

FUNDAMENTALS

INVESTMENT PERSPECTIVES FOR INSTITUTIONAL INVESTORS

Top comment



Garth Taljard
Portfolio Manager

"Fund managers have found more sophisticated ways of delivering risk-managed beta." See page 7.

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OLD MUTUAL
Investment Group



Commentary for the period ending 31 March 2007.

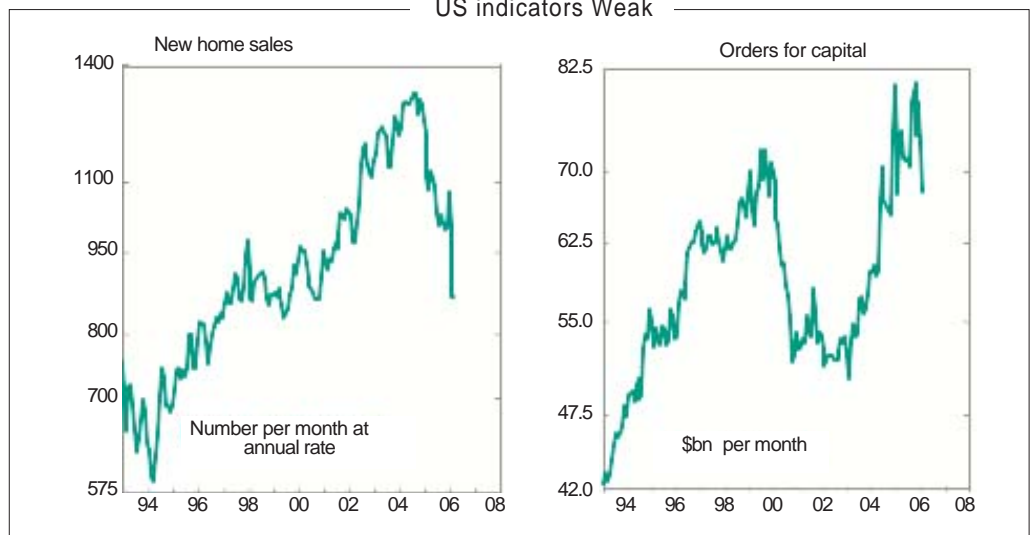
GLOBAL ECONOMY

OMIGSA VIEW

While downside risks to the US economy can certainly not be downplayed, we still think it unlikely that the US will enter a full-blown recession. Despite ongoing concerns over the health of the US economy, we remain of the opinion that 2007 will see another year of solid growth, albeit a little slower than in 2006.

- Concerns about the health of the US economy mounted during the first quarter of 2007.
- A still weak housing market; intensifying problems with loans to sub-prime borrowers (i.e. those with poorer quality credit credentials); unexpected weakness in orders from the private sector for investment goods (machinery, etc); a renewed surge in oil prices and a warning that the US economy may be heading for recession from Alan Greenspan, the previous Chairman of the Federal Reserve Board, were responsible for the worsening in sentiment.
- The Fed acknowledged the downside risks by adopting a more neutral tone in its outlook assessment of monetary policy in the months ahead.
- With concerns about the US economy mounting, all indications are that the rest of the world is still growing at a solid pace. Indicators from the Euro-area and Japan point to sustained solid growth, while Chinese economic indicators point to a re-acceleration in activity during the first quarter, following a bout of slower growth during the last quarter of 2006.
- Acknowledging the ongoing strong growth, the central banks of all three countries raised interest rates during the first quarter of 2007.
- The behaviour of commodity prices also does not indicate any severe slowdown in demand for raw material inputs.

US indicators Weak



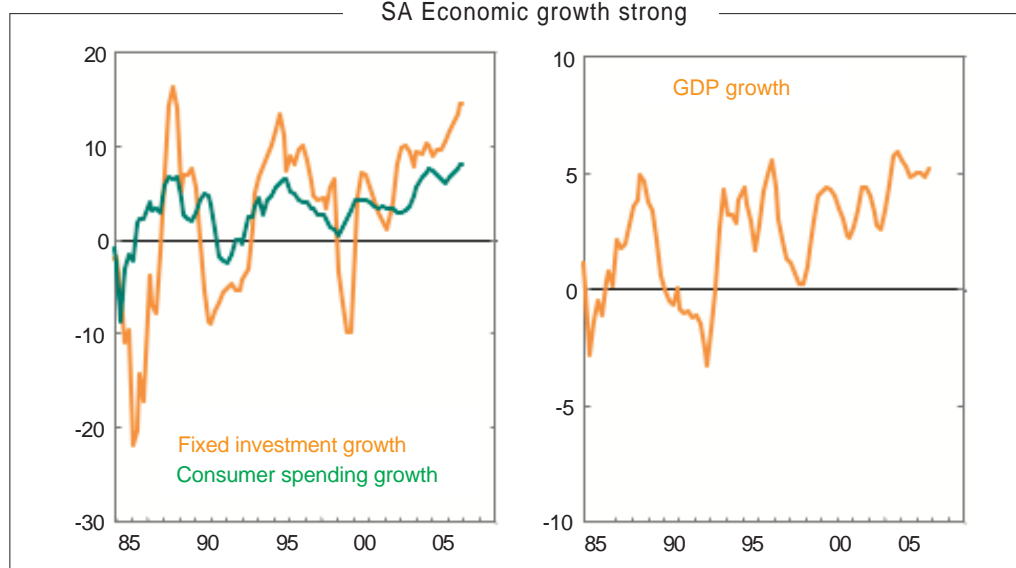
LOCAL ECONOMY

OMIGSA VIEW

Our long-held view that the South African economy will outperform the expectations of most analysts, is not only proving correct, but we expect this to remain the case for some time to come. Short-term inflation risks remain relatively high, given strong demand, still rising food prices and the recent renewed surge in the oil price. This holds a risk that the Reserve Bank may be forced to raise rates again some time later this year.

- The local economy continues to grow strongly. Data released by the Reserve Bank indicate that consumer spending rose by 7,5% during the second half of 2006 and fixed investment by over 15%. Already heavy public sector capital spending plans have recently been raised even further, indicating that the investment boom will continue for a number of years. We expect the pace of consumer spending to slow moderately this year, but to still record growth of over 5%, as incomes are rising solidly.
- GDP growth is expected to expand by a further 5% or so this year, as producers benefit from strong demand growth and a moderately more competitive currency after last year's rand adjustment.
- While the strong expansion in the local economy is to be welcomed, it does also bring with it the risk that the local economy could overheat, ultimately putting upward pressure on inflation.
- The sharp widening of the current account deficit to almost 8% of GDP in the final quarter of last year is certainly cause for concern, even though the deficit was adequately financed by capital inflows.
- Foreign trade figures for the first two months of this year point to a welcome narrowing in the deficit, but the shortfall remains sufficiently large to hold inherent risks to the rand and, hence, inflation.
- While recent inflation numbers have been a little better than expected, inflation risks remain very much alive, given booming demand conditions in the economy.

SA Economic growth strong



GLOBAL ASSET ALLOCATION

OMIGSA VIEW

International markets are not expensive and interest rates are unlikely to go up from these levels. On the other hand, the expected slowdown in earnings growth is likely to limit the upside of equities, but they are still expected to outperform cash. We remain underweight US equities because of the macro-economic concerns surrounding the US economy.

- Global equities recovered well from their late February/early March sell-off; ending the quarter only 1.7% off their February highs.
- Stock market sentiment recovered following Federal Reserve chairman Ben Bernanke's speech indicating that he would adjust monetary policy depending on the economic data releases.

- US equities managed to close marginally higher.
- In Europe, equities were firm across the board, while Japanese equities fell below 18 000 during March — ending the month 1.8% lower, but still flat for the quarter.
- US equities continued to underperform their international peers this year — a trend that began in 2002.
- Although US markets are not expensive at current levels, macro-economic concerns about the state of the US economy continue to weigh on Wall Street's equity market performance.

LOCAL ASSET ALLOCATION

OMIGSA VIEW

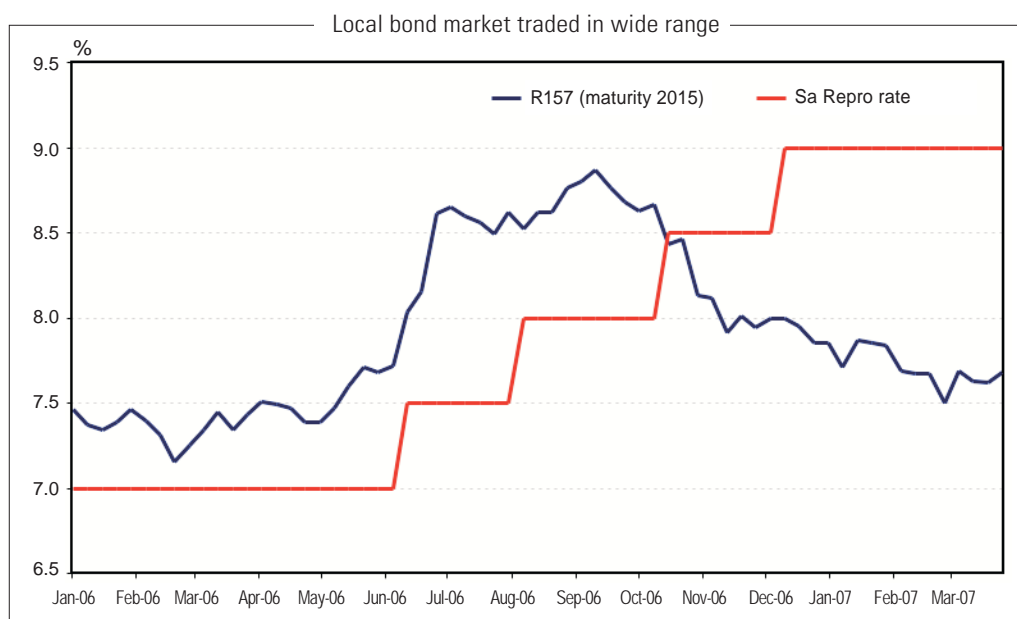
The SA equity market is at an advanced stage of a bull trend. The valuation of the market is by no means cheap on an earnings multiple basis, thus a correction should not come as a surprise to the market. Although too early to tell, we do not, however, believe it is the start of a bear market. Earnings growth still appears to be robust and profitability levels are at historic highs. The market gained as equity prices advanced globally. Our shares were supported by firm metal prices, which underpinned the performance of the mining sector, as well as generally decent company earnings.

- The JSE experienced an exceptional recovery, ending the quarter above 27 000.
- Global sentiment and firm commodity prices provided the impetus to the continued bull run in local equities, which saw them end the quarter 9.4% higher.
- The strength was experienced across all sectors, but miners were the stars of the first quarter.
- Quoted property lagged somewhat during March, but ended the quarter ahead of the All Share Index — continuing a trend of outperformance that began in mid-2006. Firm fundamentals continue to support this sector, which was the strongest performing sector on the JSE during the first quarter.
- Resources shares also performed exceptionally well, buoyed by high metal and oil prices, as well as the sector's improved earnings prospects.
- Banks joined the party following decent results.
- Familiar themes, such as construction, remained the flavour of the equity market.

FIXED INCOME

OMIGSA VIEW

Local bond yields are at extended levels, particularly when compared to money market rates and considering that we do not expect short-term interest rates to be cut soon. Short-term upside risks to inflation, especially from rising oil and food prices, call for a cautious stance to the bond market. Cash is thus favoured over bonds, while we are defensively positioned within bonds.



- The benchmark R157 yield traded in a wide band of between 8.03% and 7.43% during the quarter before rising toward month-end.
- The central bank left the repo rate unchanged for the first time since June 2006.
- Global bonds ended flat, with limited impact on the local market.
- Higher oil prices, a weaker rand and rising food prices caused renewed concern about the near-term inflation outlook.
- The local yield curve is still inverted, pointing to market expectations of a benign medium-term inflation outlook, but possibly also monetary policy easing toward year-end or early in 2008.
- The low funding requirement by the national government is helping to create a demand/supply imbalance, which partly explains the extent of the inversion.
- Generally, bonds in the 12 month plus sector of the All Bond Index had priced in a fair amount of good news, hence the limited curve normalisation toward the end of March following recent negative news flow. ▲



MARKET INDICATORS

AS AT 31 MARCH 2007	DY%	PE RATIO	1 MONTH %*	12 MONTH %*
FTSE/JSE All Share Index	2.3	15.6	6.4	37.6
FTSE/JSE Resources Index	2.1	16.0	11.1	47.0
FTSE/JSE Industrial Index	2.0	15.0	3.2	34.7
FTSE/JSE Financial Index	3.3	13.3	3.2	27.3
FTSE/JSE SA Quoted Property Index			3.2	21.9
ALBI BEASSA Bond Index			-0.5	5.6
STEFI Money Market Index			0.7	7.8
MSCI World Index (R)			1.6	36.5
MSCI World Index (\$)			1.9	16.0

* TOTAL RETURN INDEX PERCENTAGE CHANGE

ECONOMIC INDICATORS

	LATEST DATA		PREVIOUS YEAR
EXCHANGE RATES:			
Rand/USD	Mar - 07	7.25	6.14
Rand/UK Pound	Mar - 07	14.22	10.66
Rand/Euro	Mar - 07	9.65	7.43
Rand/Aus\$	Mar - 07	5.86	4.39
COMMODITY PRICES:			
Gold Price (\$)	Mar - 07	663.6	583.7
Gold Price (R)	Mar - 07	4,801.0	3,580.0
Oil Price (\$)	Mar - 07	68.1	66.2
INTEREST RATES			
Prime Overdraft	Mar - 07	12.50%	10.50%
BA Rate	Mar - 07	8.97%	6.97%
R157 Long-bond Yield	Mar - 07	7.84%	7.51%
INFLATION:			
CPI (y-o-y)	Feb - 07	5.7%	3.9%
CPIX (y-o-y)	Feb - 07	4.9%	4.5%
REAL ECONOMY:			
GDP Growth (y-o-y)	Dec - 06	5.2%	4.9%
HCE Growth (y-o-y) (Household Consumption Expenditure)	Dec - 06	8.0%	6.0%
GFCF Growth (y-o-y) (Gross Fixed Capital Formation)	Dec - 06	14.4%	10.3%
Manufacturing Production (y-o-y) (Seasonally adjusted)	Feb - 07	7.2%	4.0%
BALANCE OF PAYMENTS:			
Trade Balance (cumulative 12 month)	Feb - 07	-\$9.48bn	-\$4.47bn
Current Account (% of GDP)	Dec - 06	-7.8%	-4.1%
Forex Reserves (incl. gold)	Mar - 07	\$26.40bn	\$22.86bn

(All information relates to month end.)

What investors want: quantifying the feel-good factor of risk-managed beta



Garth Taljard
Portfolio Manager

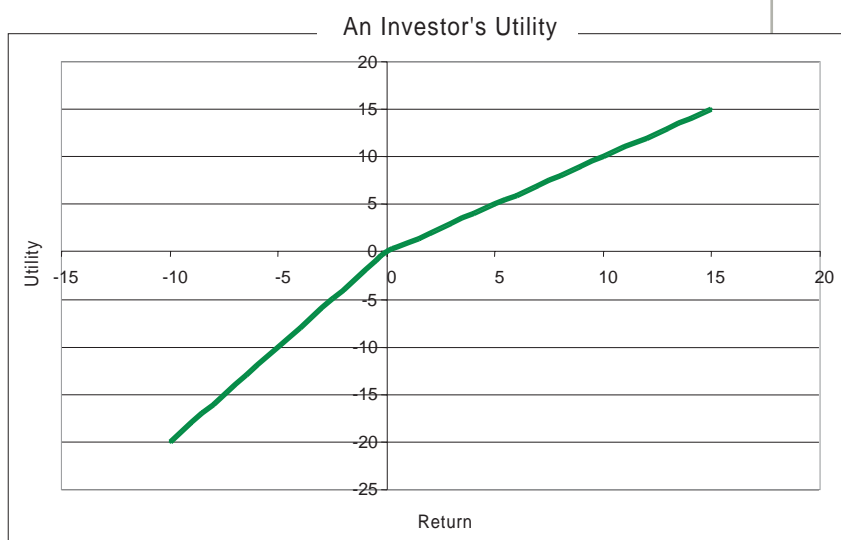
Investor behaviour and behavioural theory have shown that investors are painfully averse to experiencing losses in the financial markets – so much so that they feel at least twice as much pain from a loss than the pleasure they would feel from the equivalent gain.

In the late seventies, Prospect Theory made significant breakthroughs in determining how investors actually make decisions when faced with the prospect of incurring losses or when confronted with financial market risks. Over the past few decades further work has been done in developing and fine tuning this theory, initially developed by Daniel Kahneman and Amos Tversky in 1979. The key findings are that instead of basing decisions on the levels of their final wealth, investors instead tend to focus on the gains and losses they could make along the way. They also exhibit a strong degree of loss aversion, as described above and illustrated in the graph below, and that makes them more likely to sell quickly if they have earned profits and less likely to sell if they are running losses.

The investment business has since specifically catered for the behaviour revealed in Prospect Theory, developing funds with asymmetric return profiles, namely products that limit the downside, while still capturing some of the upside. These funds, broadly known as absolute return funds and structured funds, offer different degrees of capital protection and generally aim to deliver consistent, positive real returns — an investment objective we refer to as risk-managed beta.

What is currently in vogue is to pay for alpha and not beta, with investors regularly advised to build a portfolio that has a core portion managed by a passive manager and to surround this with various satellite funds that deliver alpha. However, alpha is rare, expensive and often unreliable. And, though products that offer beta may be cheap, they are also much more risky, with the investor participating fully in market volatility. Thus, we would recommend that the investor pay less attention to achieving elusive alpha and rather focus on protecting beta.

In the example we use a utility function to measure investor satisfaction. It shows an investor can be potentially more satisfied with a product that aims to deliver asymmetric returns (risk-managed beta) than if they had been invested in a product delivering alpha or one that tracked the markets, offering beta — even if the latter two funds ultimately delivered better returns during the period.



In the example below, we have looked at the period between January 2003 and June 2004. This period covers both bear and bull market cycles. We show three return profiles: a manager delivering alpha; beta (the market); and a manager providing risk-managed beta. What is notable in the risk-managed beta profile is that the fund does not participate fully in the downside experienced by the beta portfolio, nor does it participate fully in the upside.

Investor Utility						
	ACTUAL MONTHLY RETURNS			UTILITY		
	Alpha*	Risk-managed beta**	Beta***	Alpha*	Risk-managed beta***	Beta***
Jan-03	1.5	-1.8	-5.0	1.5	-3.7	-9.9
Feb-03	1.0	-1.5	-4.3	1.0	-3.0	-8.6
Mar-03	0.3	-1.9	-7.9	0.3	-3.8	-15.9
Apr-03	1.5	1.7	-1.7	1.5	1.7	-3.3
May-03	-3.3	3.8	14.1	-6.6	3.8	14.1
Jun-03	3.7	-0.1	-2.2	3.7	-0.1	-4.4
Jul-03	-0.5	1.4	5.7	-0.9	1.4	5.7
Aug-03	-0.6	0.7	5.1	-1.3	0.7	5.1
Sep-03	2.4	-0.3	-2.9	2.4	-0.5	-5.7
Oct-03	-0.1	4.3	9.8	-0.1	4.3	9.8
Nov-03	2.9	0.6	-0.2	2.9	0.6	-0.5
Dec-03	-0.4	3.1	6.9	-0.8	3.1	6.9
Jan-04	-1.6	2.2	4.6	-3.2	2.2	4.6
Feb-04	0.5	-0.2	0.5	0.5	-0.3	0.5
Mar-04	1.5	0.3	-1.4	1.5	0.3	-2.8
Apr-04	1.7	-0.5	-2.4	1.7	-1.1	-4.7
May-04	-1.4	0.1	0.3	-2.8	0.1	0.3
Jun-04	4.0	0.2	-2.7	4.0	0.2	-5.4
Total	13.6%	12.6%	14.7%	5.3%	6.0%	-14.3%

Utility Function:
 $U(x) = x$ if $x > 0$
 $U(x) = 2x$ if $x < 0$
Where x is the monthly return

Source: S&P Fund Services and Old Mutual Investment Group SA
* Old Mutual Top Companies Funds' excess returns over FTSE/JSE All Share,
** Old Mutual Dynamic Floor Fund, *** FTSE/JSE All Share Index

Based on the different value the investor attaches to positive and negative returns, as spelt out in Prospect Theory, we have calculated what the utility of an investor would be on a month by month basis over the period dealt with in the example and for the different investment strategies. According to the theory, the investor experience of a loss is twice that of an equivalent positive return. Thus, in March 2003, when the beta portfolio declined 8%, the investor would have experienced a 16% loss in terms of the theory. But in May 2003, the investor who made 14% in the beta portfolio, would have experienced a 14% experiential gain.

In the example, the investor ends up having the most positive utility or experience in the risk-managed beta fund, better than his experience in both the alpha-generating fund and the beta fund. This is despite the fact that over the 18-month period the investor in the risk-managed beta fund achieves the lowest return of the three portfolios (13% versus the 14% delivered by the beta fund and 15% by the alpha fund). In fact, the investor's experience in the beta fund is strongly negative (-14%) even though it achieved the highest return over the period.

This potentially better experience for some investors, who are more comfortable avoiding the losses incurred during market cycles than participating in the ups and downs but ultimately ending up with a positive return, explains why they are willing to pay a premium to investment managers for products that aim to protect their capital from any possible downside.

Over time, fund managers have found more sophisticated ways of delivering risk-managed beta than before, and the cost of the protection used in managing the funds has also come down — increasing the efficiency of providing risk-managed beta to investors.

IN CONCLUSION, WE ASK:

- Shouldn't investors spend more time managing their beta, rather than chasing alpha and;
- Is their portfolio being protected in the most efficient way?

GETTING THE BEST VALUE OUT OF HEDGING MECHANISMS

A simple way to insure your portfolio is to buy protective put options from a bank. These options will pay out if the market falls, so that the losses from beta are offset by the gains from hedging. If the market goes up, you get the positive beta and lose the option premium. The resulting return profile on your total portfolio will be a better fit for your investment objectives: it will increase your utility compared to an unhedged portfolio, even taking into account the option premium.

The ways to add value in using options to hedge a portfolio could be:

- Choosing the right combination of term and strike to best match the payoff profile with the investment need.
- Fitting an optimal hedge to the portfolio by limiting tracking error.
- Trying to reduce the option premium spend by selling out-of-the money puts or calls (e.g. in a collar or fence strategy).

Of course, the banks selling these options build in a margin to provide for the risk they are taking, as well as to provide profits for their shareholders! So a way to cheapen the cost of insuring a portfolio is to use dynamic hedging rather than bought options.

Dynamic hedging is a strategy of providing capital protection by cutting risk when the portfolio is falling, and increasing risk when it is rising. Typically this is done by switching between risky assets (e.g. equities) and risk-free assets (e.g. cash). In the event of an extended bear market, the portfolio could even switch entirely into cash to make sure that capital is fully protected.

The return profile of a dynamic hedging strategy is similar to that of an option-based hedging strategy. Market losses are hedged out (by switching into cash) but the portfolio benefits from positive beta by switching into equities.

The difference in the two strategies is that the dynamic hedger pays the cost of realised (actual) market volatility, whereas the option buyer pays the cost of implied (bank price) volatility. Research by Peregrine Securities over the 10 years from 1996 to 2006 indicates that there was a cost saving of at least 3% a year by hedging with realised volatility instead of implied volatility. Although there were periods where realised volatility was higher than implied (and dynamic hedging would underperform), over the longer term the cost saving has been substantial and would have materially increased investor returns. This shouldn't be a surprise, as the banks selling at (higher) implied volatility are not running charities, and would expect to make profits while providing investors with products. It is by saving some of this margin that the dynamic hedger can add value. ▲



Terry Burnham
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Why we get risk wrong: the biological and neurological basis of risk management

The assessment of financial risk is a central tenet of any investment strategy. Most investment managers utilise a risk model within the framework of their investment process. Despite this, many investors either analyse financial risk incorrectly or, even when they do make correct assessments, fail to act on them in a consistent and rational manner. Recent biological and neurological studies suggest that our problems with managing risk are firmly entrenched in our minds. Thousands of years of biological history have built us to react to risky situations in particular ways – ways that can be costly in current financial markets.

(Acadian Asset Management is one of the US investment managers in the Old Mutual Group)

In this paper, we discuss the irrational behaviour we tend to exhibit when assessing risk, explain how our neural circuits are partly responsible for this behaviour, and examine the biological rationale for our proclivities towards financial risk. We then illustrate how a structured, quantitative investment approach can not only circumvent our built-in cognitive flaws, but also profit from the mistakes made by others.

FLAWED RISK ASSESSMENT

The behavioural literature has firmly established that people are not particularly good at handling probabilities and risk. Recent work has established the neurological and biological basis of these behaviours. Before we discuss the new findings, we highlight some of the important studies illustrating humans less than perfect risk machinery.

THE HIV TEST QUESTION

A group of Harvard Medical School doctors and staff were given this hypothetical scenario: A woman asks her doctor for an HIV test. The doctor feels that it is unnecessary, given that only one person out of a thousand with her age and sexual history is infected. However, the doctor agrees and finds that the patient tests positive for the virus. If the HIV test is 95% accurate, what is the chance that the woman is actually sick?

The most common response given by the Harvard group was 95%. The correct answer, however, is slightly less than 2%¹. What could explain such a wide variance between the perceived and actual answer?

The truth is that we are all built to suffer from flawed risk assessment. In the example above, the respondents were engaging in base rate neglect — in this case the tendency to overestimate the probability that any one individual testing positive is actually sick, while ignoring the broader statistical context. Note that in a group of one thousand people with this patient's background, one person is sick and the rest are healthy. Among the healthy individuals, a 95% accuracy rate indicates that fifty (5%) will receive a falsely positive report. As a result, fifty-one people receive bad news, but only one (just under 2%) is actually ill, as the other fifty have false positives on their tests.

The reason this is labeled base rate neglect is the problem becomes more severe as the underlying likelihood (the base rate) decreases. If only one person in a million were sick, a positive test result would indicate sickness only 0.02% of the time, and yet even Harvard doctors would likely stick to their incorrect 95% assessment.

LOSS AVERSION AND RISK

In addition to base rate neglect, we also tend to exhibit an extreme, irrational hatred of losses. Consider the following two scenarios:

- Scenario A: 80% probability of gaining \$4,000, 20% probability of gaining \$0
- Scenario B: 100% probability of gaining \$3,000

Despite the fact that Scenario A is economically richer, with an expected value of \$3200, the overwhelming majority of people choose Scenario B, the sure thing.

NOW, CONSIDER THESE SCENARIOS:

- Scenario C: 80% probability of losing \$4,000, 20% probability of losing \$0
- Scenario D: 100% probability of losing \$3,000

In this case, despite the fact that Scenario C has an expected value of a larger loss (-\$3200) than Scenario D, most people will choose C because it appears to offer a chance, however small, of avoiding loss altogether ².

Note the inconsistent approach to risk demonstrated by the responses to the two examples, despite their similarity. People tend to be risk averse when considering gains, but risk-seeking when they are facing losses. This is not necessarily irrational, but it causes interesting changes in behaviour when, for example, investments change price and approach the individual's cost.

Furthermore, because people are willing to pay (on average) to obtain certain outcomes, loss aversion can provide an opportunity for others to make money.

IMPOSING IRRATIONAL ORDER ON RANDOM EVENTS

Our ability to assess risk properly is also impaired by our poor understanding of random events — such as a coin toss. In a set of fair coin tosses, people typically predict that 50% of the results will be heads and 50% of the results will be tails. Once a sequence has been generated that is not evenly split, however, people erroneously expect that the overall sequence will quickly revert back to the mean. Similarly, if asked to write down a random series of coin toss results, most people will alternate between heads and tails far more often than actually occurs, failing to incorporate the likelihood of long strings of one or the other appearing ³.

Related to this phenomenon, a study of lottery bets showed that people rarely play numbers that have recently won. The use of a winning number decreases sharply in the week following the win, and use increases only gradually thereafter. Of course, in a fair lottery the odds of a given number coming up are the same each week regardless of past history. If others avoid numbers that have recently won, then it will be economically advantageous to play such numbers because if they win, the payout will be shared among a smaller group of bettors. One study of the New Jersey state lottery showed that the average payout for all winning numbers was \$262, but the payout for winning numbers that repeated within one week of a previous win was \$349 ⁴.

THE NEUROLOGICAL CONNECTION

As noted previously, these and many other kinds of costly financial behaviours have been well documented over the past several decades. What has advanced recently is our understanding of why we behave in this way — the biological underpinnings of the human response to risk.

First, it is important to note that humans are not inherently risk-averse in all settings; rather, our response to risk is often flawed in modern situations. Far from being built to avoid risk, there is a biochemical reward system built into our brain that is stimulated by risk to produce dopamine, a chemical that makes us feel good. There is anthropological evidence that for our human ancestors, risk-taking led to success in obtaining food, shelter and prestige in the group hierarchy. From this perspective, the body's production

of dopamine encourages risky behaviour precisely because that behaviour led to success for our ancestors.

Interestingly, some people are born with a gene that muffles the buzz they get from taking moderate risks. Individuals born with flawed dopamine receptors need to go to more extreme lengths to obtain the dopamine high — thus are born the bungee jumpers, racing drivers, arctic explorers and Las Vegas high rollers of the world. This dopamine-dampener is often called the novelty- or risk-seeking gene. It is even possible to connect this risk-seeking gene with the earliest human migration. Modern humans arose in a small part of Africa and over time migrated to remoter parts of Africa, to Europe, then on to Asia and South America, creating the diverse nationalities we know today. It will come as no surprise that the risk seeking gene is much more common among the populations of today's civilizations that are geographically the most remote from our initial place of origin⁵.

Just as our genes have turned many of us into risk junkies, they have also built into our nature an unwarranted optimism — which in turn deceives us into overestimating our chances of winning. It is a mathematical fact that, as a group, we must be exactly average. When asked, however, we confidently state that we will outlive others, become ill less frequently, and even pick stocks that will outperform the market. By creating such unrealistic beliefs, our genes provoke us into taking greater risks than we otherwise would.

To sum up, our bodies are built to enjoy risk, in part because risk-taking paid off for our ancestors. Even if such tendencies were once useful, the same brain machinery can cause costly behaviour in many modern settings. Given that our brains are designed to handle the risks associated with the world of our ancestors rather than those of today, we tend to run into problems when significant differences exist between the ancestral world and the modern world — such as in financial markets.

IN FLAWS, OPPORTUNITY

The study of human biology offers clues to investor behaviour. This in turn suggests that there are opportunities to profit from biologically-driven irrationality.

there are
opportunities to
profit from
biologically-driven
irrationality

Because humans are fine-tuned for an environment with very little relationship to financial markets, our instinctive responses tend to be harmful to investment success. A variety of studies pinpoint the emotional centres of the brain as the cause of costly behaviours (Lo and Repin 2002; Sanfey, Rilling et al. 2003; McClure, Laibson et al. 2004; Camerer, Loewenstein et al. 2005). If emotional involvement in investing is destructive, the conclusion is that non-emotional processes are more likely to lead to better performance.

Quantitative investment approaches benefit greatly from their innate objectivity. More traditional, fundamentally-oriented firms generally rely on a limited number of security analysts to develop winning investment ideas. If the traditional firm assigns only a limited number of stocks to each analyst, it is conceivable that an analyst can generate some unique insights with regards to earnings trends or growth prospects. In practice, however, there is cause to be skeptical about the likelihood and repeatability of these kinds of insights. As seen with several highly publicised examples (e.g. Enron, WorldCom, Tyco), the human tendency to succumb to charismatic and persuasive corporate executives has led many analysts to greatly underestimate the risk of a given investment.

Sells are another source of irrationality in a fundamental process. It is not uncommon for an individual analyst to fall in love with a stock and feel compelled to defend their recommendation even as the ship goes down. In a typical quantitative process, the cost basis of an investment has no bearing on its current attractiveness, so there is no emotion associated with a potential loss when selling a security. With no personal attachment to any particular company, a quantitative process bases buy and sell decisions solely on empirical evidence.

To provide a concrete example, consider what role the price paid for an investment ought to play in the decision to buy more, sell or hold. The answer, except for tax considerations, is that the purchase

price ought to be irrelevant. However, research suggests that for most discretionary investors, the purchase price plays an important (and costly) role in future decisions. Quantitative processes, in contrast, are designed to circumvent the fallacy of caring about the past.

Finally, a structured process is inherently contrarian, which is likely to be a winning approach to investing in global markets. This helps avoid behavioural problems often realised in more traditional and subjective approaches — such as trend-following and getting too enthusiastic about a market just as it is about to peak.

AVOIDING UNCOMPENSATED SOURCES OF RISK

The biological perspective suggests that particular aspects of the environment can cause money-losing behaviour. One interesting issue has to do with the availability of real-time data, particularly prices. Most investing environments are filled with real-time quotes. Yet the evidence suggests that current price information is toxic to investment returns, because the constant stimulus of rapidly moving prices activates emotional and costly decisions among investors. More real-time price data does not make us smarter about risk. In fact, the explosion of data may even explain why so-called anomalies of mean-reversion and momentum exist in markets.

In contrast, a quantitative process is highly scalable to a large volume of stocks and applies a consistent set of information to every stock in its investment universe. There is no potential for bias towards trading a stock that is the subject of a sudden news item or price change, or even that an analyst simply happens to know more about. Forecasts are accurately comparable across stocks, as the same decision rules are applied consistently.

Furthermore, a quantitative approach treats new information objectively. This avoids both the knee jerk reaction cited above and also its opposite, the delay that often occurs as human cognition works to adjust to new conditions. In a structured process investment decisions are made based on current evidence, without any bias stemming from past perceptions of a company and its prospects.

The ideal investment approach is based on an open and continual flow of information which is automatically incorporated into return forecasts. Objective real-time response to information — myriad pieces of data for each stock, analysed in-depth according to their intricate relationships — is key. This is a task that would be impossible for a human analyst to achieve daily on even a few stocks, let alone the thousands that exist in today's global equity markets.

In addition, quantitative managers typically utilise empirical risk models to help create portfolios with a certain level of expected risk or tracking error relative to a benchmark. These risk models provide insight into the sources of risk within a particular portfolio — is active risk coming from stock selection, from asset allocation, from country or sector allocations, or from market cap or investment style deviations from the benchmark?

An advantage of structured processes in general is the ability to avoid unintended and uncompensated bets. The ideal process will seek to minimise uncompensated sources of risk in portfolios, and to have a good handle on the overall tracking error a particular portfolio is likely to deliver. Leaving such judgments to human intuition can be a costly strategy. Traditional management firms often don't know what their overall bets are or, if they do know, how likely they are to be compensated with excess returns.

CONCLUSION

This paper has briefly touched on issues related to human biology and investor irrationality, and offered some general thoughts on safeguarding against — and even profiting from — these phenomena. To summarise:

- Financial risk is an evolutionarily novel concept. Our brains are built to respond in ways that are often financially damaging.
- Financial markets move based on investor behaviour, and that behaviour is often subjectively based and emotionally driven.
- The best investment decisions are often uncomfortable and counter-intuitive. People are bad at making such decisions on a day to day basis.

- Successful investment approaches remove emotion and subjectivity from the equation.
- The key is to engineer an investment environment for success -- determine objective criteria for buy and sell decisions and then apply these consistently, ideally across the broadest possible universe of opportunities. ▲

Footnotes

- 1 Kahneman, Daniel, Paul Slovic and Amos Tversky, Eds. (1982). *Judgment Under Uncertainty: Heuristics and Biases*. Cambridge, Cambridge University Press.
- 2 Kahneman, Daniel and Amos Tversky (1979). "Prospect Theory: An Analysis of Decision Under Risk." *Econometrica* 47: 263-291.
- 3 Tversky, Amos and Daniel Kahneman (1974). "Judgment Under Uncertainty: Heuristics and Biases." *Science* 185(4157): 1124-1131.
- 4 Terrell, Dek (1994). "A Test of the Gambler's Fallacy Evidence from Pari-Mutuel Games." *Journal of Risk and Uncertainty*. 8: 309—317.
- 5 Chen, Chuansheng, et al. (1999). "Population Migration and the Variation of Dopamine D4 Receptor (DRD4) Allele Frequencies Around the Globe." *Evolution and Human Behavior* 20(5)(September): 309-324.



Old Mutual Investment Group and OMAM (UK) win 25% of all S&P awards

Our wide range of investment expertise was again showcased at the 2007 S&P/Financial Mail Unit Trusts Awards function on 20 March 2007. OMIGSA and OMAM (UK) walked off with numerous performance awards. In total, we garnered 14 of the 55 fund awards on offer – more than any other institution and a quarter of all fund awards!

According to S&P Fund Services, these awards reward not only superior performance, but also the consistency of that outperformance relative to the benchmark of the fund's peers.

The following funds won awards for best relative risk-adjusted performance for periods ending 31 December 2006. An award was received for each period indicated.

FUND	SECTOR	PERIOD	PORTFOLIO MANAGER/S
Old Mutual Financial Services Fund	Domestic Equity: Financial portfolios	1, 3 & 5 years	Tracy Brodziak & Richard Hasson
Old Mutual Mining & Resources Fund	Domestic Equity: Resources & Basic Industries portfolios	1, 3 & 5 years	Mike Schr der
Galaxy Defensive Fund of Funds	Domestic Asset Allocation: Prudential Low Equity portfolios	3 & 5 years	Symmetry
Old Mutual Global Bond Feeder Fund	Foreign Fixed Interest: Bond portfolios	1, 3 & 5 years	OMAM UK
Old Mutual Global Equity Fund	Foreign Equity: General portfolios	3 years	OMAM UK
Old Mutual International Growth Fund of Funds	Foreign Asset Allocation: Flexible portfolios	3 years	OMAM UK
Marriott Global Income Growth Feeder Fund	Foreign Asset Allocation: Flexible portfolios	1 year	Marriott

These outstanding results are further evidence that Old Mutual is geared towards being the number one savings and investment company in South Africa, based on the investment expertise offered by Old Mutual Investment Group (OMIGSA) and its international asset management capability. ▲

S&P Unit Trust Performance Awards for best relative risk-adjusted performance for periods ending December 2006: Old Mutual Financial Services Fund (1, 3 & 5 years); Old Mutual Mining & Resource Fund (1, 3 & 5 years); Galaxy Defensive Fund of Funds (3 & 5 Years). Old Mutual Asset Managers (UK) won awards for the Old Mutual Global Bond Feeder Fund (1, 3 & 5 years) and Old Mutual International Growth Fund of Funds (3 years). Unit trusts are generally medium to long-term investments. The value of units may go down as well as up and past performance is not necessarily a guide to the future. Fluctuations or movements in exchange rates may cause the value of underlying investments to go up or down. You can easily sell your investment at the ruling price of the day (calculated at 15h00 on a forward pricing basis). Unit trusts can engage in borrowing and scrip lending. A schedule of fees and charges and maximum commissions is available on request from the company / intermediary. Old Mutual Unit Trusts is a member of the Association of Collective Investments, SA. Old Mutual Investment Group (South Africa) (Pty) Limited is a licensed financial services provider.

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