe	3 years (% p.a.)	5 years (% p.a.)	7 years (% p.a.)	10 years (% p.a.)
S&P/ASX 200 <sup>†</sup>	5.00	6.47	9.55	4.52
Fund Manager Median <sup>*</sup>	4.55	6.61	9.61	4.60
Fund Manager Mean <sup>*</sup>	4.74	7.46	9.95	4.70
MVW Index adjusted for fees <sup>#</sup>	9.78	9.53	12.63	5.71

Table 11: Long term performance vs blend peers

Morningstar Australia OE Equity Large Growth Universe	3 years (% p.a.)	5 years (% p.a.)	7 years (% p.a.)	10 years (% p.a.)
S&P/ASX 200 <sup>†</sup>	5.00	6.47	9.55	4.52
Fund Manager Median <sup>*</sup>	4.34	5.61	8.53	3.76
Fund Manager Mean <sup>*</sup>	4.38	5.74	8.59	3.74
MVW Index adjusted for fees <sup>#</sup>	9.78	9.53	12.63	5.71

Source: Morningstar Direct, as at 30 April 2016.

\* Fund manager performance figures are net of fees

† S&P/ASX Indices are unmanaged and do not include fees and costs payable when investing in a fund.

# Results are calculated to the last business day of the month and assume immediate reinvestment of distributions and include MVW's management costs of 0.35% p.a. MVW Index (MVMVWTRG) was launched on 29/11/2013. MVW commenced operation on 4/3/14. MVW Index performance shown prior to its launch date is simulated based on the current index methodology.

Australian Equity Large Blend, Large Growth and Large Value Universe are based on the defined universe funds that invest primarily in large Australian companies. Stocks in the top 70% of the Australian equities market based on market cap are defined as 'large'. The 'blend' style is assigned to portfolios where neither growth nor value characteristics dominate.

MVW provides an Australian example of how smart beta is disrupting the active funds management industry. Globally smart beta is also on the rise. Between 2009 and 2015 smart beta exchange traded products in the US grew from US\$61 billion to US\$377 billion according to NASDAQ. In Europe, the portion of investors putting their money into smart beta ETFs has risen from 49% to 68% since 2014 (EDHEC's European ETF Survey 2015). Australian investors too will continue to be attracted to smart beta investments like MVW for their low costs, simple, transparent, rules based portfolios.

## Conclusion

Consistent with previous research and market experience in the US and Europe, equal weight investing via MVW in Australia has led to significant outperformance since its inception.

Since its inception in March 2014 to the release of this paper MVW has outperformed the S&P/ASX 200 and this has been achieved from:

- its contrarian trading strategy;
- higher exposure to smaller stocks rather than to bigger stocks; and
- MVW's propensity to extract more returns when markets are rising and lose less when markets are falling.

MVW has benefited from its better diversification and importantly its outperformance has been achieved with an acceptable increase in the level of risk.

The performance of MVW cannot be overlooked. The evidence in this paper shows that MVW would be an ideal Australian equity core holding for a diversified investment strategy and as a substitute for existing active and passive strategies.

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## Appendix 1: The academic support of equal weight compared to market capitalisation

Market capitalisation weighted indices are overweight overvalued shares and underweight undervalued shares (Treyor, 2005). This is because when the market overvalues a stock its market capitalisation goes up. A fund tracking a traditional market capitalisation index buys more and more of the overpriced stock and loses money when the market corrects. Conversely, when the market undervalues a stock, the fund sells more and more of the underpriced stock, missing out on profit when the market corrects. In other words, tracking a market capitalisation weighted index results in "buying high" and "selling low". The opposite of what investors want. For investors tracking a market capitalisation index this can have a negative impact on performance.

Another criticism of market capitalisation is the risk of exposure to bubbles and high concentration (Clare et al, 2013).

To overcome these shortcomings index providers have created alternative indexation methods including equal weight investing.

DeMiguel, Garlappi and Uppal (2009) found that out of 14 asset allocation models evaluated across seven empirical data sets none is consistently better than equally weighting assets in terms of Sharpe ratio and certainty-equivalent return.

Testing these findings, Plyakha, Uppal and Vilkov (2012) compared the performance of equal, value and price weighted portfolios of stocks over four decades. They found that the equal weight portfolio outperformed in terms of total mean return, four factor alpha, Sharpe ratio and certainty -equivalent return. According to Plyakha, Uppal and Vilkov "The higher systematic return of the equal-weighted portfolio arises from its higher exposure to the market, size and value factors. The higher alpha of the equal-weighted portfolio arises from the monthly rebalancing required to maintain equal weights, which is a contrarian strategy that exploits reversal and idiosyncratic volatility of the stock returns."

Lajbcygier, Chen and Dempsey (2015) analysing the US data over a period of nearly 50 years found equal weighted indexing was the most successful indexing method. Lajbcygier, Chen and Dempsey found that equal weighted indexing had a statistically significant positive bi coefficient meaning that it is able to systematically "time" the market by outperforming in down markets. "In addition, for the equal weight index, we find evidence of market timing on the value premium (positive and significant hi coefficients). Thus again we have evidence that the effect of market timing is most pronounced in the equal weight index."

Lajbcygier and Sojka assessed the viability of different indexing methods accounting for all transaction costs using different rebalancing frequencies, trade sizes and fund sizes. For each of the three fund sizes - \$500 million fund (small), \$1 billion (medium) and \$10 billion fund (large) - the equal weight strategy was the best performer in terms of geometric returns and Sharpe ratios. Lajbcygier and Sojka did however find that equal weighted indexing was capacity constrained due to liquidity constraints supporting Arnott et al (2005). This criticism should be considered in equal weighted index construction.

Hamich and Brown (2014) provided mathematical proof "that equal weight is the portfolio construction approach that gives the best diversification for the long term. Not just better than market capitalisation, but the best possible diversification among any portfolio construction strategy."

## Appendix 2: Quarterly top 10 and bottom 10 contributors to MVW's relative performance

In the tables below we report the performance of MVW compared to the S&P/ASX 200. All figures sourced from Factset using the Brinson-Fachler methodology to which Factset applies a smoothing methodology. The attribution returns model a gross of fee return, so the returns indicated will not be those experienced by MVW. The attribution methodology is holdings-based. It calculates the return of portfolio and benchmark components based upon the price changes applied to daily snapshots of constituent securities. Daily holding loads do provide a reasonably accurate approximation of total portfolio return in most circumstances, however attribution is not exact as cash flows, corporate actions and intraday trading may impact holdings. The goal of the tables below is to provide useful data for interpreting performance differences between MVW and the S&P/ASX 200. The data used in the analysis is either provided by FactSet or loaded by VanEck into FactSet.

### 31 March 2014 to 30 June 2014 MVW outperformed by 0.38% during the quarter

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
NAB	1.29	5.91	-4.83	0.28	ARI	1.08	0.10	-41.11	-0.52
DJS	1.50	0.15	25.03	0.27	CBA	1.37	9.54	4.44	-0.27
ALQ	1.42	0.23	23.69	0.25	TPL	1.41	0.13	-16.52	-0.25
BHP	1.35	8.79	-1.56	0.18	ILU	1.25	0.27	-17.96	-0.21
CGF	1.40	0.27	16.25	0.16	BSL	1.28	0.24	-11.58	-0.13
QAN	1.49	0.21	14.03	0.16	FMG	1.26	0.60	-17.14	-0.13
RMD	1.29	0.30	15.86	0.15	ANZ	1.36	6.81	3.41	-0.13
WOR	1.33	0.26	14.99	0.14	CCL	1.13	0.37	-14.23	-0.12
AWC	1.47	0.25	12.97	0.13	OSH	-	0.77	14.30	-0.10
TTS	1.32	0.31	12.76	0.12	SEK	1.27	0.42	-9.06	-0.09

## 30 June 2014 to 30 September 2014 MVW outperformed by 2.28% during the quarter

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
ANZ	1.28	6.65	-7.26	0.37	ALI	1.16	0.07	-44.88	-0.51
CTX	1.49	0.25	30.67	0.33	ALQ	1.18	0.22	-40.52	-0.46
CBA	1.29	9.56	-4.37	0.32	TLS	1.36	4.98	4.49	-0.17
WBC	1.28	7.74	-5.14	0.30	SWN	1.45	0.08	-11.43	-0.15
TBL	1.31	0.13	24.14	0.28	CSL	1.33	2.46	12.45	-0.14
AWC	1.41	0.28	25.56	0.26	UGL	1.26	0.08	-10.96	-0.13
REC	1.35	0.11	19.02	0.24	FMG	1.26	0.54	-18.04	-0.13
BHP	1.36	8.74	-3.93	0.22	WOR	1.41	0.28	-9.12	-0.10
ORA	1.43	0.14	17.16	0.21	WES	1.36	3.63	3.44	-0.09
HVN	1.42	0.14	17.10	0.21	IPL	1.39	0.35	-6.55	-0.06

## 30 September 2014 to 31 December 2014 outperformed by 0.57% during the quarter

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
BHP	1.26	7.72	-13.29	1.11	CBA	1.36	9.76	13.76	-0.84
QAN	1.53	0.31	72.66	0.67	ALI	1.14	0.05	-41.10	-0.55
REC	1.69	0.14	28.39	0.36	WOR	1.12	0.20	-34.29	-0.43
WOW	1.29	3.10	-10.40	0.26	MTS	1.24	0.17	-27.09	-0.35
CTX	1.48	0.31	22.22	0.21	TLS	1.39	5.25	12.64	-0.35
ORA	1.42	0.16	18.90	0.19	ILU	1.12	0.22	-24.30	-0.29
IPC	1.38	0.36	20.65	0.17	SWN	1.30	0.07	-16.15	-0.24
CIM	1.31	0.16	16.58	0.15	UGL	1.00	0.05	-18.33	-0.24
TAB	1.50	0.23	14.96	0.13	ANZ	1.34	6.64	6.78	-0.19
ALL	1.56	0.28	13.71	0.13	WBC	1.32	7.72	6.01	-0.18



## 31 December 2014 to 31 March 2015 underperformed by 0.72%

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
TOL	1.56	0.35	52.64	0.40	UGL	1.03	0.02	-33.56	-0.52
ILU	1.47	0.21	45.16	0.34	WBC	1.38	7.93	18.76	-0.50
TPL	1.37	0.15	35.85	0.27	BSL	1.22	0.19	-25.02	-0.41
HVN	1.45	0.17	32.44	0.23	FMG	1.17	0.28	-27.59	-0.38
WOW	1.29	2.73	-1.63	0.17	MTS	1.12	0.10	-16.44	-0.31
ALL	1.35	0.29	28.51	0.17	ALQ	1.38	0.15	-7.63	-0.22
IPL	1.53	0.43	27.59	0.17	ALI	1.43	0.04	-20.93	-0.21
QAN	1.37	0.41	30.00	0.16	NAB	1.40	6.16	14.73	-0.20
TAB	1.42	0.26	26.19	0.15	AUC	1.34	0.32	-9.58	-0.19
PPT	1.36	0.17	21.44	0.12	ANZ	1.35	6.63	14.18	-0.19

## 31 March 2015 to June 2015 outperformed by 1.39%

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
WBC	1.30	7.51	-16.08	0.65	MTB	1.36	0.08	-28.71	-0.34
ALQ	1.46	0.15	19.94	0.31	BSL	1.13	0.14	-28.23	-0.26
WOR	1.55	0.16	9.01	0.21	SWN	1.58	0.08	-21.13	-0.22
CBA	1.33	9.72	-8.85	0.19	TLS	1.38	5.22	-2.69	-0.15
ANZ	1.33	6.41	-9.78	0.18	SGM	1.24	0.13	-15.76	-0.12
NAB	1.37	6.17	-9.84	0.16	JHX	--	0.50	17.91	-0.11
SAN	1.51	0.55	9.66	0.14	SEK	1.31	0.38	-17.87	-0.11
ORI	1.45	0.53	8.32	0.13	CCL	1.33	0.37	-15.12	-0.09
HUN	1.39	0.19	3.45	0.11	PPT	1.41	0.18	-12.10	-0.07
CIM	1.42	0.15	2.84	0.11	MPL	1.25	0.41	-13.36	-0.06

## 30 June 2015 to 30 September 2015 outperformed by 2.10%

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
ANZ	1.39	6.12	-15.90	0.46	WOR	1.18	0.13	-41.56	-0.47
CBA	1.47	9.75	-11.74	0.43	SAN	1.14	0.45	-47.68	-0.45
BSL	1.67	0.15	20.89	0.40	ORG	1.10	0.76	-47.39	-0.20
BHP	1.32	5.91	-14.93	0.40	ORI	1.18	0.47	-29.32	-0.19
TPL	1.55	0.20	21.07	0.34	ALQ	1.26	0.15	-21.37	-0.19
AIO	1.76	0.58	26.32	0.31	AWC	1.23	0.24	-22.87	-0.19
MPL	1.52	0.44	23.23	0.29	WES	1.40	3.32	3.28	-0.18
DMP	1.59	0.18	13.51	0.24	CSL	1.48	3.14	4.18	-0.16
ORA	1.50	0.20	12.53	0.23	ILU	1.27	0.22	-18.49	-0.14
QAN	1.58	0.58	17.72	0.22	CWN	1.39	0.34	-17.32	-0.12

## 30 September 2015 to 31 December 2015 outperformed by 0.46%

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
BHP	1.20	5.00	-19.62	1.05	CBA	1.39	9.90	17.62	-0.88
DMP	1.63	0.23	43.51	0.46	WBC	1.39	7.71	17.16	-0.62
MFG	1.62	0.22	43.37	0.42	SGM	0.91	0.10	-24.05	-0.33
TLS	1.29	4.93	-0.00	0.24	WOR	1.22	0.10	-21.66	-0.28
SEK	1.49	0.35	28.17	0.22	CSL	1.42	3.32	18.06	-0.20
CWN	1.43	0.33	26.26	0.20	TPL	1.44	0.24	-8.43	-0.19
BSL	1.26	0.17	23.06	0.16	ALQ	1.29	0.15	-11.35	-0.17
BOQ	1.44	0.36	23.58	0.16	MPL	1.39	0.48	-11.16	-0.17
CGF	1.55	0.34	22.13	0.16	S32	1.09	0.51	-21.98	-0.16
ALL	1.49	0.41	19.71	0.13	ORG	1.41	0.68	-11.93	-0.14

30 December 2015 to 31 March 2016 outperformed by 6.34%

Contributors to performance (%)					Detractors from relative performance (%)				
Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.	Stock Code	Average Weight in MVW	Average Weight in ASX 200	3 Month Return	Contrib. to relative perf.
CBA	1.31	9.99	-10.02	0.73	WOR	1.18	0.13	-41.56	-0.47
ANZ	1.27	5.44	-16.00	0.64	SAN	1.14	0.45	-47.68	-0.45
BSL	1.71	0.22	40.48	0.60	ORG	1.10	0.76	-47.39	-0.20
CIM	1.55	0.22	45.23	0.59	ORI	1.18	0.47	-29.32	-0.19
FMG	1.45	0.26	38.18	0.52	ALQ	1.26	0.15	-21.37	-0.19
WBC	1.31	7.85	-9.56	0.49	AWC	1.23	0.24	-22.87	-0.19
S32	1.49	0.49	37.56	0.43	WES	1.40	3.32	3.28	-0.18
MPL	1.50	0.53	38.71	0.35	CSL	1.48	3.14	4.18	-0.16
NAB	1.27	5.40	-10.02	0.33	ILU	1.27	0.22	-18.49	-0.14
ILU	1.67	0.21	9.78	0.26	CWN	1.39	0.34	-17.32	-0.12