

Concentrations, correlations & structural issues in Australian equities

Paul Drzewucki | Ellerston Capital | 13 August 2015

Much has been written and spoken about the increasing concentration of the Australian stock market indices. Quantitative easing (QE) has driven a search for yield globally, resulting in a unique Australian experience that has seen the major ASX indices become increasingly dominated by a small number of companies and an even smaller number of sectors.

The concentration in the index is mirrored by the concentration of the Australian funds management industry. The dominance of the 10 largest managers over the Australian market is unprecedented.

The majority of the market beta is now being generated by a few sectors and the inexorable rise of index and quasi-index strategies (managed funds & ETF's) is exacerbating this phenomenon.

How does index concentration and structural inefficiency in the Australian equity market and its participants create exploitable opportunities for alpha generation?

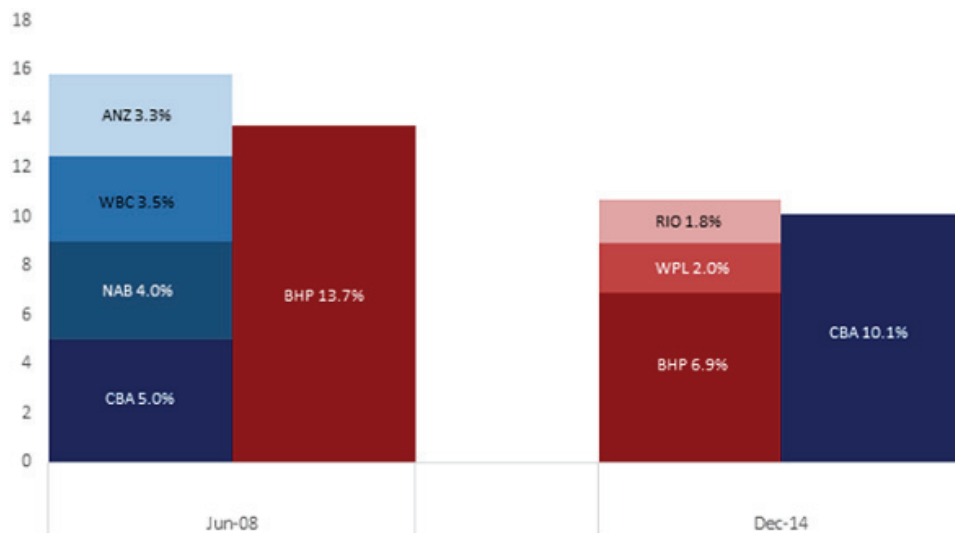
INDEX DISTORTIONS

Whether an advocate of active or passive investing, it is clear that an index constructed by capitalisation weights leads to distortions in underlying sector and security exposure. Without wanting to add to the mountains of words already dedicated to understanding and deconstructing the make-up of market capitalisation indices, it is worth making the following observations.

To illustrate how index distortions as a result of market capitalisation construction have manifested themselves in the Australian market, Figure 1 is reproduced from this year's Australian equity large companies sector review by Zenith Investment Partners.¹ Figure 1 has been reproduced to demonstrate the evolving landscape within the main Australian indices.

A unique confluence of events in recent years has resulted in a record low of 2% RBA cash rate in Australia, causing a distortion for the prices of securities delivering attractive yields or dividends. With Australian banks trading on a forecast 5.1% forward yield and an average 60bps yield premium to the market, it is not difficult to understand the attractiveness.

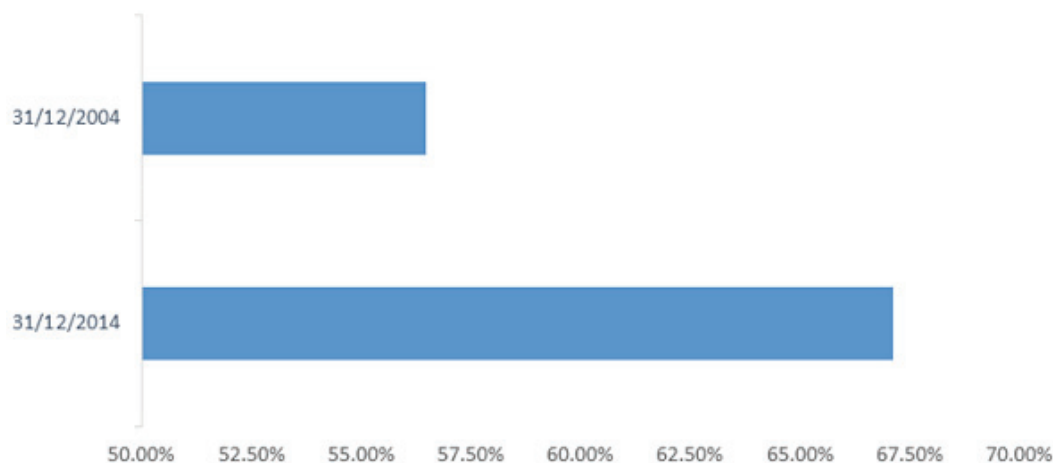
Figure 1: Banks relative to Resources at stretched market Environments



Source: Zenith Investment Partners

As at 31 December 2014 the financial sector accounted for 37.8% of the ASX 200 index. Company payout ratios on average have continued to increase as companies see natural support levels for their share prices as long as yields remain attractive. In 2010 to 2014, over 50% of the ASX 200 companies returned more cash than they generated over the same period. This amounts to \$128 billion in free cash flow against \$177 billion in dividends or share buy-backs.² The end result is an index highly concentrated in the top 20 securities and dominated by the financial sector. In fact, over the last 10 years the 20 largest listed companies (ASX 20) as proportion of the ASX 200 has grown by a further 18% to now represent 67.1% of the index (Figure 2 over page).

Figure 2: ASX20 as a % of ASX200



Sources: Bloomberg

FUND MANAGER CONCENTRATION

A unique feature of the Australian funds management industry is that it is highly concentrated when compared to other developed markets. Australia is the fourth largest pension market at A\$1,675 trillion, and has grown at a compound annual rate of 11.7% for past 10 years³ – the fastest in the developed world – it is to be expected that there is tremendous competition with the largest asset class, Australian equities. Depending on how competition is measured, there is and there isn't, a lot.

There are over 620 funds available to investors across large, mid, small and A-REIT sectors of the Australian equities market. In large cap Australian equities, there are 311 products.⁴ By this measure alone, it is easy to say there is a lot of competition. However, delving deeper, one could be forgiven for thinking that there is very little competition.

The 10 largest managers control 48.3% of total funds under management (FUM) in Australian equities (Figure 3) and the next 10 managers account for 24% of FUM – so the top 20 managers by FUM control almost 75% of the total FUM in Australian equities.

Figure 3: 10 Largest Australian Equity managers' market share

Manager	Funds Under Management (\$m)	Total of Australian Equities (%)
MLC	28,871.0	7.0
AMP	27,498.0	6.7
Perpetual	23,417.0	5.7
CFS GAM	22,795.0	5.5
SSGA	20,697.0	5.0
Vanguard	18,405.0	4.5
Challenger	15,710.0	3.8
BTIM	15,224.0	3.7
IFM	13,789.0	3.3
Schroders	12,668.0	3.1
Total Australian Equities	411,922	

Source: Rainmaker⁵

Active Manager Performance & Implications

Of the 311 Australian equity funds in the general category – that is, excluding smaller companies and specialist funds – what percentage of funds failed to beat the benchmark?

As Figure 4 shows, in the year 2014, only 38.6% of Australian equity funds outperformed their benchmark after fees. Over the five years, that decreased to 30% – or, to put it another way, there was over a 70% chance that a manager underperformed.⁶ While acknowledging that there are some problems with the comparison methods in the SPIVA data, not least being that the index return is measured on a pre-fee basis and the manager returns are measured post-fees,⁷ the relative performance of the Australian equities managed fund universe has, with the exception of one or two bright spots, rarely impressed over the long term. As a case for active management, it is a disappointing result.

Figure 4: Percentage of Australian equity funds that failed to beat the benchmark

Year	# Funds	1 Year (%)	3 Year (%)	5 Year (%)
2010	285	81.0	53.6	70.6
2011	269	66.6	67.4	63.3
2012*	265	72.7	81.1	69.0
2013	391	32.2	62.8	69.7
2014	311	61.4	63.1	77.16
Average		62.8	65.6	70.0

Source: SPIVA. * mid-year report 2012

The implications for the active segment of the industry are profound. Evidence suggests there has been a reaction from investors that does not appear to be stopping. Figure 5 (over page) details the inflows, outflows and net position for each calendar year since 2009 for Australian equity funds – all market capitalisations and specialisations.

Figure 5: Australian equity funds

Year	Inflow (\$m)	Outflow (\$m)	Net (\$m)
2010	7,384.4	6,374.1	1,010.3
2011	3,844.4	10,745.0	(6,900.6)
2012	3,267.7	10,831.0	(7,563.3)
2013	5,672.8	9,448.3	(3,815.5)
2014	5,973.1	11,113.2	(5,140.2)
Total			(22,409.3)

Source: Morningstar

Stripping out passive funds from the funds flow data highlights a much bleaker picture for active Australian equity products. In 2014 alone, the total amount withdrawn from active Australian equity funds across all capitalisations was over A\$6 billion. In contrast, Australian listed ETFs grew by A\$10,107.5 billion from 31 December 2011 to 31 December 2014. With over 50% of listed ETFs investing by way of a passive strategy, there is a clear trend of investors moving a significant portion of their investments from active Australian equity funds into passive strategies.

In the US, a similar trend can be seen. From 2007 to 2013, index domestic equity mutual funds and domestic equity ETFs received net inflows of US\$795 billion, while actively managed domestic equity mutual funds experienced net outflows of US\$575 billion.⁸

The volume of money flowing out of active Australian equity funds and moving into passive funds and ETFs is a significant development. Combined with the fact that a small number of managers control a large percentage of the funds under management, it's important to explore the ramifications across a number of different parts of the market.

Active manager risk

So how active is today's relative return of benchmark aware manager? To answer this question, there are a range of measures at our disposal.

One measure is to look at correlation to the index against which they are measured. The average correlation of the Zenith Investment Partners-rated universe of large capitalisation managers to the ASX 300 index is 0.98 and 0.97 when measured against the ASX 100 index.

Another way to look at this is to examine the active share of the funds.⁹ Active share is a simple concept that measures the active component of an investment portfolio in relation to

an index. It is scored out of 100 and the higher the score, the more active the investment strategy.¹⁰ Since the publication of a dedicated research white paper in 2011 by Morningstar, the concept of active share has gained traction and understanding in the investment community. Morningstar's analysis has determined that the average manager under its coverage in the Large Cap Australian equities sector has become less active since the global financial crisis. This period witnessed a sharp reduction in active share, from mid 50s down to mid 40s, midway through 2008. Today, the figure remains in the mid 40s, indicating that overall, managers' willingness to deviate from the benchmark has not recovered.

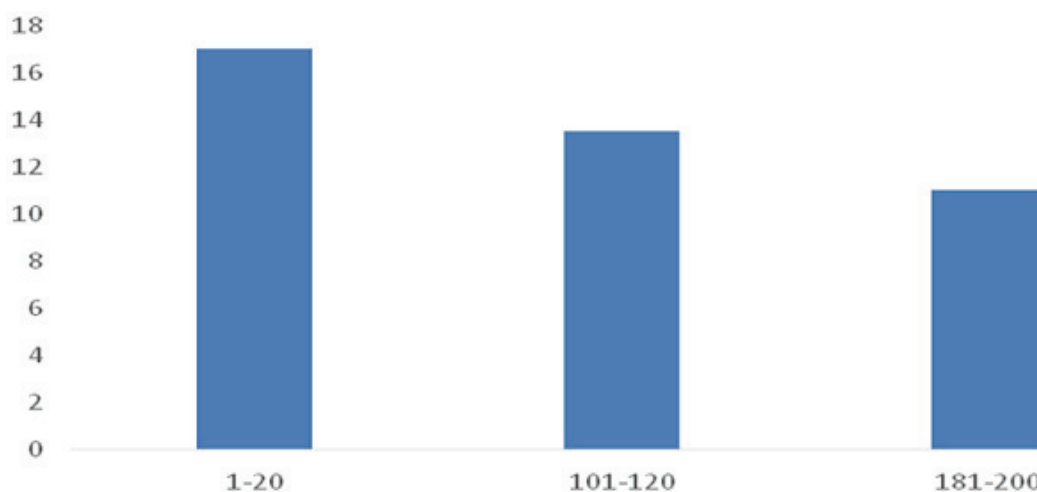
Drawing a conclusion across both the Morningstar and Zenith Investment Partners' research, the declining willingness of managers to take active "bets" away from benchmark is compounded by the changing structure of the index against which they are measured. With over two-thirds of the benchmark return being generated by 20 securities, it would stand to reason that the average large cap Australian equity manager is finding it challenging to deliver the same level of active risk as 10 years ago.

ASX 20 – a highly efficient market

Across rated managers in Zenith Investment Partners' large cap Australian equity review 2015¹¹ the highest ASX 20 exposure for an individual manager is 72% and the lowest is 45%. The average of all rated managers is approximately 60% or only 5.5% underweight against the ASX200 (at 30 April 2015). This is not a large underweight looking across 20 securities.

With the majority of its portfolio invested in the ASX 20, a benchmark aware manager must spend a large portion of its time analysing the top 20 stocks. Broker analyst coverage therefore reflects the proportional focus of clients. Figure 6 below shows the number of broker analysts covering the market by stock size.

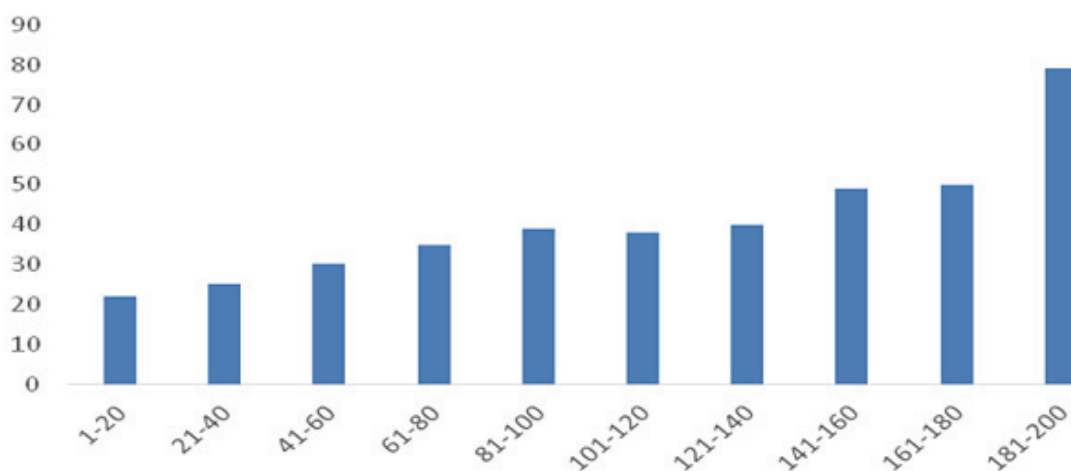
Figure 6: Average number of analysts publishing



Source: Goldman Sachs

Brokers are providing an exceptional service, both to the companies in the ASX 20 and the institutional clients that invest so heavily in this part of the market. With so much time and effort by a considerable proportion of market participants expended upon one (albeit significant) part of the market, it is reasonable to expect greater opportunities to invest outside of this area. Using volatility as a measure of efficiency, this thesis holds true (Figure 7). Volatility increases gradually through the size bands of the ASX 100, and increases markedly outside of the ASX 100, and especially for the last 50 names in the ASX 200.

Figure 7: Average 90d share price volatility



Sources: Goldman Sachs

“Look at market fluctuations as your friend rather than your enemy; profit from folly rather than participate in it” – Warren Buffet

Volatility is a friend of active managers. A study completed by Royce Funds in 2014 reached the same conclusion.¹² The study involved the use of US SPIVA data over the Morningstar US Small Cap universe and compared the out-/under-performance of these funds against Russell 2000 index. The Russell 2000 index was segmented into volatility quintiles over rolling 12-month observations. As each volatility quintile corresponded with a SPIVA-US measurement period, a conclusion can be drawn as to what levels of volatility result in under- or out-performance of the manager universe.

At the lowest level of volatility (quintile 1), the average manager underperformed by 0.5%. As volatility increased through each quintile, the average manager began to outperform, until at quintile 5, the average manager added 2.22% on average.

Figure 8: Under- and out-performance of US small cap funds



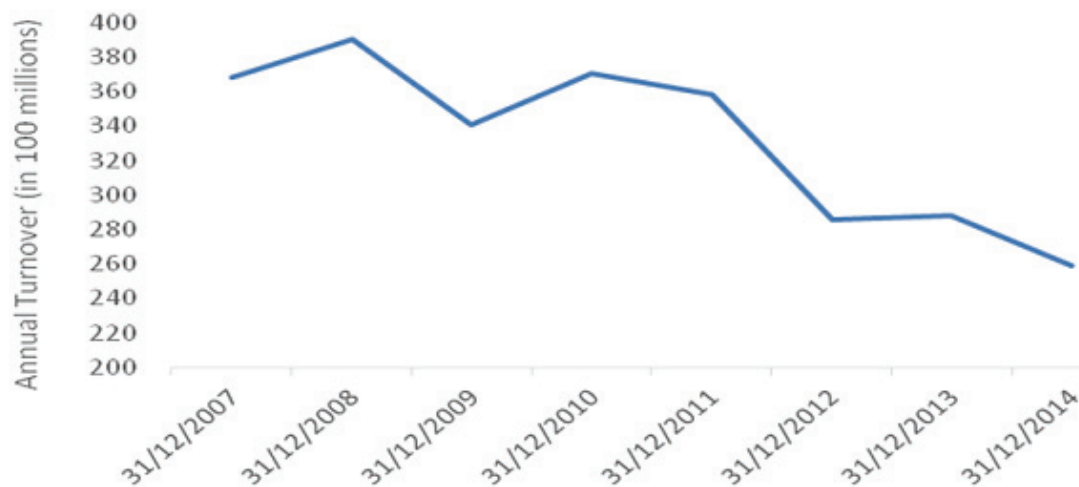
Sources: Royce Funds

Observed 90-day volatility for the top 20 names in the Australian market is approximately 50% of that recorded for securities ranked 81 to 100 by size, and 25% of that recorded for securities ranked 181 to 200. This fact alone makes the task of delivering alpha for benchmark-aware managers challenging – especially when remembering that over 60% of their portfolio is (on average) invested in the ASX 20. And, their ability to deviate substantially from the benchmark is also constrained by another change in the market.

MARKET LIQUIDITY AND MARKET IMPACT

As the proportional size of the ASX 20 has increased, an interesting trend has emerged. Average annual turnover in the top 20 securities has decreased by 42% since 2007 or 51% since peaking in 2008 (Figure 9).

Figure 9: ASX Top 20 – Annual turnover



Source: Macquarie Equities

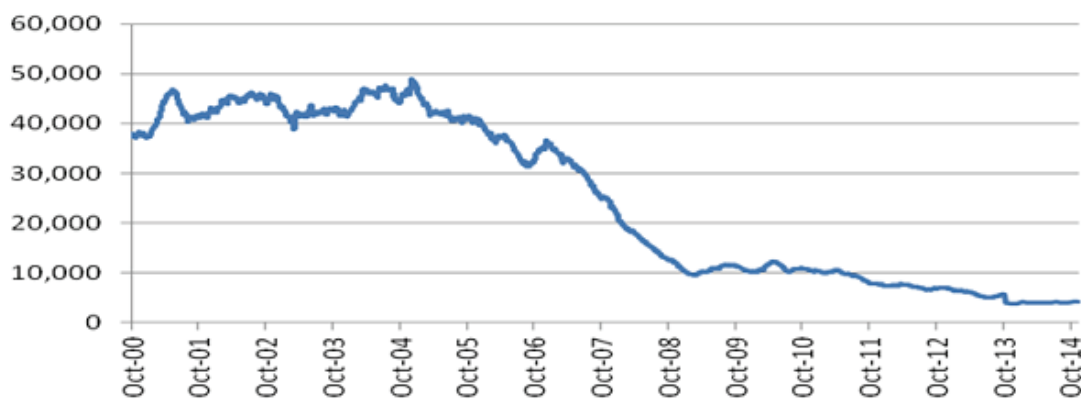
One explanation for the decline draws on the earlier observation regarding funds flow. Investors are moving from active to passive funds where trading is a mere fraction of that for

an active manager. It is reasonable to assume that the increasing market share of passive funds is a factor in the decreasing turnover in the ASX 20.

Another explanation for the declining turnover of the 20 largest securities lies within the increasing dominance of these names within the broader index. The proportional index weight of the ASX 20 has increased, active share has declined and there is a very high correlation between active funds and the index. This suggests that managers are locking in market beta. The decline in trading volume indicates a buy-and-hold strategy is now part of active managers' arsenal.

To give the benefit of the doubt to these managers, the trading environment may also be contributing to a decline in trading activity. Declining trading volumes and significantly smaller average dollar value per trade have become the norm over the last seven years. Between 2007 and 2014, average annual turnover in the market decreased significantly (42% since 2008) as shown in Figure 10. The average trade size has also shrunk – the average trade today is a A\$4,086 compared to \$46,662 in 2004.

Figure 10: Average trade value



Sources: Goldman Sachs & Macquarie Equities – based on 60 day median (of average daily trade value)

What has caused this substantial change? There have been a number of meaningful changes in the way the market operates since 2008. The two biggest changes have been the demise of investment banks' proprietary trading desks, and the rise of dark pools and algorithmic trading.

Proprietary trading

An unseen part of the market for most non-institutional investors is proprietary trading. Prior to 2008, each investment bank operating in Australia would allocate bank capital to a group of skilled traders to trade on its own behalf for the express purpose of generating a profit. Subsequent reforms in the USA, including the Volker Rule, banned any institution that owned a bank from owning, investing in, or sponsoring a hedge fund, private equity fund or proprietary trading operation.

In addition to regulatory change, the unavailability of capital as bank balance sheets required substantial repair and injections of new capital meant that most investment banks simply don't have the capital to risk trading on their own account.

As well as the role that proprietary divisions played in seeking out profitable trades for the banks, they also played the very important role in providing liquidity by way of market making. Market making involves the supply of liquidity – in particular securities – that aids the trading of large positions. For example, it was typical prior to 2008 for a broker attached to one of the large investment banks to take both sides of a defined transaction (to a dollar limit). The proprietary trader assumes the risk on the balance sheet and the counter-party (fund manager) has obtained the liquidity required to exit a portfolio position in one security and purchase the new security for his/her fund. The proprietary trader will look to carefully exit their exposure to these two positions with the advantage of having a materially different time horizon to the fund manager. Since 2008, however, the fund manager typically needs to complete the trade in the absence of a market-making broker – with a material impact on available liquidity.

Dark pools – ASX Centre Point & Chi-X Hidden

In a fragmented market with less liquidity visible at the touch, dark pools have become a valuable tool for traders looking to execute large orders with minimal information leakage and price impact.¹³

Dark pools and high-frequency trading were brought into the consciousness of the broader public through Michael Lewis's book, 'Flash Boys – Cracking the Money Code'.

Dark pools came about primarily to facilitate block trading by institutional investors, who did not wish to impact the markets with large orders and, consequently, obtain adverse prices for trades.

The almost total demise of the proprietary trading desk has had a profound impact on market making and liquidity. Some literature argues that the growth in dark pools across both the ASX and Chi-X exchanges has compensated in terms of liquidity.

Examining this assertion leads to conflicting outcomes. Today, dark pools represent 28% of total turnover across both the ASX and Chi-X exchanges, indicating a growing acceptance of dark venues for execution by professional traders.

But this is where it starts to get interesting. Some 52% of ASX Centre Point (ASX Dark Pool) trades are less than the median trade size of ASX lit. Small trades in dark pools are referred to as low quality fills (LQFs) and come about for two main reasons.

The first is that professional traders implement a specific strategy to detect liquidity in the pool, referred to as pinging. By sending through a very small order, they look to detect both the direction and availability of liquidity in a specific security.

The second reason is a direct function of the trade order entered into the pool. There are an almost infinite number of algorithms that can be used to place an order via the pools. Common trading strategies are like icebergs – the bulk of the order is hidden and is only revealed in small quantities once the initial order is filled. An institutional investor can enter trade instructions for specific volume and price-weighted algorithms that can accelerate or decelerate trading as prices and volume increase or decrease. The use of specific algorithms is designed to reduce market impact – however, as demonstrated, the structure of the Australian market is unique and characterised by a small number of large managers.

With the average trade value having shrunk to under \$5,000 in 2014 and over half the trades executed through ASX Centre Point smaller again, it is difficult to understand how dark pools are improving execution and reducing market impact.

Block trading

In line with other global exchanges, the ASX established a block trading facility (BTF) in 2012. Often called an upstairs market, the purpose of the BTF is to allow market participants to transact large trades at an agreed price, negating the requirement to place a large order into the market.¹⁴ In reality, it appears that after a strong start, volume in the BTF is decreasing – which is consistent with the broader decline in volumes across the whole market.

Figure 11: ASX BTF – annual turnover

Year	Volume (A\$m)
2013	1,030,805
2014	586,817
2015	331,211

Source: Morningstar

EXPLOITING THE MARKET

To summarise thus far:

- The ASX 200 is now dominated by the 20 largest companies by market cap;
- The top 10 fund managers control 48% of the funds under management in Australian equities;
- Investors are deserting unitised active Australian equity funds – instead, index funds and ETFs are growing strongly;
- The average Australian equity fund manager has become less active since 2008;
- For the ASX, turnover is down, average trade size has shrunk, and liquidity in the market is a fraction of what it was 10 years ago; and,
- ASX 20 is very efficient, with significantly less volatility than the rest of the market, making it very hard for active managers to outperform in this area.

This paper now explores the opportunities that exist in such an environment.

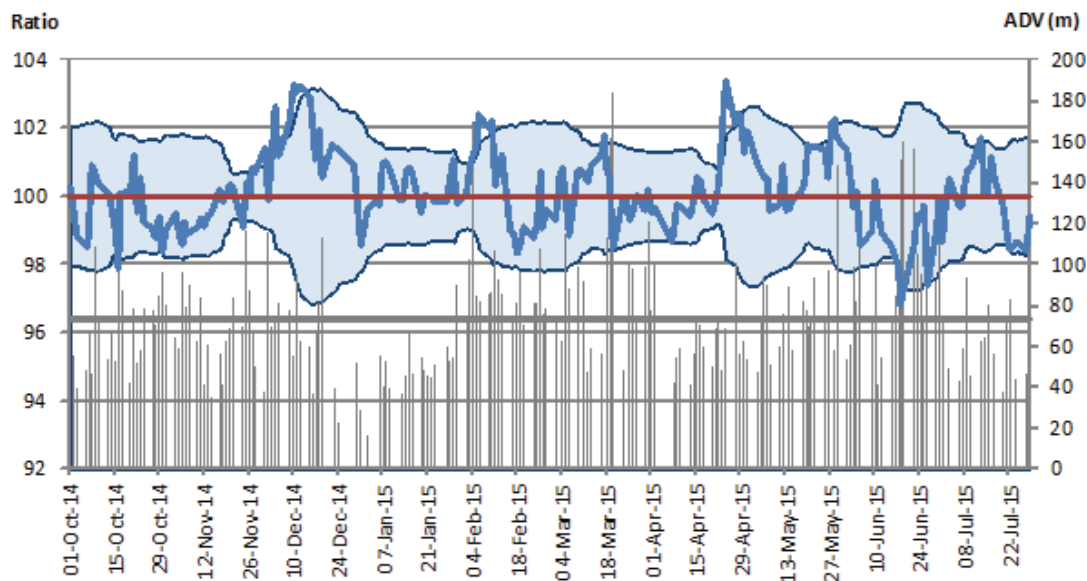
Relative value relationships – correlations and mean reversion

The decline in market liquidity and average trade value has been felt across all size bands in the ASX 200. One would therefore expect to see greater market impact from trading in securities outside the ASX 20. This is consistent with the observed volatility in stocks ranked 81 to 200 in the ASX200, as shown above.

Using statistical measurements and techniques, is it possible to isolate the market impact of trading in two similar securities?

Figure 12 analyses the relationship between Mirvac (ASX MGR) and Stockland Corporation (ASX SGP). Both companies are in the same GICS sector – REITS – an important point that is addressed further below. The observation period is 200 trading days. The solid blue line shows the simple price ratio between the two companies (MGR divided by SGP). The horizontal red line represents the 20-day moving average of the price ratio between the two. The grey bars show average daily traded volume for both securities and the solid grey line is the average traded volume over the observed period.

Figure 12: Mirvac Group & Stockland Corporation – Correlation



Source: Ellerston Capital

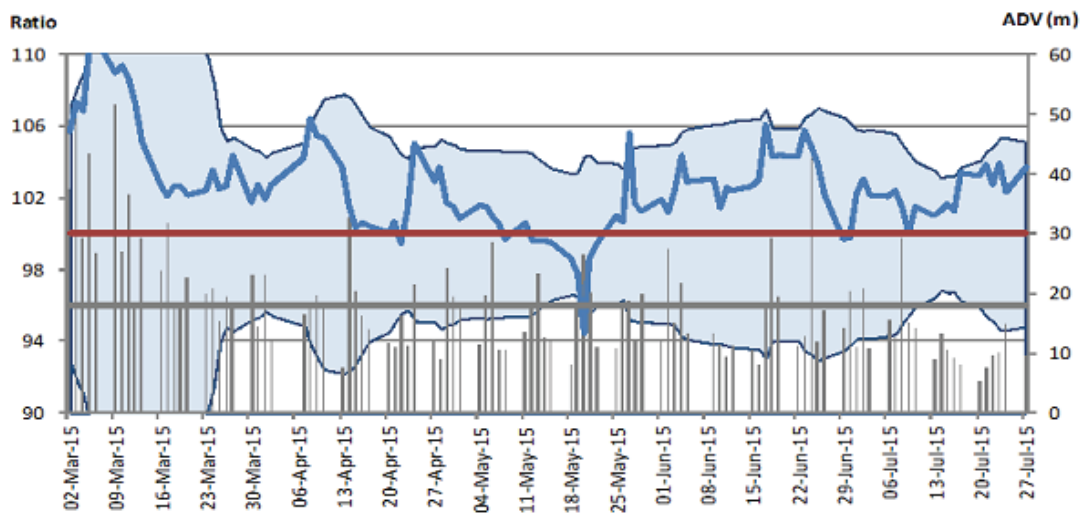
What stands out is the very obvious relationship between the two securities. Their share prices are highly correlated, and they also display very strong mean reversion. Mean reversion occurs when the prices ratio (blue line) intersects the 20-day moving average (red line). The price ratio between these two companies crossed the moving average line over 35 times in 200 trading days.

Also observe the impact that trading volume has on the relative price of MGR and SGP. From 26 November 2014 to 10 December 2014, we see higher than average trading volume in both securities. This coincides with a dislocation (statistically significant change) in the price ratio of the two securities. In this case, SGP outperformed MGR.

In the next example, Figure 13 illustrates the trading relationship between Adelaide Brighton Limited (ASX: ABC) and Fletcher Building (ASX: FBU). Again, both companies are in the same GICS sector – materials – and their underlying businesses are similar (building materials and construction).

The same simple price ratio as the previous example, ABC divided by FBU, is again represented by the blue line. The red line again represents the 20-day moving average of the price ratio between the two securities. The grey bars show daily traded volume for both securities and the solid grey line is the average traded volume over the observation period, this time 100 trading days.

Figure 13: Adelaide Brighton Limited & Fletcher Building Limited – Correlation



Source: Ellerston Capital

From 2 March 2015 to 9 March 2015, there was above average trading volume in both securities. The relative price of the two moved significantly in favour of ABC, represented by the blue line moving sharply higher in Figure 13. Moving forward to the period from 15 June 2015 to 22 June 2015, there is another increase in the trading volume of these two securities and, in this instance, the price of ABC fell relative to FBU, eventually reverting and crossing the 20-day moving average on 29 June 2015.

Is there an explanation as to why the price ratio between these two similar companies changed? Before conclusively proving that the movement between the two securities was only due to market impact, it is important to first explore all possible fundamental reasons for the change. To do this requires examining logical fundamental reasons. There are a myriad of reasons as to why this dislocation may have occurred.

- Did either company provide results or guidance to the market?
- Has an influential broker analyst issued research updating their view on either company
- Are there rumours of takeover or corporate activity impacting the respective share price?
- Has the CEO unexpectedly resigned?
- Are directors buying/selling shares on market?

These are just some of the reasons the relationship or correlation between two similar companies might change. With a very high degree of certainty, we can eliminate any fundamental reason behind a relative price movement.

What explanation therefore remains for the price movement between these two securities? Could it be market impact caused by a change in the supply and demand dynamics as a result of one or more large managers buying and selling both securities? What market inefficiency can explain this movement? In a market where the top 10 managers control nearly 50% of the institutionally managed funds, trading into a market where the average dollar value of a trade is 14% of the size traded only seven years ago and is today under \$5,000 are reasons that could describe market inefficiencies worthy of exploitation.

Given the consistent reversion of the price ratio to the 20-day moving average, as long as the fundamental reasons have been eliminated, there is enough evidence to be comfortable with the thesis.

A trading strategy such that the security that has outperformed is short sold while simultaneously purchasing the underperforming security to an equal dollar value will result in a profit once the two prices or the relative value reverts to its 20-day moving average.

In the two examples above, the two securities are both within the same sector. The advantage of trading this strategy within the same sector is that both company's fundamental price is influenced by the same economic factors, thereby eliminating a number of risks at the security level. In the Adelaide Brighton and Fletcher Building example, if there was an economic release that would be expected to have an impact on the sector (e.g. ABS Construction Activity), we would expect either positive or negative news to impact both companies in equal measures.

We see price dislocations for no fundamental reason as per the example above, up to 10 times per day and the frequency for ex-20 names is higher than for the larger companies where volatility is less prevalent.

Trading strategies

Plan for Life data shows that for 2014, the sector of the funds market growing the fastest was alternatives.¹⁵ Alternatives grew at over 35% for the year, more than twice the rate of the next category. From here, this paper looks closely at the Australian market for alternatives and specifically the subcategory encompassing trading strategies (long/short and market neutral).

The Zenith Investment Partners universe of long/short (variable beta), active extension (beta 1), market neutral (beta 0) and traditional long-only large company Australian equity managers provides a very stark contrast in the potential investable funds. Figure 14 shows that long/short investing as a manager skill set is under represented in the Australian market.

Figure 14: Alternatives fund universe

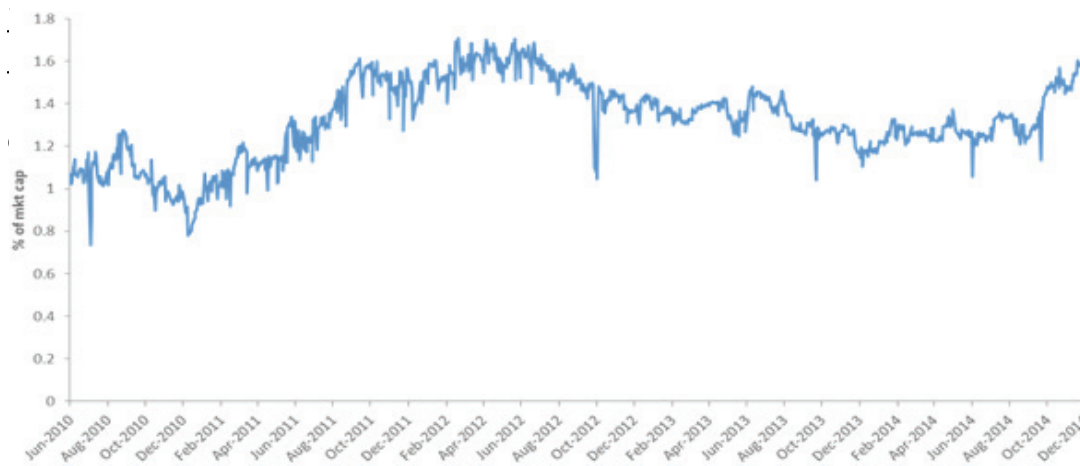
Strategy	Initial Universe	% of Total	Rated Universe	% of Total
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Long/short & active extension	26	12	14	13
Market neutral	9	4	6	5
Large companies (long only)	191		91	

Source: Zenith Investment Partners

Further evidence of this under representation is shown by the level of short interest. Short interest is the total number of shares sold short as a percentage of the total shares on issue in a particular company (Figure 15).

Figure 15: ASX200 Short Interest %



Source: Goldman Sachs

One of the biggest risks in being short a security is being caught in a short squeeze. A short squeeze is when a security is actively sold short yet starts to increase in value, forcing the short sellers to cover the position by purchasing the security, therefore causing its price to increase further. In a market such as Australia's where total short interest is less than 30% of comparable developed markets (for example, the US and Europe), the risk of a short squeeze is far lower, thereby minimising one of the main risks of being short a specific security.

Contrasting the market for active large cap Australian equities, long/short investing has low levels of short interest and a very low concentration of funds under management across a small number of participants – attributes conducive to alpha generation.

ENDNOTES

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Paul Drzewucki is Portfolio Manager with Ellerston Capital.