

Risky Business

Building shock resistant Australian equity portfolios



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Shock resistance begins with the idea that volatility is a given in risk asset classes like equities and that shocks represent unexpected events that are difficult to predict.

This white paper examines how active fund managers can manage their exposure to volatility and shocks, and how each can be exploited in the quest to add alpha and improve shock resistance. Active fund managers can measure risk from a range of perspectives beyond the reach of average investors, unearthing 'hidden' risks at the asset class, portfolio and stock levels.

This white paper also highlights why it is important for portfolio constructors to consider their fund manager's approach to risk management, not just their manager's investment style or ability to generate alpha.

Draft

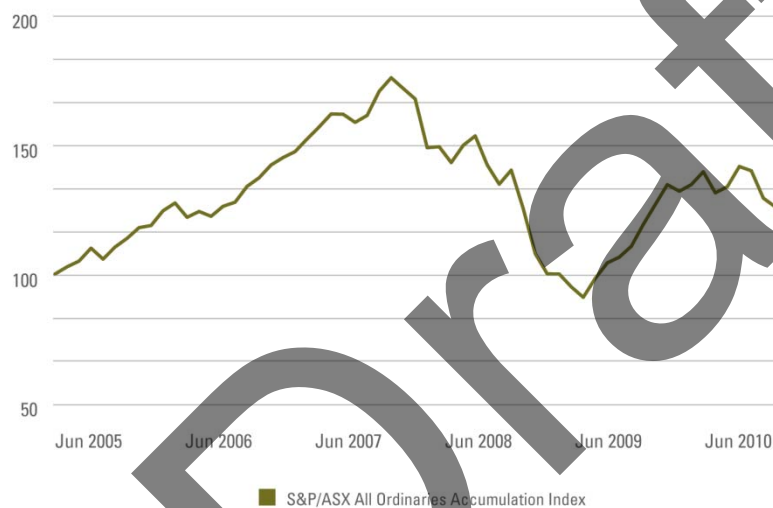
Chapter One Australian equity volatility versus shocks

The first step in building a shock resistant Australian equity portfolio is understanding what is volatility and what is a genuine shock.

The recent volatility in the Australian equity market resulting from the global financial crisis has shocked and tested the faith of many retail investors.

From October 2007 to February 2009, the Australian sharemarket effectively halved in value as fear and pessimism dominated the investment landscape. This decline is shown in the following chart.

CHART 1: Australian Equity Performance during the Global Financial Crisis



Source: ASX.

However, given the amount of short-term volatility (and sometimes not so short-term volatility) that we typically see in Australian equities, the reality is that bouts of volatility are indeed normal.

My view is that a much longer-term perspective is appropriate for most of an Australian equity investor's life.

Indeed, when judged over decades rather than years, Australian equities have delivered outstanding returns, volatility and all. This is the time horizon that professional investors and fund managers would consider appropriate and necessary.

My view is that volatility isn't a shock at all. Nor should it be perceived as a shock. It is part and parcel of investing in any risk asset and leads us to the concept of "risk premiums".

Investors take on "risk premiums" as soon as they move away from the safety of cash.

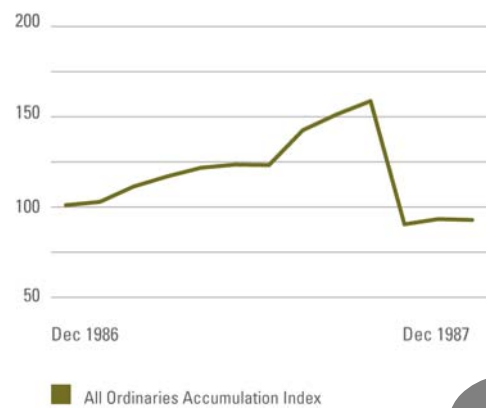
"Risk premiums" measure the additional long-term return that investors demand for taking on risk and volatility across the asset classes, from bonds to property to equity.

To put into context the dramatic recent volatility of the Australian equity market, the following chart identifies the Australian equity index from January 1987 to May 1989.

During this time investors could be forgiven for having serious misgivings about taking on “risk premiums” immediately after the experience of 1987.

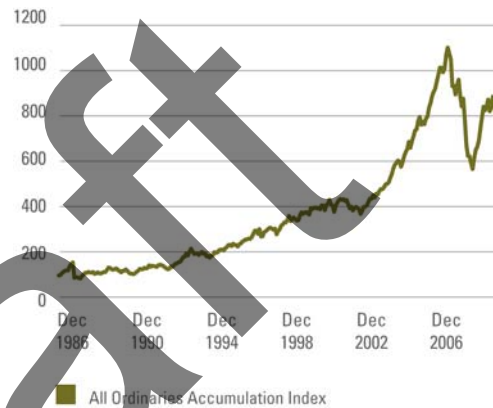
CHART 2 – Recency Bias: Its easy to mistake short term events for long term trends

Australian Equity Performance during the 1987 crash



Source: ASX

Australian Equity Performance over 26 years



Source: ASX

However, Legg Mason’s view is that this type of volatility shouldn’t come as a shock as it has occurred time and again throughout history.

As evidence, the accompanying charts show you the experience of 1987 in the context of longer-term performance. The volatility and shocks at this time barely register 20 years later.

This is why practitioners should spend considerable time with investors focusing on return expectations and risk tolerances over decades rather than years.

That said, volatility should not be ignored completely. From an individual investor’s perspective, volatility close to retirement can cause significant stress and one key study found how its impact is highest within five years either side of an investor’s retirement age.

John Livanas, Faculty of Business, School of Actuarial Studies, University of New South Wales, has found that: “50% of investment returns arise during a period only a few years before retirement. Getting it wrong early has less effect. But paradoxically, getting it wrong later also has less effect due to the confluence of the amount of money risked and the time remaining to allow for compounding peaks at around retirement”¹

So, if volatility should not be perceived as a shock unless you are close to retirement age, what constitutes a shock for equity investors?

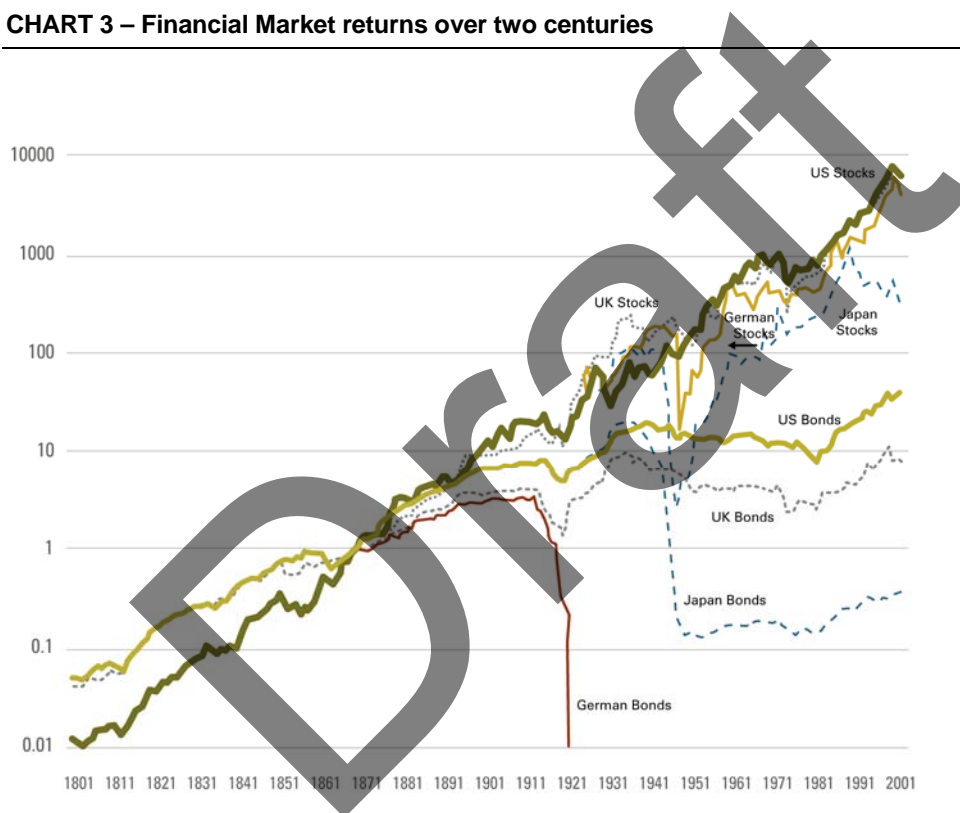
I would argue that the most important shock would strike at the heart of equity investing itself- manifested as persistent failures to deliver on long term assumptions of company returns. As long as companies deliver on long term assumptions, short term volatility is not our main focus, and generally won’t matter over time.

A real shock would be if there was a breakdown in the economic drivers of these long term assumptions on company returns. “The long-run performance of equity investment is fundamentally linked to growth in earnings. Earnings growth in turn, depends on growth in real GDP” Bradford Cornell, Professor of Financial Economics, California Institute of Technology.²

An example of a breakdown in economic drivers occurred in Japan in 1990, in the wake of burst property and equity market bubbles. Leveraged companies that had bought assets before the crash were left to repair balance sheets and had no interest to pursue profit opportunities.³

In the Australian context, our view is that a similar long term breakdown in economic drivers is unlikely.

CHART 3 – Financial Market returns over two centuries



Source: Stocks for the long run, Jeremy J.Siegel, 2002

While we and others (Cornell) don't necessarily expect the past strength of equity markets to continue at the same pace, we do have relatively favourable expectations for the future performance of the equity market.

Furthermore, we are prepared to accept the short-term volatility that comes with the fruits of long-term investing. As Warren Buffet wrote in his 1997 annual letter to Berkshire Hathaway Inc. shareholders, “So smile when you read a headline that says, ‘Investors lose as market falls’. Edit it in your mind to, ‘Disinvestors lose as the market falls – but investors gain’”.⁴

Chapter Two Volatility and shocks in the approach of fund managers

Investment styles such as value, growth or thematic characterise how a manager attempts to beat the market. All of these approaches aim to exploit some signal in the market, such as price and earnings momentum.

The need for a clear investment philosophy is described by Aswath Damodaran, (Professor of Finance and David Margolis Teaching Fellow) at the Stern School of Business at New York University.

“If you do not have an investment philosophy, you will find yourself:

1. Lacking a rudder or a core set of beliefs, you will be easy prey for charlatans and pretenders, with each one claiming to have found the magic strategy that beats the market.
2. Switching from strategy to strategy, you will have to change your portfolio, resulting in high transactions costs and you will pay more in taxes.
3. With a strategy that may not be appropriate for you, given your objectives, risk aversion and personal characteristics. In addition to having a portfolio that under performs the market, you are likely to find yourself with an ulcer or worse.”⁵

For any given investment style, active fund managers require specific strategies to outperform the market and peers. This also gives rise to further volatility and potential shocks.

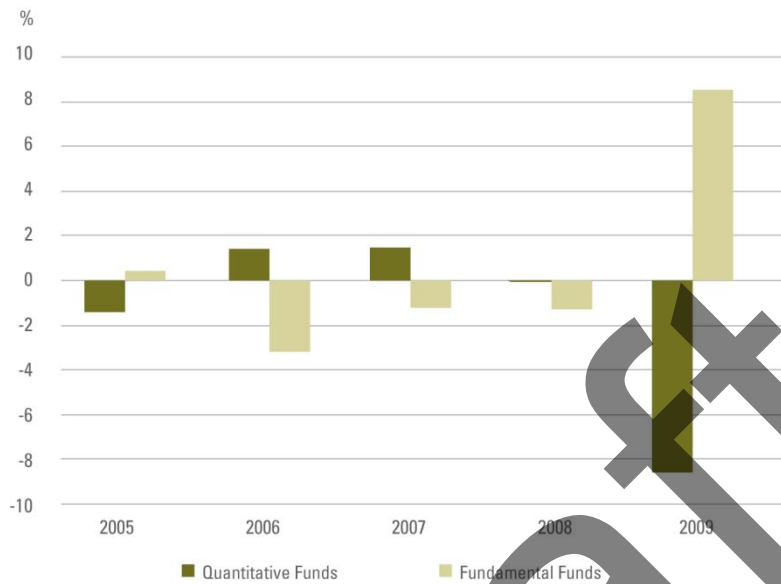
A fund manager’s process aims to repeatedly exploit the anomaly targeted by their investment philosophy or approach. This leads to a signature that reflects a signal the manager uses to seek excess returns.

Unfortunately, this leads the investment returns of a manager to be correlated with factors in the market that are prone to cycles. Evidence of this cyclical in the returns of fundamental and quantitative managers comes in Legg Mason’s white paper, “*Quantitative Pitfalls, Quantamental Solutions*”, written by Australian Core Equity Portfolio Manager Matthew Lambert.

The following chart shows how well fundamental managers that apply forward-looking research in their processes did as a group relative to quantitative managers in 2009. Therefore, even these broader investment approaches can be cyclical.

CHART 4 – Performance of Quant versus fundamental funds

Median active returns to 31 August each year



Source: Mercer. Past performance is not necessarily indicative of future performance.

As with market aggregates, we need to be able to assess whether a manager's investment philosophy or style will work in the long run. If that style does poorly for a time, we need a way to decide either that this presents a buying opportunity or that the style is no longer likely to work.

Consider value investing, which has been widely endorsed in academic literature for its long-term track record. In Australia, the S&P Citi Value vs. Growth Index is a good proxy for relative returns from a value investment style. If you looked at the following chart in February 2009, your faith in value investing would have been severely tested.

CHART 5 – Australian equities: Value versus Growth

Median active returns to 31 August each year



Source: S&P Citi. Past performance is not necessarily indicative of future performance.

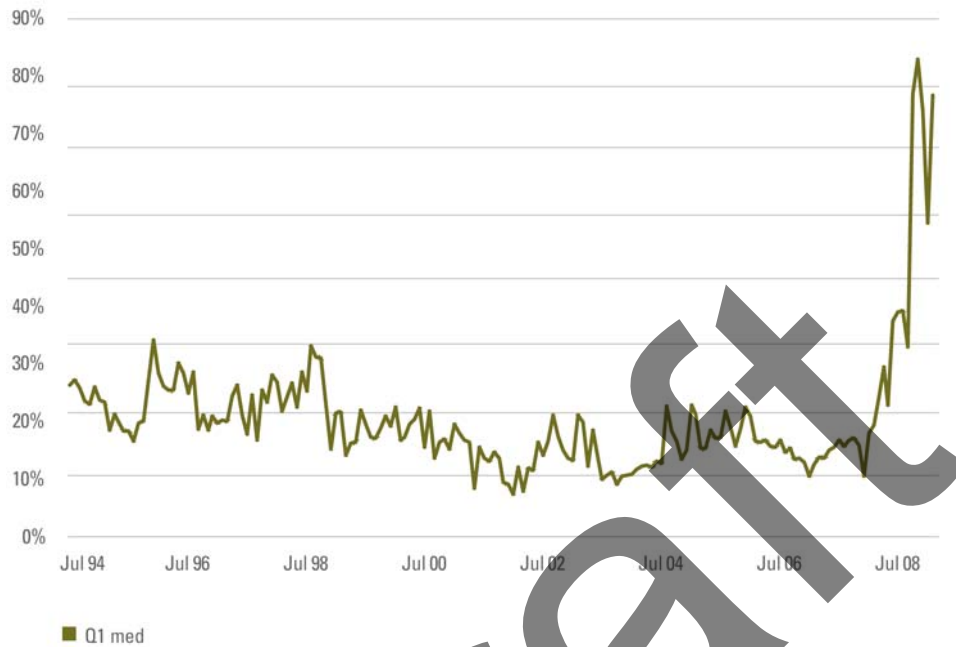
But, in the same way that we can assess whether the market is over- or under-priced, we can assess whether a manager's style is well positioned to deliver strong returns.

Legg Mason's approach is to look for undervalued securities. Given that we value each company in the market, we can then look for pockets of cheap risk premiums, not just cheap stocks. The next chart shows the difference in upside to fair value between the 20th cheapest stock in the top 100 and the average stock. The wider the dispersion, the greater the opportunities from investing with a value approach.

So, while February 2009 felt like the worst time to be in a value strategy, our forward looking analysis, based on a model of expected returns, pointed to the largest opportunity to invest in value stocks that we had seen.

Chart 6– “Value Spreads” can indicate future opportunities

LMAE Valuation Spread



Source: Legg Mason Australian Equities.

Clearly the subsequent performance of value strategies has been strong.

The link to building shock resistant portfolios is to understand the risk premiums you are aiming to exploit at a market level and at an active management level, and to focus on the expected return from where you are today, rather than relying on past returns. Don't let risk aversions or misinterpretations allow once-in-a-lifetime opportunities to slip by.

With this in mind, let's contrast this approach with the way that risk models respond to cycles.

Chapter Three The cost of misinterpreting risk

Risk models estimate a manager's tracking error. The assumption is that a lower tracking error portfolio will be less affected by shocks.

However, these risk models are built around volatility assumptions rather than around deviations in long run expected return assumptions. To forecast the amount of risk associated with a given exposure to a factor such as value, they just measure the historic stock price volatility associated with the value style. Risk models make no other attempt to judge whether the expected returns due to the value factor have changed.

With the benefit of hindsight, equity investors should have been overweight value premiums in February 2009, since market expectations of value premiums were particularly low at this point.

At this time, a risk model would have seen especially high risk in this position, because value stocks had been particularly volatile as their prices fell.

This was a bizarre misinterpretation of risk. Effectively, value investing was seen as more risky, because recent price falls had been associated with exposure to value factors, just at the time better value had appeared on offer.

In summary, short-term, backward-looking risk models encouraged managers to take on more risk when potential returns were low (leading up to the global financial crisis) and less risk when potential returns were high (at the peak of the global financial crisis).

This is exactly what a long-term investor should not be doing.

How risk forecasts can vary through time

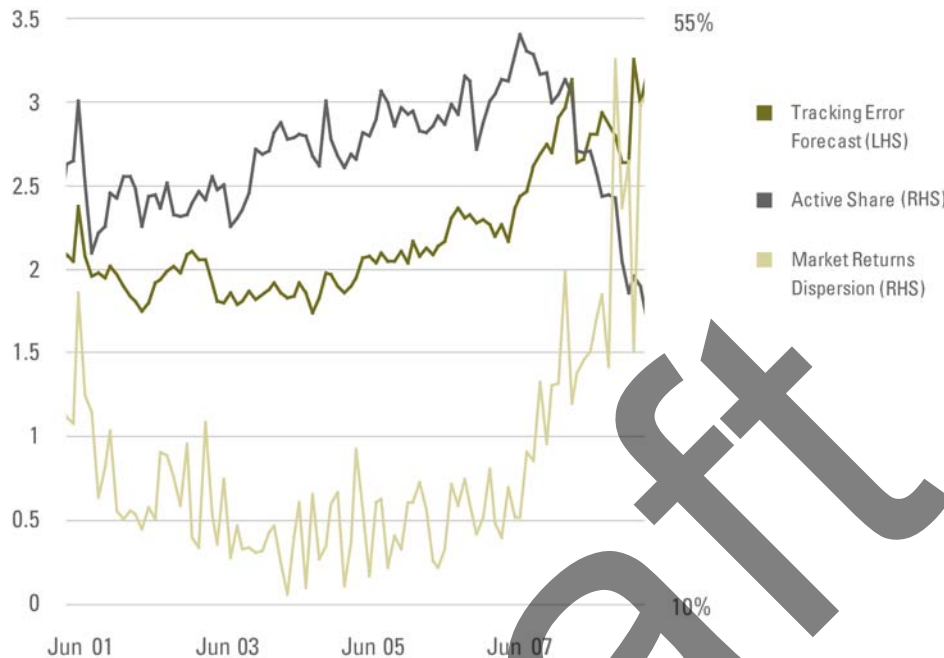
The following chart shows a detailed example of the way that risk models encouraged managers to take on more risk when potential returns were low (leading up to the global financial crisis) and less risk when potential returns were high (at the peak of the global financial crisis).

The grey line plots the 'active share' of an example portfolio. Active share shows how much a manager's fund differs from the index. It is calculated by summing all of the active overweight positions in a portfolio. Note that this portfolio moved away from the benchmark until mid 2007, then adopted a more benchmark-hugging position.

The dark green line is a risk model's forecast of that portfolio's tracking error, which is driven by active share, cross sectional volatility and factor risk. Note that forecast risk of this portfolio rose heavily through the crisis, despite the portfolios move towards the benchmark in that period.

The light green line shows dispersion (multiplied by 2.5) of returns across the market at each point in time. If we imagined a month where all stocks had the same return as one another, this would be plotted as a zero on this line.

CHART 7 – How risk forecasts vary with dispersion of market returns



Source: Legg Mason Australian Equities

From 2001 to 2006, the volatility of returns declined across all financial markets. Positive returns and increasingly risk-seeking behavior saw investors take on more risk to seek alpha in response to declining tracking error forecasts. But then, after the dispersion of market returns blew out in 2008, the risk models 'decided' that managers were taking on far more risk. The response of many managers was to reduce active share to control the tracking error. The misinterpretation of risk may have resulted in investors losing capital permanently. But this was at a time when opportunity on a forward looking expected return basis had increased.

Chapter Four Avoiding Shocks in Active Management

1. Reading into the signals...

To manage shocks, investors need to recognise when historic drivers of performance may no longer hold true. Specifically, investors need to look out for fade in the performance of their investment signals.

Investing using earnings revisions is a common active management strategy. It is based on the observation that, after an analyst upgrades (or downgrades) a company's earnings estimate, their next review of those earnings is also likely to be an upgrade (or downgrade).

Given that many investors price stocks using expected earnings, serial correlation in earnings estimates suggests that after you see an analyst upgrade an estimate you should overweight the stock to get ahead of the next upgrade.

However, markets evolve and the more well known and accepted an investment strategy becomes, the smaller the opportunity.

The following chart shows the actual persistence of earnings revisions (top line) and whether stock prices are anticipating further earnings revisions (bottom line).

The gap between the two lines represents the opportunity to add alpha. Evidently, it has contracted over time.

Chart 8 – What worked in the past may not work in the future

S&P/ASX 300: Actual versus expected earnings revision persistence through time (5 year rolling regression)



Source: Macquarie Research, September 2008

Clearly, as more investors used this strategy, the predictive power of the signal reduced.

Imagine the shock for investors to find that expected returns for their strategy had disappeared over time.

The following chart identifies the gap between the actual and expected persistence (the dark green line, while the light green bars show how effective the strategy has been at predicting stock price moves).

Chart 9 – Signals can lose their effectiveness over time

Comparison of persistence gap with 12 month average IC: S&P/ASX 300



Source: Macquarie Research, September 2008

Again, the lesson here is not to look at past performance. You are much better off focusing on expected returns.

Monitoring signals with a forward looking perspective is one way to mitigate risks, but let's now look at some hidden and less obvious risks that may be avoided.

2 Uncovering hidden concentration risk

Every equity investment carries a potential loss from unforeseen events. However, a quality investment manager can reduce the impact of some shocks by analysing business operations and assessing exposure risk not just experience risk.

This risk measure can then be factored into valuations and position size limits.

The recent BP oil spill in the Gulf of Mexico serves to highlight the risks of concentrated stock positions.

Prior to the oil spill, BP represented around 6% of the U.K. equity benchmark. As the stock approximately halved following the oil spill, the underperformance had a significant impact on U.K. equity portfolios⁷.

Interestingly, prior to the oil spill the Barra risk model estimated BP's stock specific risk, at around 2%, which was extremely low. Since the oil spill, the risk model, based on experience rather than potential exposure, estimates BP's stock specific risk at around 49%.

In the context of the Australian market, BHP Billiton represents a far bigger exposure for Australian investors than BP did for U.K. investors. Obviously, a similar impact on BHP Billiton as experienced by BP would have a dramatic impact on Australian equity portfolios.

Nassim Taleb's book, the Black Swan, focuses on improbable events that can have a significant impact. His theory highlights that just because something hasn't happened, doesn't mean it can't. Human behaviour also seeks to explain the event after the fact.

What many Australian investors may not realise is that BHP Billiton is drilling fields similar to BP's Macondo, is using the same contractors, is drilling at similar depths and levels of geological complexity and is also acting as operator,

In many ways, the risk exposure to BHP is similar to the risk exposure to BP.

This is not pie in the sky stuff - blowouts at oil wells are relatively common. Since 1955, there have been 573 offshore rig blowouts and oil wells are now far deeper and more complex so technical risks have actually increased.⁶

Clearly there are other factors at play in considering the risk of a blow out to BHP. Company culture, safety procedures and track records are very important.

But the point is that the exposure risk for BHP, as it was for BP, is prevalent. If approximately US\$100 billion was wiped off BHP's market capitalisation due to a similar event, it could fall 52% and the index would fall by 6%.

To manage shocks, portfolio constructors need to be fully aware of their risk exposures, not just experiences.

3 Diverse analytical approaches

Equity markets bring together investors with different approaches and objectives and because of this, the stocks that look the most attractive according to one investment approach often look the least attractive using another. Diversity of approach can be used to mitigate the risk of using any single approach.

Combining Fundamental and Quantitative Research

Fundamental and quantitative research can complement one another. Let's begin by contrasting the way that these two techniques uncover alpha opportunities.

Fundamental research seeks to identify the true value of a company by forecasting its long term cash flows. Good analysts look beyond the short term price and earnings noise. Their experience and contacts should help them to envision a future that may be very different from the past. They should be able to profit from unique insights.

We are also aware that fundamental analysts can exhibit behavioural biases when assimilating incremental news. As inputs drift, analysts tend to remain anchored to their current set of forecasts until a significant announcement arrives.

To the contrary, quantitative forecasts of stock returns use objective rules that continuously adjust to reflect even the smallest pieces of data as they are released. These rules seek to profit from naturally reoccurring opportunities that can be tested across all possible investments over a long historical period.

Here is an example where managers might look to combine diverse approaches to improve their investment decisions.

Value vs. Value Trap

Earlier, I discussed how managers have an approach to active management that comes through in a statement of investment style.

In the case of a Value manager, a common approach to picking stocks is to consider the price to earnings ratio of the company - the lower the better. The following chart on the left below shows the price to earnings ratio of QBE Insurance over the past five years.

You can see that you are currently presented with an opportunity to buy QBE at one of the lowest price to earnings ratios in recent times.

However, a good value manager should also consider risks to implementing a buy decision, such as declining earnings.

Whilst the current price to earnings ratio is low, the following chart on the right shows that the future earnings per share estimates of QBE have fallen for the past five years. The observation that revisions are usually serially correlated suggests that future earnings per share may be further downgraded.

How a manager incorporates these diverse approaches varies, but clearly considering the problems/decisions from different perspectives increases the chances of making a good decision.

This is why we believe that using diverse analytical approaches is so important in active management.

Chart 10 – QBE Price to Earnings and Earnings Per Share

QBE - Price to Forecast Earnings (consensus)



QBE - Earnings per Share Forecasts (consensus, next twelve months)



■ Next 12 months ■ Report after next
■ Average of next 12 months

Source: Factset

Chapter 5 Conclusion

Australian equities provide a unique opportunity for investors to participate in the growth of the general economy. The price of this opportunity is volatility, with the potential for shocks. Successful equity investment requires a long-term mindset, with an appreciation that volatility is to be expected.

Active managers are charged with the responsibility of not only outperforming their benchmarks, but also managing a portfolio through times of volatility and providing a degree of shock resistance. The underperformance of a manager's investment style can introduce another source of volatility.

While shocks cannot be avoided completely, active managers can limit the impact of shocks through a disciplined process, adequate diversification, understanding the effectiveness of signals, strong measurement of risk fundamentals and most importantly, a culture of forward-looking insight into 'how this time will be different'.

Footnotes

- 1 Faculty of Business, School of Actuarial Studies, University of New South Wales.
- 2 Economic Growth and Equity Investing; Bradford Cornell. *Financial Analysts Journal* Volume 66 Number 1 2010.
- 3 Richard Koo: *The Holy Grail of Macro Economics – Lessons from Japan's Great Recession* John Wiley & Sons, 2008.
- 4 Warren Buffet, 1997 annual letter to Berkshire Hathaway Inc. shareholders.
- 5 www.damodaran.com
- 6 SINTEF Offshore Blowout Database.
- 7 MSCI Research Bulletin, *The BP Oil Spill and ESG*, Roger Urwin, June 2010.

IMPORTANT INFORMATION

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