the technical analyst

Oct-Dec 2009

The publication for trading and investment professionals

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BEHAVIOURAL FINANCE

Special issue

Markets

Moving average gives bearish signal for Cable

Special Feature

Fund managers give their BF perspective on this year's equity rally

Interview

Kulshan Capital on managing money using behavioural finance

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Welcome

Matthew Clements – Editor

The precise nature of the relationship between behavioural finance and technical analysis continues to be debated by academics and market practitioners alike. Although most would agree that the two are connected, they do both belong in very different worlds; TA on the dealing floor and BF, for the most part, in the university. Bridging this gap is one of the challenges facing both subjects. In this issue, we focus on behavioural finance and how its lessons can be applied to trading and investing in the markets.

We hope you enjoy this issue of the magazine.

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Editor: Matthew Clements
Managing Editor: Jim Biss
Consultant Editor: Trevor Neil
Advertising: Louiza Charalambous
Subscriptions: Vanessa Green
Events: Gerald Ashley
Design & Production: Stuart Field
Printing: Goodman Baylis

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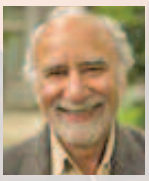

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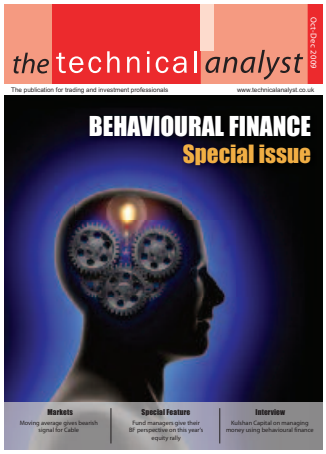

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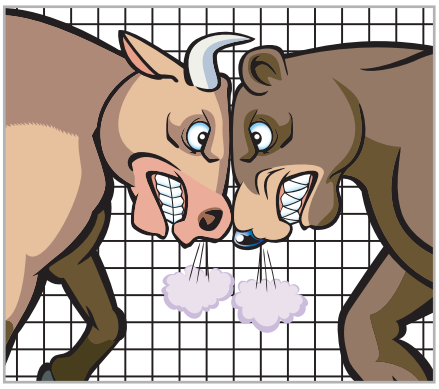
Behavioural Finance
We look at how behavioural finance and market sentiment can be used in making trading and investing decisions.

04 Outlook for GBP/USD



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GBP/USD 260-day MA gives bearish outlook

By Steve Jarvis

GBP/USD peaked at 2.1158 in November 2007, the highest level since May 1981; almost spot-on the 76.4% Fibonacci retracement level of the entire November 1980 to February 1985 2.4460 to 1.0366 decline. The retreat from 2.1158 attempted but failed to leave a higher base around the 1.9339 to 1.9372 area from January to May 2008, eventually breaking down in August 2008, triggering an accelerated decline to an extreme low of 1.3500 in January 2009. This marked the lowest since September 1985. Figure 1 is a monthly bar chart that identifies the key turning points and long-term trendlines of the past 30 years.

Figure 1.

Using the 260-day MA

Figure 2 is a 2-year daily bar chart showing a multi-month base pattern can be identified between January and April 2009. This left a (bullish) failed downwards break below the previous significant bottom at 1.3685 (June 2001). The January-April 2009 base pattern was completed in May 2009 when lower tops at 1.4975 & 1.5368 were taken out, this after a golden cross of the 22 and 65 day moving averages. These moving averages (shown here in green & red) equate to rolling 1-month and 3-month averages and are used to indicate the medium-term market trend.

"FOR THE LONGER-TERM TREND, THE 260-DAY (1-YEAR) MOVING AVERAGE IS PREFERRED OVER THE WIDELY USED 200-DAY LINE".

For the longer-term trend, the 260-day (1-year) moving average is preferred over the widely used 200-day line. The 260-day line is shown here in blue and despite being cleared en-route to the 1.6744 & 1.7041 highs in June and August, even now is still trending lower. Conversely, the 200-day moving average (not shown) has been rising since late July and is currently around 1.5450. →

Figure 2.

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Trainer: Trevor Neil

Trevor Neil is principal trainer for the Technical Analyst magazine. He became a commodities trader at Merrill Lynch in the mid 1970's before going on to work at LIFFE giving technical analysis support to floor traders. In 2000 he became head of technical analysis at Bloomberg where he was responsible for training and technical analysis software development.

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"A RETREAT TOWARDS ITS 260-DAY MOVING AVERAGE IS FAVOURED OVER COMING WEEKS, AND GIVEN THAT THIS LONG-TERM INDICATOR IS STILL FALLING, A BREAK DOWN COULD TRIGGER AN ACCELERATED RETREAT."

Figure 3.

On Figure 3, an enlarged version of the previous one, it can be seen that at the point the multi-month base pattern was completed in May 2009, bullish confirmation was obtained from the MACD (the bottom chart) by way of a higher low above the pivotal zero line. This pointed to a bullish trending phase. As the MACD is constructed from the differential between two moving averages, when it rises from a negative reading this indicates a loss of downwards momentum. It can be an excellent lead indicator, but when the actual readings are still below the zero line, it initially only indicates a "corrective" phase and the signals only become "primarily bullish" when a foothold is established above zero. In most cases bullish confirmation never occurs, so until a trend change is confirmed by the establishment of a higher low above zero, from the outset the rise has to be considered as corrective.

MACD signals

The MACD works in exactly the same way at tops. Figure 3 also shows an excellent example of how the MACD can give a lead signal to a bearish reversal. Here, the indicator peaked in June 2009 but new price highs were made two months later, peaking at 1.7041. Furthermore, over recent months the price action has taken on the appearance of a text book head & shoulders top pattern. The shoulders were almost at exactly the same level (1.6744 & 1.6740) and the neck-line was gently rising. We've seen a breakdown through the neck-line being accompanied by the MACD moving back into negative territory.

As previously mentioned, the market is currently above its falling 260-day (1-year moving average) which now comes in around 1.5475, midway between the 38.2% & 50% retracements of the 1.3500-1.7041 6-7 month recovery at 1.5270 & 1.5688. A retreat towards the 260-day moving average is favoured over coming weeks, and given that this long-term trend indicator is still falling, a break down could trigger an accelerated retreat. A move beyond the 50% retracement at 1.5270 towards former resistance around 1.4975-1.5067, and possibly as far as 1.4336-1.4400 (76.4% retracement / April 2009 higher low), could be witnessed.

To avert the current multi-month bearish outlook, we will need to see a rebound over 1.6428-1.6467, the mid-point of the recent 1.6155-1.6740 recovery and 23 September 2009 lower high. However, at present a recovery towards that area would be classed as corrective, ahead of a lower top triggering a further decline towards the aforementioned targets by year-end.

Steve Jarvis

Steve Jarvis has over 20 years' experience of providing technical analysis to FX professionals. Steve is head of technical analysis at InterpreTA, Tradermade's technical analysis service. Fully annotated Technical commentaries are provided via Maverick, Tradermade's latest web-based charting application. Both major and emerging market FX rates are covered in depth, with intra-day and multi-day analysis applied to real-time charts.

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US STOCKS
Key reversal to watch for the S&P500

By Al Bicoff

The bulls will argue that the US equity market will remain strong due to the weak USD because 40% of the S&P500 profits are derived overseas. The current equity rally is based on the fact that there is nowhere else to find high returns, coupled with the short covering of the non-believers and the Fed monetization. The caveat is that with the 9.2 trillion dollar deficit, where does the weak US dollar become a peril to inflationary pressures? The ongoing paradox is that the low rates in 30-year bonds reflect a fear of deflation, while the gold market is showing inflation. Since China and India are currently in their industrial revolutions and will create around new 700 million middle class, the inflationary pressures will arise from the consumption of homes, automobiles, etc, while the goods they produce will trigger fierce competition, in turn lowering profit margins and deflating prices on finished goods.

A major S&P500 correction may not occur until the USD bases out and begins to show a bullish personality. Until then, equities, gold, crude, grains and softs will all have a bullish undercurrent due to the weak dollar.

The S&P500 left a Key Reversal on 9/23/09 at 1075.50 and a bearish undertone remains until a close above 1075.60 occurs. This means the market is vulnerable into the year end and could correct 7-10% unless a close above this Key Reversal occurs. The daily chart now has key support against the old high on 8/28/09 at 1033.50, coupled with the 21-day moving average at 1036.00. A close below 1033.50 triggers selling down into the 995.00 area.

Figure 1 - S&P500

Key support is now against the 21-month moving average at 1021.80 along with the 38.2% Fibonacci retracement at 1017.50, and the 40-day moving average at 1020.10 (Figure 1). Upside resistance is now against the 21-month moving average at 1081.25 and then against the 50% retracement at 1126.00. The weak USD will remain the upside catalyst to the S&P500, paradoxically firming the crude market which is trading in tandom with stocks. ■

Alfredo Bicoff is President at Technical Analytics in the US


New bull market

or bear market rally?

US STOCKS MARCH-OCTOBER '09

For this issue's Special Feature, we interviewed four leading investment managers to give their views on the rally in equities seen since March this year. We started by asking them if they believe it represents the start of a new bull market, or if it is merely a bear market correction. In keeping with the theme of this edition, we also asked if they think behavioural finance has anything to say about the rally, and the likely outlook for the market going forward. →

Michael Fraikin
Portfolio Manager
Invesco

Is the current rally in stocks (Dow/S&P) the start of a new bull market or merely a bear market rally?

If a bear market means lower lows than I would think it is unlikely, but of course not impossible. I would, however, struggle to believe that we are at the beginning of a great new bull market. If we look at the bull market of 90s, that was underpinned by falling interest rates and growing profits. That is not the environment likely to be in place in the developed markets over the next 10 years. On the other hand, equity returns over the last 10 years have been exceptionally poor so equities have this going for them. Nevertheless, it would be decidedly peculiar if the market got near to, or beyond, the 2007 peak. This will worry market participants.

Can it be said that the market is suffering from a case of overconfidence with regard to stock market valuations?

It does not look like overconfidence to us, at least with regards to valuations. On most measures we look at, equities seem fair to attractively valued rather than expensive. On the other side there is the nagging and widely shared worry that we are going to see the economic underpinnings for these valuations come under pressure again. That said, the rally of the last six months has been largely a rally of "junk" stocks; loss making, highly leveraged, poor earnings development etc which looks overdone.

Do you think that behavioural finance can help explain the V-shaped dip we saw in March?

I would think that as market trends accelerated there was an increasing inbuilt tendency for further accentuating. This will have been fuelled by confirmation bias with an increasing proportion of investors becoming gloomier and gloomier and a growing expectation that the world was likely to see a repeat of the Great Depression and of course not willing to consider alternatives. At the same time investors would have held rather significant tactical underweights in equities and corporate bonds and would have had a strong preference to maintain such a view and positioning. At the same time the market movement of the previous six months was to no small extent caused by redemptions and window dressing – organisations with investments in corporate bonds and equities would have wanted to either eliminate or downsize them much more for the sake of appearances than long term return expectations. But such vicious overshooting will be normal at the end of a strong trend. Equally strong was the recovery in the later part although at least initially the sentiment and perception did not change much.

Are there any behavioural finance biases that you believe have been especially prevalent in the market since the credit crises?

Status quo bias; in that investors have been exceptionally reluctant to change. Loss aversion has also been prevalent with many. Only now, as markets have recovered somewhat, is there more noticeable activity from institutions such as pension funds. Also, confirmation bias in the last 12 months as opinions seems to be even more consensus-driven than normal. Maybe this is a sign of people seeking safety in numbers since if you get it wrong when everyone else does it much less a problem..

→

Mark Schindler
Portfolio Manager
Alternative Investments
Clariden Leu

When does a bear market rally turn into a new bull market?

Many market participants, including myself, have been surprised by the strong and persistent equity market rally seen since March 9th. How can it be explained that so many money managers have been surprised by these developments, and some are still wondering whether to buy into it at these levels as they have clearly been heavily underweight equities. There is this phenomenon called 'basis rate fallacy'.

Let's imagine there are 100 urns with 1000 balls each. 45 of these urns have 700 black and 300 red balls in them, 55 of the urns have 300 black and 700 red balls in them. The first question is, "what the probability is that a randomly chosen urn has more black than red balls in it"? That question is easy to answer; the correct answer is 45%. Now let's assume that from the randomly chosen urn (including putting back), 12 balls are drawn. The result of the drawing is 8 black and 4 red balls. Now question number two: What is the probability that the randomly urn has more black balls in it? The typical answers received are 45% and 67%. However, the correct answer is 96.04% and can be calculated based on the concept of conditional probabilities after the theorem of Bayes.
Ganguly, Kagel and Moser performed a nice academic study on whether the basis rate fallacy also occurs in a market context, and indeed it does. One of the results of their study was that market experience and interaction did not eliminate the base rate fallacy. However, there is no clear evidence whether the rational Bayesian or irrational players dominate the market, and therefore the aggregate price outcomes. This is likely to depend on the strategic environment the actors trade in. If we assume a more adaptive behavior and update of information as, for example, proposed by Andrew Lo in his adaptive market hypothesis, there might a slower and more gradual convergence towards the true rational price, and this is exactly what we are observing currently. So, are we now in a new bull market or just a market rally? With all the positive feedback loops and mental adjustments going on, this market rally might last longer than most people think.

→

Stefan Hofrichter
Director,
European Multi Assets
RCM Allianz Global Investors

Is the current rally in stocks (Dow/S&P) the start of a new bull market or merely a bear market rally?

We think we are not yet seeing the beginning of a new equity bull market in developed equity markets, which we define as a secular rise in real stock prices. Two important conditions, which usually have to be in place at the beginning of a new bull market, have not been met in our opinion. Firstly, equity valuations, while moderately cheap in the US in March 09, have not fallen to extremely low levels (adjusted PE ratios of 10 or lower). Secondly, we expect average economic and, hence, earnings growth over the coming one or two years to be only moderate and not to exceed potential because of the economic headwinds we are still facing, i.e. the deleveraging of the private household sector in many economies around the world, especially in the US. Until private household balance sheets are repaired, we would only expect a sideways equity market, broadly speaking. Nevertheless, the upper end of the trading range could very well be above current market levels.

If you believe the latter, are there any levels the market may be anchored to that may give a clue to where the market may peak?

Several market prices, especially credit spreads as well spreads in money and swap markets, have gone back to levels seen just before the Lehman bust. Applying the same rationale to US equity markets, this would imply for the S&P500 a level of around 1250. Applying performance numbers of historical average equity market rallies post a bear market, which many investors also like to do, we would again come up with an S&P500 level in the area of 1200 to 1250, which could be seen by many market participants as the upper end in this rally. We prefer to look at a combination of market valuation, cyclical indicators and contrarian sentiment indicators to assess whether the market has run its course.

Do you think that behavioural finance can help explain the V-shaped dip we saw in March?

Capital markets since September 08 can very well be explained by BF theory. Just to name a few concepts which can be applied at this juncture: Extreme loss aversion, focus on selective information (fear of depression) and herd behaviour can help explain why markets, not only equities but also corporate bonds and commodities, sold off that sharply after Lehman and why various sentiment indicators were at depressed levels. Contrarian investing in capital markets in March 09, especially in equities and corporate bonds, paid off because valuations, especially in corporate bonds and, albeit to a significantly lesser extent in equities, reflected very negative expectations.

→

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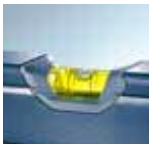

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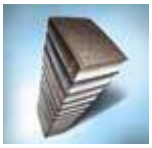

DEPTH
Top five messages for all CME Globex-traded products

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Horacio Valeiras
Managing Director
Nicholas-Applegate Capital Management

Is the current rally in stocks (Dow/S&P) the start of a new bull market or merely a bear market rally?

All the indications are that it is a new bull market, having risen more than 20% and crossed the 50 and 200-day moving averages. The definition of a bull market is a 20% rise. To distinguish from what we would call a significant bear market rally, we also look at relative strength indicators like the index level relative to the moving averages. Worldwide, all markets have surpassed these levels; therefore, we don't believe this has just been a bear market rally.

Can it be said that the market is suffering from a case of over-confidence with regard to stock market valuations?

We believe so because earnings expectations have been beaten with cost cutting, rather than top line growth. Cost cutting can't continue indefinitely; eventually companies have to grow sales to deliver earnings growth. While some sectors, like technology, have seen an increase from very depressed sales levels, the picture is not consistent across the market.

Do you think that behavioural finance can help explain the V-shaped dip we saw in March?

Yes, in February and early March, investors drove equity prices significantly below fair value. They believed that earnings would continue to drop, write-offs would continue to rise, and the financials would continue to suffer. In other words, they were extrapolating recent past behaviour, anchoring in the past, and therefore drove prices and valuations below fundamental value. When the world didn't end, a sharp reversal took place through short covering and then fundamental buying. As we have rebounded, we believe investors have reached a point of overestimation of future prospects.

Indicator Focus:

Technical trading in the FX markets after news releases

By David Furcajg

We look at how the impact on FX rates of news releases can create trading opportunities that can be exploited using simple technical analysis strategies.

How can technical analysis respond to the exogenous shocks, such as news releases, that disturb the price formation process and provoke extreme reactions? In our view, exogenous disturbances affect the efficiency of technical analysis.

Introduction

The FX market is the ideal laboratory to try to understand the movement of prices after an exogenous disturbance. Macroeconomic statistics (exogenous disturbances) are released at regular times and dates every month of the year. So, it is quite easy to examine a broad spectrum of data to quantify the impact and analyse the reaction on prices. In order to determine a typical reaction, we analysed a sample of price data, following the publication of 14 US macroeconomic news releases between 1st January 2005 and February 2009. The data sample includes: the highest, lowest, opening and closing prices of each candle.

The frequency of these data is one minute and our analysis covers the 120 minutes following each macroeconomic publication. We analyse the impact of these publications on the following nine pairs of currencies: AUDUSD, USDCHF, USDJPY, EURUSD, GBPUSD, EURJPY, GBPJPY, USDCAD, and NZDUSD. The aim being to determine which macroeconomic news has a major impact and which are the currencies which react the most violently? Once all this information is gathered together, we analyse the direction of currency prices with substantial volatility. Those that fluctuate strongly enable us to plan a trading tactic using conventional technical analysis tools.

To determine the impact of macroeconomic news on FOREX, we developed a synthetic index based on analysis of prices after the release. This index depends for 70% on the average spike observed in the first three price bar candles with a frequency of one minute (here we understand a spike to be the difference between the high and the low of a candle). We attribute the remaining 30% to the range, the measure of the difference between the higher and the lower price over 120 trading minutes.

We weight the spike (AS) more because we believe the immediate reaction of prices concentrates more information concerning the emotional state of the market than the range (see Figure 1). Moreover, this approach is fully justified as the range can undergo other shocks in the 120 minutes following the publication. And, we wanted to isolate the impact of a single shock. →

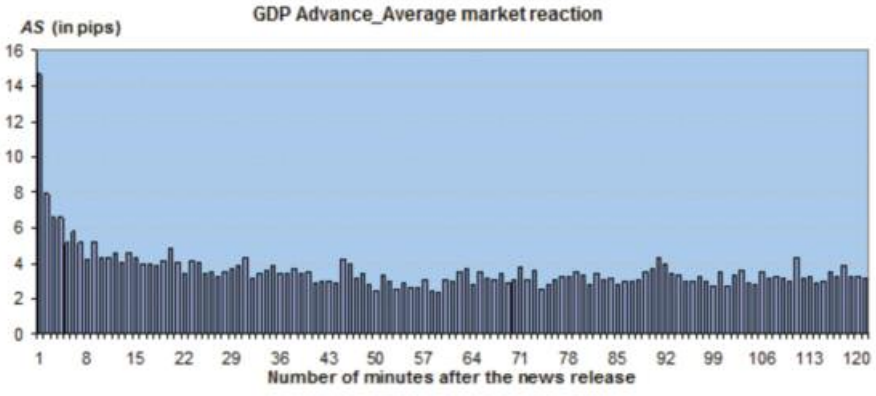

Figure 1.

Currency / Impact									
Rank / Economic Indicator	Strong Impact				Medium Impact			Weak Impact	
1 / Non-farm payrolls	GBPJPY	GBPUSD	EURUSD	USDCHF	EURJPY	USDJPY	USDCAD	AUDUSD	NZDUSD
2 / GDP Advance	GBPJPY	GBPUSD	USDCHF	EURUSD	EURJPY	USDJPY	USDCAD	AUDUSD	NZDUSD
3 / Trade Balance	GBPJPY	GBPUSD	USDCAD	USDCHF	EURUSD	EURJPY	USDJPY	AUDUSD	NZDUSD
4 / CPI	GBPJPY	GBPUSD	EURUSD	USDCHF	EURJPY	USDCAD	USDJPY	AUDUSD	NZDUSD
5 / Retail Sales	GBPJPY	GBPUSD	EURJPY	EURUSD	USDCHF	USDJPY	USDCAD	AUDUSD	NZDUSD
6 / ISM Index	GBPJPY	GBPUSD	EURJPY	USDCHF	EURUSD	USDJPY	AUDUSD	USDCAD	NZDUSD
7 / PPI	GBPJPY	GBPUSD	EURJPY	EURUSD	USDCHF	USDCAD	USDJPY	AUDUSD	NZDUSD
8 / NY Empire State Index	GBPJPY	GBPUSD	EURJPY	EURUSD	USDCAD	USDCHF	USDJPY	AUDUSD	NZDUSD
9 / Durable Goods	GBPJPY	GBPUSD	USDCHF	EURJPY	EURUSD	USDCAD	USDJPY	AUDUSD	NZDUSD
10 / Chicago PMI	GBPJPY	GBPUSD	EURJPY	USDCHF	EURUSD	USDCAD	USDJPY	AUDUSD	NZDUSD
11 / Industrial Production	GBPJPY	GBPUSD	EURJPY	EURUSD	USDCHF	USDCAD	USDJPY	AUDUSD	NZDUSD
12 / Consumer Confidence	GBPJPY	GBPUSD	EURJPY	USDCHF	EURUSD	USDJPY	USDCAD	AUDUSD	NZDUSD
13 / Existing Home Sales	GBPJPY	GBPUSD	EURJPY	USDCHF	EURUSD	USDCAD	USDJPY	AUDUSD	NZDUSD
14 / New Home Sales	GBPJPY	GBPUSD	EURJPY	EURUSD	USDCHF	USDJPY	USDCAD	AUDUSD	NZDUSD

Table 1.

Figure 1, shows for example, the average spike (AS) of the reaction of 9 currencies to US 'GDP Advance' statistics between January 2005 and February 2009.

As one can see, the first few minutes are very volatile. But the spike falls considerably as of the second candle. The spike observed as of the 5th minute is equal to 5 pips whereas the spike in the 120th minute is equal to 3 to 4 pips. According to our tests, the same applies for all other macroeconomic statistics.

Figure 2.

Empirical results

To make it easier to read the results, we sort currencies directly as a function of the way they are disturbed by the various macroeconomic statistics. Table 1 shows that the US employment report produced the most extreme reaction, followed by GDP, the trade balance, CPI and retail sales. This table goes even further as it puts the reaction of currencies in order: if you read the table from left to right, you can see the currencies most affected by each shock and those which show little reaction.

Whatever the disturbance, the GBPJPY systematically takes first place in terms of reaction. It is followed by the GBPUSD which comes in second place. And the currencies very little affected by the macroeconomic news are the NZDUSD and AUDUSD. The interest of this table lies in the fact that it clearly shows information in terms of risk. Therefore, holding a position in GBPJPY before a macroeconomic announcement involves a much higher risk than a similar position in NZDUSD or AUDUSD. For an investor with a short-term horizon (intraday), these results reveal that before a publication, it is preferable to be out of the market, or to reduce exposure or/and adjust the stop loss, for currencies such as GBPJPY, GBPUSD, EURUSD, USDCHF and EURJPY.

Trading opportunities

In order to determine trading opportunities, we examine the average direction of the market between the moment the macroeconomic statistic is revealed and 120 minutes of trading after publication. According to our calculations covering the entire sample, the market on average always changes direction during the tested period. By way of example, Figure 2 below shows the GBPJPY price following publication of GDP Advance on 30 October 2008. This graph is the result of calculating the difference between the opening price of the first bar and the closing price of the following 120 candles.

After emphasizing that the market, on average, changes its direction and forms two extremes in the period under observation, we calculate the average time, in minutes, needed to form the extremes. We then concentrate on the pairs of currencies that are very sensitive to the most disturbing macroeconomic news (the top left part of Table 1).

Results summary

Between January 2005 and February 2009, the GBPJPY on average reached its first extreme after 8 minutes following the publication of the US →

employment report (NFP). The second extreme was reached after 66 minutes. The standard deviation associated with the first extreme is 16 minutes whereas the standard deviation for the second extreme is 33 minutes. Hence, the first extreme is on average reached rapidly (in a few minutes). The standard deviation associated is not excessive which reinforces the analysis in terms of average.

Furthermore, we observe that for the same macroeconomic release, the different currencies provide more or less the same results, which means that when a major macroeconomic announcement is made, strongly affected currencies hit a peak or a trough at very much the same time. In other words they are strongly correlated, thus we can use intra-market analysis to draw up a trading tactic.

These results highlight a certain number of characteristics that we can use to determine specific trading tactics using technical analysis.

1. Analysis of the spike demonstrates that it is best to avoid placing orders around the time of a macroeconomic announcement. Given the excess volatility, transaction costs are much higher: FX brokers considerably expand their spread when volatility is high.

2. Not all macroeconomic news has the same impact and not all currencies react the same way. A trading tactic based on technical analysis should concentrate on the currencies strongly affected by the macroeconomic news. In fact, the greater the impact, the greater the range in pips. Concentrating on volatile currencies enables one to anticipate a potentially ample movement of prices and so increase the expectation of gain.

3. Given that the market forms on average two extremes and that between these two, broad movements can develop, technical analysis tools must concentrate on detecting the first extreme and its reversal. However, the standard deviation associated with the average of the first extreme is not excessive but reveals this possibility, namely the immediate adoption of a trend; or a very rapid false signal (lasting one or two minutes), then the move into a trend that the market will maintain for 120 minutes.

4. The existence of strong correlations between currencies enables one to use intra market analysis and especially to determine which is the leading currency, namely the one whose movement has a lead time on the others?

Trading examples

The graphs present a market reaction for various currency pairs following the release of macroeconomic news accompanied by few trading tactics based on factors that we have highlighted.

Trading Tactic 1: Strategy based on the detection of the first price extreme to take advantage of the range (R) between extreme one and extreme two.

At 14h29 and 14h30 (Figure 3), we see two candlestick price bars →

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"THE EXISTENCE OF STRONG CORRELATIONS BETWEEN CURRENCIES ENABLES ONE TO USE INTRAMARKET ANALYSIS"

Figure 3 - GBPJPY on 30th October 2008 / GDP Advance / 1-minute frequency chart

whose body is far deeper than normal. Volatility increases just before and after the publication of the GDP advance release figure. The candle of 14h30 is a bullish engulfing pattern which triggers an upside acceleration. The market then forms a double top between 10 and 15 minutes after the publication which corresponds to our estimates concerning the first extreme. On breaking the neckline, it would be best to sell the GBPJPY in anticipation of a broad movement because this currency has a potentially high range (R). Also, the position must be maintained so long as the trend does not weaken. In that regard, the spacing of the Bollinger Bands and prices that stick to the lower band clearly show the trend continues. At 3p.m. the bearish structure gives signs of weakness whereas the RSI is oversold. A doji is forming while prices are reintegrating the Bollinger Bands. The market forms the second extreme and the position can be closed.

Trading Tactic 2: Strategy based on intra-market correlations

We have emphasized that, generally, intra-market correlations are especially strong on publication of macroeconomic statistics.

Figure 4 presents the USDCHF on publication of the US employment figures. Before the publication, prices were trading within a trading range between 1.0921 and 1.0975. Actually, the market is waiting to hear the news before adopting a direction. At 2:43 p.m., a candle closes above the upper bound of the range at 1.0975 while the Bollinger Bands expand; the market has taken a direction.

As the correlation between major pairs and the USDCHF is very strong, it enables us to plan a trade using the leading chart (the USDCHF) to implement strategies on lagging ones, knowing that at 14:43, the USDCHF has chosen a direction.

Trading Tactic 3: Profit from an immediate adoption of a trend

As already described, the market does not necessarily form two extremes: in some instances, it starts a trend immediately. In other words, the market adopts and maintains a single direction following the macroeconomic →

Figure 4 - USDCHF on 9th January 2009 / NFP / 1-minute frequency chart

Figure 5 - GBPJPY on 9th May 2008 / Trade Balance / 5-minutes frequency chart

news. So, strategy 3 consists of trying to take advantage of a definitely bullish or bearish movement. In order to optimise the probability of success, we suggest using a double analysis horizon to eliminate noise (false signals). Here, we observe simultaneously a graph with a 5-minute frequency and another with a 1-minute frequency. The upper horizon graph enables one to determine the trend while we use a 1-minute frequency graph to implement the strategy.

We can see on Figure 5 that the trend since the beginning of the day was bearish. On publication of the trade balance figures, the trend that prevailed completely reversed. The conjunction of two technical elements confirms the turnaround: the formation of a V-bottom and a bullish engulfing pattern. Note that the latter envelops the body of the four preceding candles (or 20 minutes of trading) which makes it much more pertinent. A third element strengthens the idea that prices turn upwards: they break above the 21-hour exponential moving average (EMA - see the encircled part). The combination of these different technical factors is seen as a sign of strength: a bullish trend is developing.

Let us now use the 1-minute graph (Figure 6) to implement a strategy.

Figure 6 also includes some elements of strength following the publication of trade balance figures: the formation of ascending lows while prices evolve above the moving average. Breaking that key level at 200.4479 would be the time to take a long position with a stop-loss below the previous low point. It can be maintained so long as the conventional trend monitoring parameters are not broken. In this regard, breaking of the lower limit of the ascending channel at 4p.m. forms a possibility. ■

David Furcajg, CFTe, MFTA, is a technical strategist at 3rd Wave Consult in Paris

Figure 6 - GBPJPY on 9th May 2008 / Trade Balance / 1-minute frequency chart

"BETWEEN JANUARY 2005 AND FEBRUARY 2009, GBPJPY ON AVERAGE REACHED ITS FIRST EXTREME AFTER 8 MINUTES FOLLOWING THE PUBLICATION OF THE US EMPLOYMENT REPORT."

Calibrating a stop-loss for higher performance

By Michael Ervolini and Harold Haig

Between great buys and alpha lays position management

Equity managers can and do deliver alpha. Yet few portfolios produce it consistently. New research shows that even when a manager generates alpha through effective buys, the likelihood of delivering superior performance is low. So what happens to the overall performance of portfolio decision making?

The precious distillation of research, discipline and judgment used in selecting a name can be dissipated through the many decisions required to maintain a stock in the portfolio. Decisions such as, how quickly should full position weight be reached? Is it more effective to add on the way up or on the way down? How great a loss is required to discredit a thesis? Is it better to bank a gain or let it run? When should a stock be sold? The decisions managers make in the face of questions like these are termed "position management." Although managers often presume that their approach to position management is effective, this conviction is being challenged by a growing body of portfolio research supported by applied behavioral finance.

Well over $400 billion of equities have been studied by Cabot Research. The findings show that while many managers successfully generate alpha with their buys or stock picks, it is common to give this and more back through ineffective position management. The reverse was also discovered, in that stock selection results in negative alpha for a good portion of managers, but they capture significant alpha through their skilled position management. Either way, position management can make or break portfolio performance.

And that brings us to the good news. Portfolio results are easily improved for a wide array of managers – technical, traditional and quantitative alike. The improvement comes without altering the manager's strategy or style. Instead, managers develop greater self-awareness and use this information to improve their decisions at the margin. Honing position management can add at least 100 basis points of incremental performance in 80% or more of portfolios, with opportunities in excess of 250 basis points identified in 40% of situations.

Strengthening position management alone is no cure for a weak strategy. But when combined with buying that works, enhanced position management can raise results above the benchmark or into the next quintile ranking. It can also mean the difference between positive or negative alpha.

The buying bias

Buying stocks is the primary focus within the equity industry. The heavy attention given to buying is supported pragmatically and behaviorally. As a practical matter, few managers are able to consistently deliver attractive returns absent strong buys. Most rely on a central strategy of picking names that will outperform. And so they hone this skill extensively throughout their careers.

Buying also offers psychic benefits. Terrance Odean, the Willis H. Booth Professor of Banking and Finance at the University of California, Berkeley, explains, "Buying is very much forward looking and hopeful, whereas selling is mostly backwards looking. Since many picks do not play out as hoped, Professor Odean adds, "Selling disappointing positions brings with it regret. Managers naturally prefer to spend more time doing what is hopeful rather than dealing with regret."

Narrow focusing, however, has elevated buying at the expense of other aspects of portfolio management. The asymmetry in energy and attention given to buying, versus position management, is illustrated in the different quantities of professional and academic literature. Boundless articles and books have been written on buying strategies. In contrast, the body of work supporting position management is rather paltry. Limited results are encountered when searching for rigorous studies or advice on building position weights, making adds to current positions, and selling positions effectively. Regarding the familiar stop-loss, Professor Andrew Lo of The Massachusetts Institute of Technology noted, "Although stop-loss rules are widely used, the corresponding academic literature is rather limited." The same buy-centric perspective is mirrored in the scarcity of analytic offerings to support post-name selection decisions. Virtually all systems are designed to help managers make better buys and construct optimal portfolios. Managers have an extensive body of literature, conceptual frameworks and tools to help them learn how to buy. It is time to improve the remaining decisions that go into portfolio management.

Balancing portfolio management

This paper outlines a novel approach developed for assessing and refining position management. Calibration of the stop-loss rule is used to:

(i) Demonstrate the benefits available from more effective position management.
(ii) Underscore the need to refine position management with rigorous analysis of each unique portfolio.

The phrase stop-loss brings to mind a stop-loss order. This is a standing sell order that the broker will execute when a stock's price drops below a pre-defined price or percentage decline. Stop-loss orders are used by professional and retail investors alike. They are not, however, the focus of this discussion.

The stop-loss rule

More reflective of professional portfolio management is the stop-loss rule. This rule is part of a manager's process that promotes a review of positions whose losses warrant reassessment and possibly action. Unlike the order, which is executed by the broker based on predetermined price limits, the stop-loss rule may not result in selling. Instead, managers make final judgments regarding positions that hit the →

stop-loss rule weighing all the information available regarding the stock and its thesis.

Current stop-loss rules reflect heuristics rather than rigorous analysis. Managers develop a sense of what would have worked in the past, and then put that rule-of-thumb in place. Technical analysts commonly use a fixed price rule, often setting their stop at the current support level; whereas conventional or fundamental managers are more likely to employ a percent loss approach – using the stop-loss as a form of risk management. Occasionally, managers perform studies of past holdings to gauge when a stop-loss might have helped. Analysis of this type generally stems from 'if only I had' insights, rendering such conclusions more of what behavioralists term Counterfactual Thinking than effective calibration. Rarely, if ever, are today's stop-loss rules subjected to the same level of rigor applied to the process of picking names.

"TECHNICAL ANALYSTS USE A FIXED PRICE RULE SETTING THEIR STOP AT THE CURRENT LEVEL, WHEREAS FUNDAMENTAL MANAGERS ARE MORE LIKELY TO EMPLOY A % LOSS APPROACH."

Stop-loss rules as currently formulated simply are not adequate. Their shortfalls include:

a) Adoption on faith. Managers wonder, but have no real understanding, if their stop-loss order regime will improve or worsen portfolio performance;

b) Absolute confusion. Conventional implementations define losses on an absolute basis and this leads to unintended over-selling;

c) Execution with prejudice. Choosing whether to follow the stop-loss heuristic every time, most times or occasionally, is a judgment influenced by what feels right in the moment rather than rigorous analysis.

In practice, this rule-of-thumb approach urges managers to sell on volatility rather than thesis erosion. It can cloud the distinction between effective stock management and riding on momentum. Applied mechanically, these uncalibrated stop-loss signals can result in locking in losses while forfeiting the opportunity to participate in rebounds.

The primary benefit of the simplistic stop-loss is helping managers overcome the tendency to avoid selling losers (see The Disposition Effect and Loss Aversion). But, substituting a weak rule for an ineffective behavior is no bargain. Dealing smartly with losing positions is important – so much so that its management deserves a more thoughtful approach. One that reflects analytic rigor and promotes greater self-awareness for the manager. In other words, a stop-loss rule that works requires a lot more behind it that a good feeling.

The better stop-loss

When weaker positions are pushed out in a timely manner, the portfolio has a better chance to deliver desirable performance. Culling out the weaker holdings enables more capital to be deployed into positions with greater promise. A well-conceived stop-loss, therefore helps managers eliminate positions that are likely to continue under-performing while freeing up "dead money" for alpha generating opportunities.

Stop-loss requirements

An effective stop-loss must meet four basic requirements:

1. It should help the manager identify under-performing positions, that warrant sell consideration;

2. It should promote sell candidates in a way that avoids over-reaction to volatility or a bear market (e.g., sell everything), or to sector cyclicality (e.g., sell off all financials);

3. It should promote for consideration positions reflecting a high likelihood of continued under-performance, based on rigorous portfolio analysis; and

4. It should support the manager's use of judgment in deciding when to sell and when not, through fostering greater self-awareness together with timely nudges.

Such a stop-loss will aid the manager in improving portfolio performance across market cycles, while avoiding over- and under-reaction to volatility. It also avoids creating unintended style shift or sector concentrations.

A stop-loss that stops losses

The implementation of a truly effective stop-loss demands: a) that losses are measured on a relative basis, b) the parameters for triggering the stop are developed for each portfolio uniquely, and c) the manager receives daily signals [or alerts regarding positions] that meet the stop-loss requirements and whose thesis should be rethought.

A relative loss

Most commonly, a loss refers to a stock price that falls below its basis. This absolute approach is fine for figuring out returns and taxes, but can produce unintended conse- →

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quences from a stop-loss. For example, suppose that the stop-loss threshold is 20%. What would have happened in the fifteen months leading up to March 2009? Is it realistic to assume that most, or even some, managers would have sold off the majority of their holdings as prices dropped on average by 50%? Probably not. Instinctively, managers understand that following an absolute loss trigger in this environment can push the portfolio too far. A stop-loss based on relative performance, therefore, can help avoid unintended over-selling in extreme markets.

The relative argument extends beyond to sector performance. If the stop-loss trigger simply becomes any position whose relative performance is 20% below the benchmark, then overselling of under-performing sectors will occur. Most managers want to manage losses but maintain an exposure to their active sectors. That suggests that a stop-loss should encourage selling the under-performers within each sector while retaining its stronger names.

Taking into account these attributes, a loss for the purpose of triggering a stop-loss, can be defined as the amount by which the return of a position is below the average return for its sector, measured over the position's holding period, properly adjusted for all adds and trims. This definition represents the position's margin relative to its sector. Thus a position with a positive margin is a winner and one that has a negative margin is a loser. Positions whose negative margin meets, or exceeds, the threshold established uniquely for each portfolio will trigger the stop-loss rule and be reevaluated.

Individual calibration

Most portfolios exhibit consistent tendencies when examined over sufficient histories (say 5 years). Just as alpha-generating decisions can be consistent, so can weaker ones. For example, a rigorous analysis of a portfolio history can expose if a stop-loss can help, how much it might improve performance, and when and how it should be triggered. There are three steps involved in calibrating a stop-loss:

a) Conducting historical analysis to identify stop-loss rules that would have helped if implemented
b) Assessing if a rule from one time period will continue to deliver benefits into the next time period
c) Computing if the rule might provide reliable benefits into the future

Rule candidates: The first step is to learn if a stop-loss might have helped during a portion of the portfolio history. This is known as in-sample analysis. This type of analysis can identify promising opportunities where, on average, a stop-loss rule having specific parameters would have actually helped the portfolio.

One very simple approach to measuring benefit is to determine if positions triggered for sale by the rule then proceeded to experience positive or negative returns. If the majority of stocks experienced negative returns subsequent to being pushed out then, by this method, the stop-loss rule would have been beneficial. As intuitive as this approach is, it does not actually indicate if the portfolio would have been better off if the stocks were held or sold.

Answering this question requires looking at the portfolio returns before and after the stop-loss is implemented. It assumes that the proceeds from each stop-loss sale are reinvested back into the balance of the portfolio. The resulting "adjusted portfolio" includes all the holdings of the actual portfolio with two exceptions: a) the length that some positions were held would be shortened as they triggered the stop-loss rule and were sold, and b) the weights of the remaining positions would be slightly larger as proceeds were reinvested. The performance of this adjusted portfolio would reflect all of the manager's actual buy and sell decisions plus the effect of the stop-loss rule. The difference in performance between the adjusted portfolio and the actual portfolio indicates the effectiveness of the rule – a positive difference means that the rule helped and a negative difference means the rule did not help.

Forward benefit: Next the promising in-sample rules are tested using out-of-sample data. This is simply part of the portfolio history that is subsequent to, and not used in, the in-sample analysis. For example, if the in-sample analysis is based on months 1-24 of a 60 month history, then the out-of-sample test would begin in month 25 and run for perhaps six months or so to test how well the in-sample rule performs going forward. The results of these returns are compared to the corresponding months of the actual portfolio to determine the benefit for each test. A positive difference indicates that the out-of-sample results for the rule are beneficial. The same two step process (in-sample, out-of-sample) is then advanced by several months and performed again (say starting in month 4 and going through month 33). This is repeated until all the portfolio history has been analyzed.

Predictability: The last step involves combining, for each rule, all of the out-of-sample benefits into one return series (i.e. calendar-time series). The annualized return and alpha of this return series is then computed. A statistical test known as P-value is computed for the alpha of this series. Relatively small P-values (less than 5%) suggest that the stop-loss rule offers predictable benefits for the portfolio. The results of those rules with positive benefits and low P-values are then evaluated to determine the best candidate for implementation.

Implementation

Each day the manager needs to be advised (or given a signal) as to which positions have triggered the stop-loss rule. After this nudge to think twice about keeping these positions, the manager may take any of a variety of actions – heightened monitoring, thesis reexamination and perhaps selling. The manager will know that these positions reflect a level of loss that, on average, did not recover adequately across the →

"SOME MANAGERS IMPLEMENT THEIR STOP-LOSS COMPLETELY, SELLING ALL OF A POSITION WHEN A SIGNAL IS GIVEN. OTHERS PREFER TO ACCEPT THEIR NUDGES AND USE IT TO HEIGHTEN THEIR AWARENESS AND SHARPEN THEIR JUDGMENT."

history examined. In fact, positions of this type were shown to be a net drag on portfolio performance.

Some managers implement their stop-loss completely, selling all of a position when a signal is given. Others prefer to accept their nudges and use it to heighten their awareness and sharpen their judgment. However the implementation occurs, the manager also needs timely feedback. What proportion of signals are being implemented? What is the average delay between when the signal first appears and the position is sold? Are these positions being completely sold or trimmed? And, of course, is the signal continuing to work and have the manager's deviations from the signal helped or hurt? Over a relatively short time the manager can develop greater self-awareness and improve performance working with these daily signals.

A tale of two portfolios

Analyses were performed for two portfolios to determine what, if any, benefit they might gain from implementing a stop-loss. Both portfolios invested in large-cap stocks and pursued long-only strategies. Their size, average number of holdings and turnover were comparable.

The analytic method described above was applied to both portfolios. Results of the analyses are presented in Figure 1. The x-axis indicates the range of relative loss thresholds tested. The y-axis depicts the benefit (annual incremental alpha) computed at each threshold level.

It is immediately observed that Portfolio A will benefit significantly from a stop-loss while no benefit is available for Portfolio B. The maximum benefit for Portfolio A comes at a threshold level of roughly 25% (relative loss). While the benefit is positive at lower thresholds (20%) it can be surmised that at this level too many positions were sold that eventually bounced back, and that not selling these rebounders caused the 25% threshold to be superior. Higher thresholds (40%) simply caught too few positions to produce the higher benefits of lower thresholds. The manager of Portfolio A, therefore, should at least consider selling any loser whose total relative loss exceeds 25%. Not only is this benefit substantial, but it was shown to have a high statistical significance, indicating that the benefits are likely to continue into the future.

The absence of a useful stop-loss for Portfolio B also deserves commentary. Some managers are quite skilled at managing losers. More often than not, these managers kick out positions with negative margins that are unlikely to rebound, and they tend to hold on to those losers that ultimately bounce back. Although every decision they might make in managing a loser is not perfect, their skill is great enough that no statistically significant improvement is available through the addition of a stop-loss rule.

The difference in results between the two portfolios vividly demonstrates the importance of calibration. A stop-loss that works for Portfolio A will not help Portfolio B. Similarly, the approach in building up to a full position that works for one manager may not work at all for another. What makes a stop-loss rule or any other aspect of position management helpful is that it captures the precise opportunity afforded by each unique set of strategy, style, process and judgment. Rules-of-thumb, whether developed from hindsight or borrowed from a mentor, are no substitute for rigorous analysis and calibration.

Behavioral perspective

Owning losers hurts more than portfolio performance and no more so than when losses are realized. Consequently, investors go to great lengths to avoid taking losses and experiencing the despair and self-recrimination that losing commonly provokes.

Loss Aversion is the term used to describe this behavior within research literature. At its core it reflects the insights about decision making demonstrated by Daniel Kahneman and *Amos Tversky* in their pioneering work on Prospect Theory. Losses, it has been shown, deliver a negative emotional affect that is 2 to 3 times the pleasure provided from an equal sized gain. This hypersensitivity to losses, together with the brain being "hard-wired" to protect our ego and sense of self, help explain why people have trouble selling losers. ■

Michael Ervolini and Harold Haig are co-founders of Cabot Research LLC, where they serve as Chief Executive Officer and President, respectively.

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Introducing the Special K

By Martin Pring

Introduction

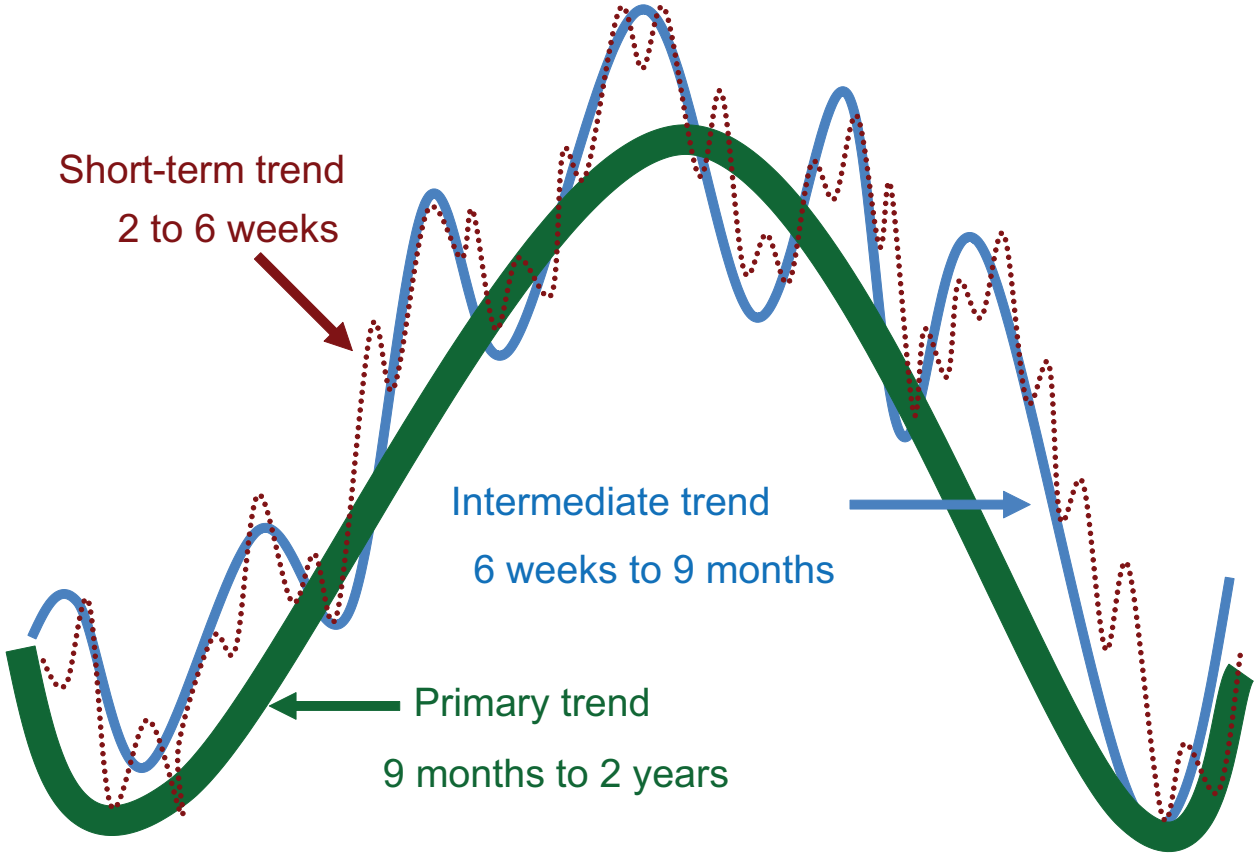
I have often thought it would be great to be able to develop an indicator that could be used for simultaneously analyzing the direction of both the primary (9 months to 2 years) and short-term trends (3-6 weeks). Part of the reason is that research shows that if things are going to go wrong in your trading life, it will usually happen when you position yourself against the direction of the primary trend. That means that using short-term sell signals in a bull market to go short or short-term buy signals in a bear market to go long are not the way to go.

My inspiration for this indicator came from two sources: First, the noted economist Joseph Schumpeter made famous a diagram in which he combined three economic cycles into one series and used that as his guidance for timing the long wave. The cycles in this case were the Kitchen, Juglar and Kondratieff. The second was my friend, the late Ian Notley, who drew my attention to a schematic diagram that reflected the primary, intermediate and short-term trends, so familiar to us in the financial markets. He called this his 'market cycle model', a version of which is shown in Figure 1. I found that an alternative method of charting these three curves separately comes when these cycles are combined into one indicator, just like Schumpter's concept for economic cycles. I called it the 'Special K' because the three indicators I used were the short, intermediate and long-term KST's (Know Sure Thing). If you are not up to speed with the KST concept just think of these as three smoothed indicators, like the stochastic based on different time frames. The result is true summed cyclicality, where proxies for the short, intermediate and long-term trends are all combined into one super one; in effect the brown dashed line in Figure 1. Table 1 shows how the calculation is made. The numbers represent days. The daily KST formula is added to that of the intermediate and long-term series. Each indicator is colour coded. Thus red is the calculation for the short-term KST etc.

Special K characteristics

1. It is a curve that reflects the dominant long-term smoothed momentum, such as a 6-month average of a 24-month Rate of Change (ROC). However, since it also contains shorter-term parameters, the resulting indicator is not as smooth. This means that it lends itself to technical interpretive techniques such as trend-line construction, peak and trough analysis etc.

2. A lot of the time the highs and lows of the Special K correspond to the actual high and low for the price series it is monitoring. That's easy to see with the benefit of hindsight but occasionally, as we will learn, it's often possible to identify these turning points fairly soon after they have taken place. The letters in →



Source: Yelton Fiscal

Figure 1.

Chart 1 for instance indicate that turning points in the Special K often coincided with those for the pound. As in all momentum situations price sometimes lags due to the nature of the momentum calculation. A2and B2 are examples of this.

3. The Special K reflects short-term price movements, but because of the summed cyclicality used in its calculation, some perspective on the maturity and direction of the primary trend can be gained.

ROC	EMA		Weight		Total
4	4	X	1	=	4
5	5	X	2	=	10
6	6	X	3	=	18
8	8	X	4	=	32
10	10	X	1	=	10
13	13	X	2	=	26
15	15	X	3	=	45
20	20	X	4	=	80
39	26	X	1	=	26
52	26	X	2	=	52
78	26	X	3	=	78
104	39	X	4	=	156
Special K					**537**

Primary trend interpretation

1. The Special K very much lends itself to trendline construction. Usually when lines greater than 9 months in duration are penetrated, there is a high probability that the primary trend has reversed. The late 2001 and early 2006 buy signals, and the early 2005 and late 2007 sell signals in Chart 1, are good examples. In fact, the 2001 and 2005 signals both represent head-and-shoulder necklines, thereby indicating that the Special K is quite capable of forming classic price patterns. Because →

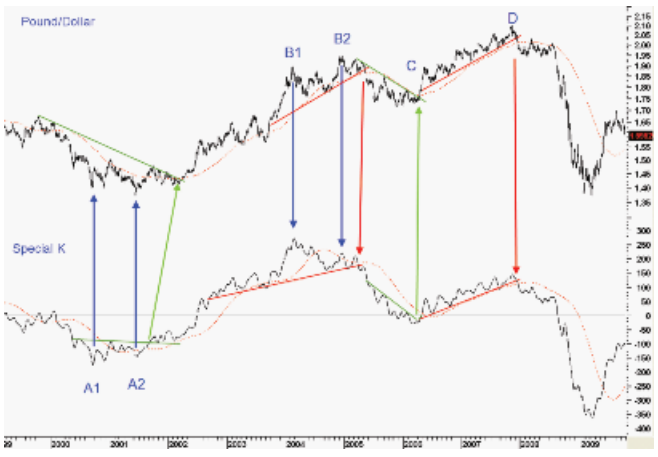


Chart 1.

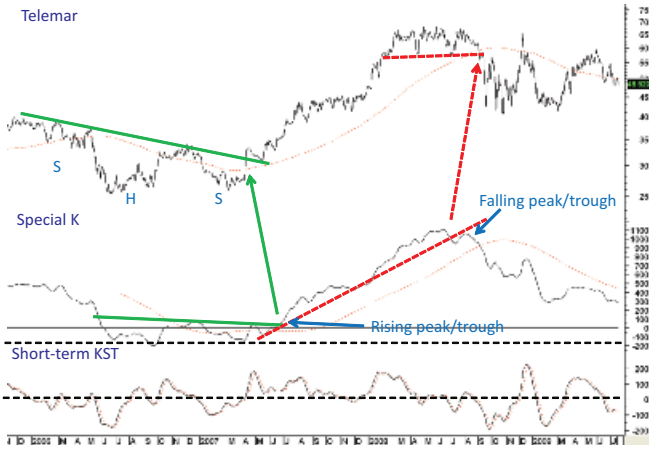


Chart 2.

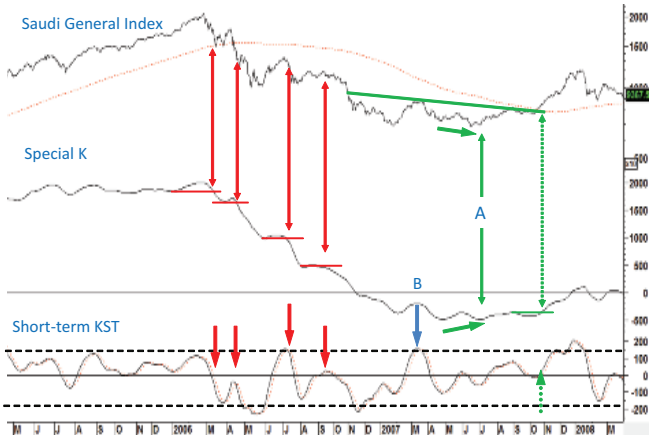


Chart 3.

of the time leading characteristics of momentum, it is also necessary to see some kind of confirmation from the price, and this was duly witnessed from all Special K trend breaks in Chart 1.

"THE SPECIAL K GIVES US PERSPECTIVE ON THE LONG-TERM TREND…IT CAN BE INTEGRATED WITH THE DAILY KST TO TIME NEAR-TERM MARKET MOVEMENTS."

2. Peak and trough reversals often show up at primary trend turning points. We see two instances in Chart 2 of Telemar, a Brazilian stock. First, the Special K completes a base and starts a series of rising peaks and troughs in late June 2007. In this case, the price was leading the way because it completed a reverse head-and-shoulders formation some time before. We often find that when the price is in such a hurry, it leads momentum this is followed by an above average price move. Later on we see a double trendline break between June for the Special K and September for the price. Finally, a series of declining peaks and troughs is signaled as the Special K crosses below its moving average (MA) at the very time the price is breaking down in September. In this instance, there was not much of a decline, but there was certainly a volatile trading range that followed.
3. The indicator, for the most part is too jagged to permit consistently reliable MA crossovers, though when these occur along with trendline violations, price pattern completions or peak/trough reversals such crossovers are usually more reliable. The combination I use is a 100-day smoothing of a 100-day MA. It's far from perfect, but is the best combination I was able to come up with.

Using the Special K to identify short-term price movements

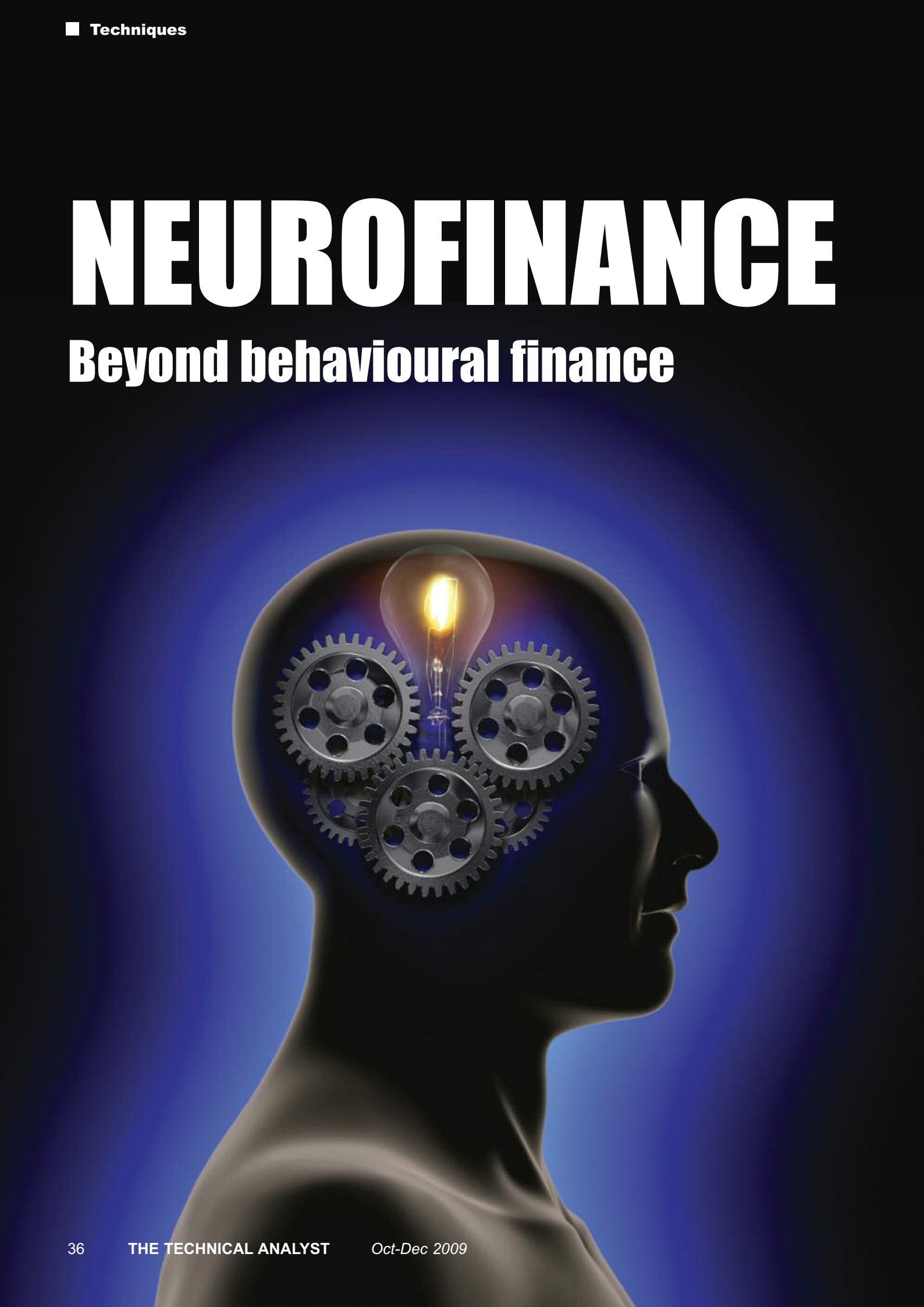
The Special K can also be used in conjunction with the daily short-term KST. This arrangement has two benefits. First, we can use the gyrations in the KST to help identify short-term reversals in the Special K. In Chart 3 for example, you can see the overbought reading at point B. It would not have been possible to identify this event by looking at the Special K in isolation. Second, the character of Special K movements can really help in deciding whether a specific short-term KST buy or sell signal is going to work or not. In Chart 3 we see a several small horizontal lines. These have been placed at the point where the Special K is just violating a previous low or surpassing a previous high. In other words, the indicator is confirming that the prevailing peak/trough progression is extending. In most situations this is a signal that the prevailing up or downtrend in the price itself will continue. In many cases this downside break develops close to the turning point in the KST itself. The March 2006 signal was an exception to this rule. This happens because the longer-term time spans included in the construction of the Special K are already pushing down hard in a bear or pulling up with strength in a bull market. The net result is a strong signal that a new leg in the primary trend is likely. That type of evidence is not usually evident when the KST is studied on its own.

The Special K gives us perspective on the long-term trend. In many cases it can be integrated with short-term indicators such as the daily KST to time near-term market movements. ■

Further information on the KST is available at pring.com you can also see a short video on Youtube under my user name (mjpring).

NEUROFINANCE

Beyond behavioural finance



In this article, we present an overview of neurofinance, the latest talking point in the field of behavioural finance. It looks at how investors and traders makes decisions based on the workings of the brain and the neural processes that are the source of the behavioural biases.

Rationality and the EMH

The underlying premise behind rational expectations, as grounded in economic theory, is that humans form logical conclusions that are appropriate to the decisions they are about to make. Rational Expectations Theory assumes that humans have the necessary cognitive ability to make these decisions. The idea of humans being perfect rationalists led to the Efficient Market Hypothesis (EMH). It also assumes a constant level of risk aversion and that behaviour is utility maximising.

However, the past couple of decades have seen the emergence of behavioural finance. The most noted proponent of the subject is Daniel Kahneman who was awarded the Noble Prize in Economics in 2002 for his work on Prospect Theory. This theory describes investor's behaviour not as utility maximising, but being based on empirical observation. The evidence against market participants behaving according to rational expectations is now great, and the argument against the EMH is very persuasive.

The list of recognized behavioural biases seen in investors is now well documented and, as it stands, one tends to be either in the EMH or the behavioural finance camp. However, the field of neurofinance takes the subject of behavioural finance one step further by showing which areas of the brain are most active in decision making. While behavioural finance describes what the biases are, neurofinance can explain why they exist and perhaps even how to overcome them.

Neurofinance states that the interaction of areas of the brain dictates investor's decision making. The evolutionary older mid-brain regions control our animal passions associated with desire. Meanwhile, the prefrontal cortex regions of the brain dictate the more human side of decision making that can have the ability to override our animal passions. It is the interaction of the two that causes the complexities of human behaviour.

Brain regions

A study at Stanford University by Brian Knutson using fMRI, conducted between 2001 and 2003, found that three subcortical (below the cortex) regions of the brain are associated with the expectation of a monetary reward. However, only one of these regions, the nucleus accumbens (NAcc), showed increasing activity during gains but not during losses. The NAcc region is rich in the neurotransmitter dopamine (DA) which has been shown to be associated with the positive effect of monetary rewards, and in the use of cocaine. These findings were consistent with Prospect Theory which says that investor behaviour is different in the presence of gains versus losses.

Another study found that the NAcc was inactive upon the realisation of the reward itself. While the NAcc is active during the anticipation phase of a gamble, a cortical region of the prefrontal cortex was active in the assessment of the realised outcome of the gamble. These findings suggest that expected and actual utility are assessed by two different regions of the brain. Knutson describes the NAcc as fuelling appetite behaviour, while the medial prefrontal cortex directs appetitive behaviour towards appropriate goals. However, he also found a lack of brain response in the presence of anticipated losses. The importance of dopamine in the brain to responses to monetary gains and losses, suggests that controlling the level of this chemical in the brain, may be a way of affecting trader's and investor's performance. →

"THE LIST OF RECOGNISED BEHAVIOURAL BIASES SEEN IN INVESTORS IS NOW WELL DOCUMENTED. HOWEVER, THE FIELD OF NEUROFINANCE TAKES THE SUBJECT OF BEHAVIOURAL FINANCE ONE STEP FURTHER BY SHOWING WHICH AREAS OF THE BRAIN ARE THE MOST ACTIVE IN DECISION MAKING".

Test of neurofinance

The large long run difference in performance between risky equities and riskless US government bonds implies that investor risk aversion is very high. This is termed the equity premium puzzle. This may be explained by the theory of myopic risk aversion which has two possible sources: investors weight losses more than gains so they go to great lengths to avoid losses, and the idea of 'reference dependence' when investors measure gains and losses against an initial reference point. So, if investors are especially averse to losses, then they will over-invest in riskless assets thereby pushing the equity premium to unforeseen levels.

A neural test of myopic loss aversion conducted by Stanford University

The target group was comprised of 15 patients with brain lesions on areas known to be associated with the processing of emotions. The patients with lesions were assumed to be less risk averse than the controls since their lesions lessened the affect associated with monetary losses. The study found that the lesion patients were much more likely to take positive expected return gambles than the control group, and so the lesion group was more profitable than the controls. The results show that particular neural activity plays an important role in decision making under uncertainty.

Neurofinance may also explain novelty seeking and aggressive risk taking, and this can be seen by excessive trading in the markets. Robert Schiller found that the US stock market has much greater volatility than can be explained by changes in company dividends. This means that a large proportion of trading in US stocks is not due to changes in fundamentals. Neurofinance suggests that much trading is done as a result of the urge to gamble, or novelty seeking, such as that experienced by compulsive gamblers. Neurofinance can also explain other behavioural biases such as overconfidence and herd behaviour as both have a neurological basis. ■

For this article, extracts were taken from: Neurofinance: Bridging Psychology, Neurology, and Investor Behavior. Steven G. Sapra and Paul J. Zak. Department of Economics, Claremont Graduate University, Los Angeles.

INTERVIEW

Nicholas Waltner

Nicholas Waltner runs a Seattle based investment advisory firm, Kulshan Capital Management, with colleague Johnny Hom, where they use behavioural finance techniques to measure and analyse levels of sentiment in the equity and bond markets. They also provide risk and money management services to high net worth individuals and institutions.

Previously, Nicholas spent 16 years at Salomon Brothers working in bond research, equity portfolio analysis, and equity derivatives trading. He talks to the Technical Analyst about using market sentiment to trade the S&P500.

TA: How do you use behavioral finance to trade?

NW: At Kulshan Capital Management we utilize the behavioral finance concept of market sentiment to extract alpha from the S&P500 Index derivatives space. As opposed to other survey or factor based investor sentiment models in the market, we look directly at both what people expect of and feel about the stock market. How often have you heard someone say, "I'm cautiously optimistic about the market"? Or "I'm very concerned about short-term prospects for the market." These statements correlate directly to two of the eight sentiment states of our market sentiment model. Over market cycles, sentiment tends to evolve around this circular model in a clockwise fashion, i.e. a bullish state evolves into a bearish one and then back to bullish state again.

On a daily basis we estimate where sentiment falls within this framework and have been doing so since November of 2000, which covers one bull and two bear market phases. What our research on this data has shown, not surprisingly, is that the patterns of how sentiment evolves over time repeat and again. We term these patterns as "canonical" sentiment states, and have also found that they tend to be correlated to specific future price and volatility patterns. We used these expected market paths to guide our trading in S&P500 derivatives.

We overlay our sentiment estimates with signals from the VIX Index, our GARCH volatility model, S&P100 group correlation, and a short-term RSI (Relative Strength Indicator) to identify a number of trading setups. We use these to "buy fear" through selling deep out-of-the-money puts, and "sell greed" by selling out-of-the-money call options on the S&P500.

TA: Why do you believe that this behavioural finance approach works?

NW: Clearly, over the long-term fundamentals drive the evolution of prices in the equity market. However, in the short-term these trends can be overwhelmed by news and other events, e.g. a war, a terrorist attack, corporate earnings beats/misses, etc. In between these two time extremes we find that market sentiment plays a strong role in how the market evolves, both in terms of price and volatility over a few days to a month in time. Clearly, when fundamentals break down as they have over the last year or so, one can see how animal spirits have played a pivotal role in driving the wild gyrations, in both the equity market and its corresponding volatility index, i.e. the VIX. Simply put, we believe that the way market participants feel about the equity market will strongly influence its short to medium-term trading patterns.

"OUR CURRENT VIEW IS THAT THIS LATEST BULL-RUN WILL NOT END WITH 1,100 IN THE S&P500 INDEX, BUT RATHER WITH A LEVEL POSSIBLY AS HIGH AS 1,140 IN OCTOBER".

TA: How do you estimate market sentiment?

NW: Our core analysis is essentially an exercise in data mining of the common neurolinguistic space of the US equity market. Take, for example, market pundits on CNBC. Every day people make bullish and bearish cases for the stock market during the various programming segments. In the future some experts may prove to be right and others wrong, but for certain, what they share in common is a specific language for expressing their views. As in many fields, there exists in the financial arena a very standard vocabulary of technical jargon, i.e. bull, bear, p/e ratio, etc. Also, there is a tenden- →

cy for the pundits to frequently refer to past events to help shed light on current market developments, i.e. 1998 LTCM crisis, Black Monday, or the 2001 technology bubble. Such terms are very rich in meaning and impart deep meaning within the sentiment neurolinguistic space.

As such, market pundits tend to repeat certain types of statements time and time again. We keep track of these statements and where they map into our sentiment paradigm. A number of studies have looked at word count on key word searches such as 'sub-prime crisis' or 'real estate bubble' to generate trading strategies. While these searches are usually quite informative, we believe that owing to their isolated context they do not produce strong statements about future market trading paths.

TA: What problems do you face in estimating market sentiment?

NW: If all financial market chatter ceased, we would have nothing to measure. If anything, over time we have seen higher levels of commentary on the equity market, especially over the latest sub-prime mortgage crisis of the last two years. However, in some cases less is more, as there are market voices which we ignore when it comes to scoring sentiment. For example, in order to maintain an unbiased estimate of sentiment, we ignore certain market participants such as corporate CEOs, television personalities and government officials, who often have innate biases with respect to their views of the marketplace.

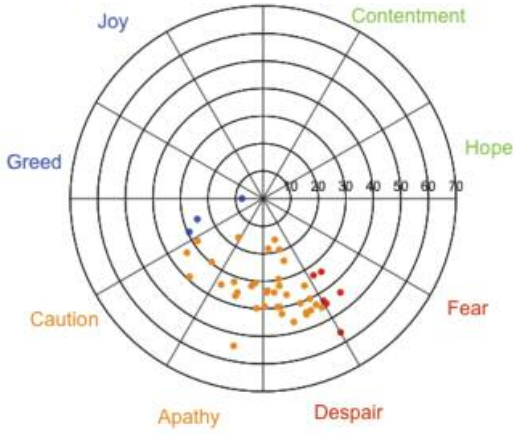
Finally, estimating sentiment can be affected by cultural issues, too. As my partner, Johnny Hom, and I spent over 15 years working in the Japanese equity market, people often ask whether we could construct a similar model for the Nikkei 225 Average. Our answer is always yes, but Japanese financial pundits tend to be much more nuanced in their statements about the markets, and hence harder to accurately parse and map into our sentiment paradigm owing to a lower emotional content of Japanese financial chatter. Some of this relates to linguistic complexity of the Japanese language itself, but the bulk of the problem relates to the fact that owing to cultural norms, Japanese speakers generally employ a mode of communication which is much less direct than that used in the western financial world.

At the end of the day, our model, like many other ones, is susceptible to GIGO (garbage in, garage out), thus identifying reliable and readily categorized sentiment is critical in maintaining an accurate time series, which can be used to forecast short-term moves in the market.

TA: What's market sentiment been doing in 2009?

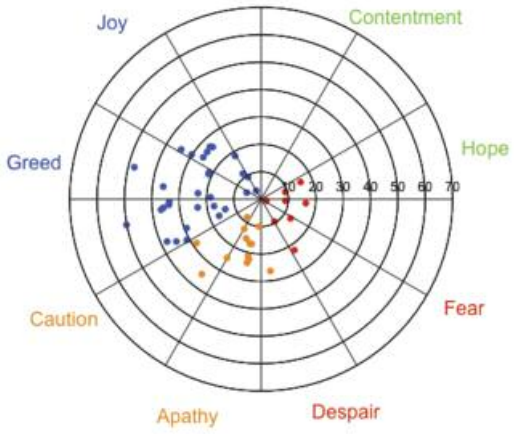
NW: As one might expect, 2009 has been a study of extremes in market sentiment. We began the year on a fairly positive note with the market having a lot of enthusiasm for the incoming Obama administration. However, owing to anti-market chatter coming out of the administration elect, by January 7th sentiment turned negative. This run in bearish sentiment continued until March 9th, in which we witnessed a 16 day string of maximum bearish sentiment readings, or what we term a bear run canonical state, which was the longest we have ever observed. This run exceeded the previous longest bear run of 15 days ending on March 12th, 2003, and the 14 day run ending on October 10th, 2008.

Kulshan Sentiment Index: January-March 9, 2009



Such bear runs of extremely depressed market sentiment are generally terminated by snap back market rallies. This time was no different as the move off the March 6th low of 666.78 has been nothing less than impressive, and one of the largest ones historically, having recently reached a recent high of 1074.77 or a 61.1% advance. In the following months, market sentiment remained firmly in a bullish state, as we witnessed the market grind relentlessly higher.

Kulshan Sentiment Index: April-June 2009

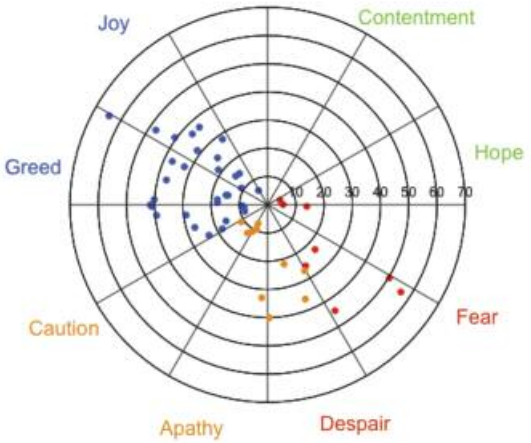


Recent market sentiment has remained bullish, yet less intense than it had been over the April-July time period. Typically, if the market is in a true bull market phase, then we will see sentiment move into the joy and contentment mode and move roughly into the northeast quadrant of our →

"WE OVERLAY SENTIMENT ESTIMATES WITH SIGNALS FROM THE VIX INDEX, OUR GARCH VOLATILITY MODEL, S&P100 CORRELATION, AND A SHORT-TERM RSI TO IDENTIFY TRADING SETUPS."

market sentiment paradigm. Thus far we have seen little evidence or no more than low intensity readings in this sector.

Kulshan Sentiment Index: August-September 2009

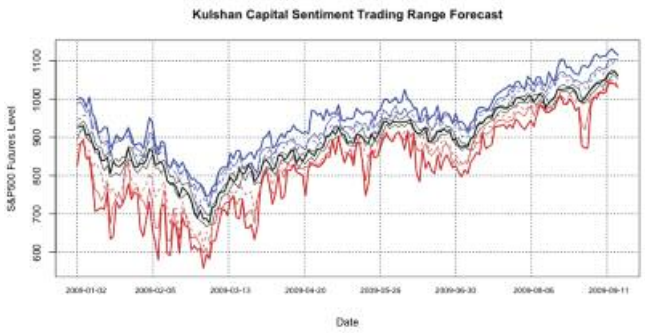


TA: What's your current view on the market?

NW: The debate continues to rage on whether we have a new bull market on our hands, or are simply experiencing the mother of all bear market rallies. Based on current sentiment, we would say that the bear market is not over yet, as we have not seen an extended shift into a strongly bullish sentiment state (joy and contentment mode). However, having said that, we have seen brief and intense swings of bullish sentiment that have propelled the market through levels which standard technical analysis would have said were major resistance levels. Specifically in March, July and again in September this year, through the 850, 950 and 1050 levels in the S&P500.

Our current view is that this latest bull-run will not end with 1,100 in the S&P500, but rather with a level possibly as high as 1,140 in October. On the downside we see 1,000 as very solid support with a near-term pullback to no less than 1,040-1,050. We come to this conclusion based on the very strong correlation of recent sentiment evolution (through September 16, 2009) versus July 24th of this year. In both cases, the market bounced off a nearly identical low twice (865.25 in July and 991.0 in September) before it ran through its near-term resistance level, as the market yesterday broke the post-Lehman key level of 1068.75. This was the afternoon peak on our most recent Black Monday on October 6th, 2008, when the market traded down nearly 100 S&P500 points, from 1,108.25 on the previous Friday, to a low of 1,009.

Below, we provide a graph detailing our market sentiment model's expected trading ranges for the S&P500 over the course of this year as of September 21, 2009. ■



For more information on our approach to market sentiment and explanations on our eight sentiment state definitions, please visit www.kulshancapital.com/explanation.html.

MODELING OVER- AND UNDER-REACTION

In order to understand at what times over-reaction occurs and at what times under-reaction occurs, Kevin Spellman of the University of Wisconsin-Milwaukee describes what he calls "The Expectations Clock". The clock is a model of market over- and under-reaction to negative events (and hence, of reversion and momentum), which depends on prior expectations. Expectations may be high when current and past changes in performance are above average, and may be low when current and past changes in performance are below average. Depending on initial expectations, negative events are either disregarded or accentuated in the decision-making process. When expectations are high, negative events may be ignored, resulting in under-reaction and short-term momentum. When expectations are low, negative circumstances may be over-emphasized, causing over-reaction and long-term reversion.

Spellman, G. Kevin, The Expectations Clock: A Unified Model for Over- and Under-Reaction (September 12, 2009).

PROFESSIONAL PROXIMITY

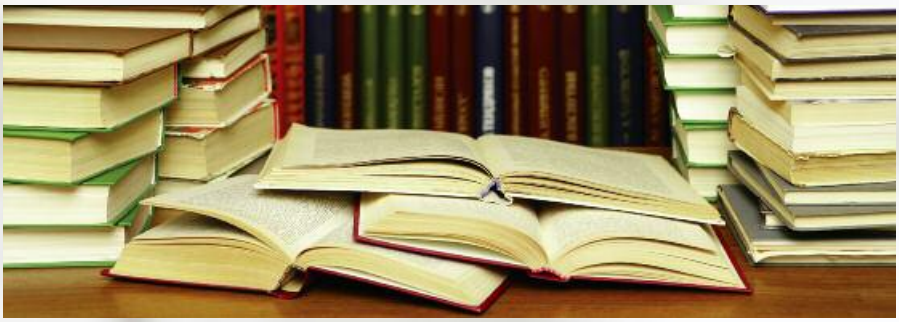
It's fairly well documented that individuals tend to hold an excess weight in stocks that are professionally close to their own, otherwise known as professional proximity, but is this professional proximity associated with asymmetric information and abnormal returns? To answer this, Trond Doskeland of the Norwegian School of Economics and Business Administration and Hans Hvide of the University of Aberdeen use a unique dataset from Norway, and find that after excluding holdings of own-company and previous employer stock, investors on average hold 11% of their portfolio in stocks within their two-digit industry of employment. They find no evidence, however, that investments in professionally close stocks are associated with a positive abnormal return in either the short or the long term. In some cases, they find evidence of a negative abnormal return. They conclude there is no evidence of professional proximity being associated with asymmetric information and abnormal returns.

Doskeland, Trond and Hvide, Hans K., Do Individual Investors Have Asymmetric Information Based on Work Experience? (August 2009). CEPR Discussion Paper No. DP7428.

Using Intraday Volume

A team of researchers from City University London have investigated the role of intraday prices and volume in enhancing daily volatility forecasts for individual trading of 14 S&P500 stocks. They found that if any intraday information is worthwhile, it comes in the form of trading volume. According to the authors, the best performing strategy involves buying the stock at extreme levels of volatility, suggesting a stronger volatility-return relationship in turbulent periods.

Fuertes, Ana-Maria, Kalotychou, Elena and Todorovic, Natasa, Intraday Price and Volume Information for Volatility-Based Trading: Does It Pay? (July 22, 2009). Available at SSRN: http://ssrn.com/abstract=1438041



Directors' Trading

Directors make good contrarian investors, according to a study that examines the patterns of, and the long run returns to, directors' trades. A research team from the University of Exeter finds that directors consistently trade in what appears to be a contrarian fashion, buying more "value" stocks and selling more "glamour" stocks, and also buying following price falls and selling following price rises. Their results show that directors' trading signals clearly generate significant positive abnormal returns in these value stocks on the "buy" side, and some smaller but still significant negative returns in the glamour stocks on the "sell" side. These abnormal returns persist for up to two-years after the initial directors' trade, and are in excess of size and value/glamour benchmarks, implying that directors use more than a naïve contrarian strategy in making their trading decisions. They also show that these excess returns remain after controlling for varying definitions of "value" and "glamour", and that abnormal returns are concentrated in smaller stocks in general, and smaller value stocks in particular.

Gregory, Alan, Tharyan, Rajesh and Tonks, Ian, Insider Trading in Glamour and Value Firms (September 1, 2009). Xfi Centre for Finance and Investment, University of Exeter Business School Working Paper No. 09/04.

POST-EARNINGS-ANNOUNCEMENT DRIFT

What happens to stock prices after surprise earnings announcements? Two US-based researches have developed a new measure to capture the degree of market reaction to earnings surprises – the earnings response elasticity (ERE). The ERE is defined as the absolute value of the earnings-announcement-abnormal returns (EARs) scaled by the earnings surprise. The authors state that a trading strategy of taking a long position in stocks in the lowest ERE quintile when both earnings surprises and EARs are positive and a short position in stocks in the lowest ERE quintile when both are negative can generate 5.11 percent quarterly abnormal return.

In another paper, the same researchers show that value and glamour stocks react to earnings announcements differently and earnings announcement abnormal returns (EARs) are significantly related to post-earnings-announcement drifts. They first sort firms into quintiles according to a measure of value and then allocate firms into six categories in terms of the signs of the quarterly earnings surprise (/-/0) and the EARs (/-). They find that glamour stocks are more volatile around earnings announcement dates. The drift patterns of value and glamour stocks are different: glamour stocks exhibit much larger negative drifts following negative earnings surprises and EARs, while value stocks exhibit much larger positive drifts following positive earnings surprises and EARs. A trading strategy of taking a long position in value stocks when both EARs and earnings surprises are positive and a short position in glamour stocks when both are negative can generate 16.6% to18.8% annual returns. This anomaly is mainly a long-side phenomenon.

On the same subject, another study by Chordia et al has found that the post-earnings-announcement drift occurs mainly in highly illiquid stocks. A trading strategy that goes long high-earnings-surprise stocks and short low-earnings-surprise stocks provides a monthly value-weighted return of 0.04 percent in the most liquid stocks and 2.43 percent in the most illiquid stocks. The illiquid stocks, however, have high trading costs and high market impact costs. Ttransaction costs account for 70-100 percent of the paper profits from a long-short strategy designed to exploit this earnings momentum anomaly.

Yan, Zhipeng and Zhao, Yan, Earnings Response Elasticity and Post-Earnings-Announcement Drift (July 1, 2009).

Yan, Zhipeng and Zhao, Yan, When Two Anomalies Meet: Post-Earnings-Announcement Drift and Value-Glamour Anomaly (September 2009). Available at SSRN: http://ssrn.com/abstract=1482662

Chordia, Tarun, Goyal, Amit, Sadka, Gil, Sadka, Ronnie and Shivakumar, Lakshmanan, Liquidity and the Post-Earnings-Announcement Drift (August 5, 2009). Financial Analysts Journal, Vol. 65, No. 4, 2009.

All papers are available from the Social Science Research Network, SSRN, www.ssrn.com

THE JANUARY BAROMETER UPDATED

According to Streetlore the market return in January provides useful information to would-be investors in that the January market return predicts the market return over the remainder of the year. This adage has become known as the January Barometer. In 2006 a group of US-based researchers (Cooper, McConnell and Ovtchinnikov) investigated the power of the January market return to predict returns for the next 11 months using 147 years of U.S. stock market returns. They found that, on average, the 11-month holding period return following positive Januarys was significantly higher, by a wide margin, than the 11-month holding period return following negative Januarys. In their latest paper they update that analysis through to 2008 and address the question of how an investor can best use that information as part of an investment strategy. They find that the best way to use the January Barometer is not the obvious one of being long following positive Januarys and short following negative Januarys, but to be long following positive Januarys and invest in T-bills following negative Januarys. This strategy beats various alternatives, including a passive long-the-market-all-the-time strategy, by significant margins over the 152 years for which they have data.

Cooper, Michael J., McConnell, John J. and Ovtchinnikov, Alexei V., What's the Best Way to Trade Using the January Barometer? (July 4, 2009).

INTERPRETING VOLUME IN JAPANESE STOCKS

In the Japanese stock market, the return reversal effect is known to be strong while price momentum is not so prevalent when compared to other markets. A paper by Susumu Kadoya of BlackRock Japan and Takashi Namatame of Senshu University challenges this observation and finds that high turnover does indeed induce momentum at least for short-term periods. .

Kadoya, Susumu and Namatame, Takashi, Empirical Tests on Turnover Information (February 16, 2009).

THE EFFECTS OF MANAGERIAL OWNERSHIP

A paper by Feng Zhang of the University of British Columbia investigates the effects of managerial ownership on equity prices and operating performance. He finds that an investment strategy that buys the highest managerial ownership decile and shorts the lowest decile would have earned an abnormal return of 6.4 percent per year from 1993 to 2008. It seems analysts tend to underestimate the superior profitability of such firms. This results in both greater forecast errors and higher earnings announcement returns for higher managerial ownerships firms.

Zhang, Feng, Managerial Ownership and Equity Prices (September 1, 2009).

THE SIGNIFICANCE OF 52-WEEK HIGHS

The 52-week high share price has been shown by George and Hwang (2004) to carry significant predictive ability for individual stock returns, dominating common momentum-based trading strategies. A study by Travis Sapp of Iowa State University examines the performance of trading strategies for mutual funds based on (1) an analogous 1-year high measure for the net asset value of fund shares, (2) prior extreme returns and (3) fund sensitivity to stock return momentum. According to Sapp, all three measures have significant, independent, predictive ability for fund returns. Further, each produces a distinctive pattern in momentum profits, whether measured in raw or risk-adjusted returns, with profits from momentum loading being the least transitory. Nearness to the 1-year high and recent extreme returns are significant predictors of fund monthly cash flows, whereas fund momentum loading is not.

Sapp, Travis, The 52-Week High, Momentum, and Predicting Mutual Fund Returns (August 26, 2009).

UNSOPHISTICATED PENSION FUNDS

According to a paper based on the Dutch pension fund industry during the 1999-2006 period, pension funds tend towards relatively unsophisticated investment policies. The authors develop three indicators of sophistication: gross rounding of investment choices, investments in alternative sophisticated asset classes and 'home bias.' They find that pension funds' strategic portfolio choices are often based on coarse and possibly less sophisticated approaches. Most pension funds, particularly the medium-sized and smaller ones, round strategic asset allocations to the nearest multiple of 5%. Second, many pension funds invest little or nothing in alternative asset classes besides equities and bonds, resulting in limited asset diversification. Third, medium-sized and smaller pension funds favor regional investments and as such not fully employ the opportunities of international diversification. Finally, they show that pension funds using less sophisticated asset allocation rules tend to opt for investment strategies with a lower risk-return profile.

Dreu, Jan De and Bikker, Jacob Antoon, Pension Fund Sophistication and Investment Policy (August 23, 2009).

WHICH STOCKS TREND BEST?

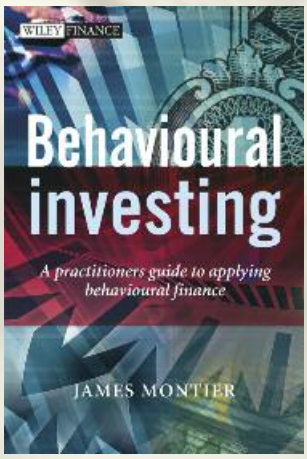
Momentum trading is linked to a lack of information, according to a hypothesis supported by Emre Konukoglu of the University of Toronto. Using foreign portfolio flows in individual stocks he documents significant momentum trading concentrated in stocks on which foreign investors potentially have more informational disadvantages. As such, he says that small stocks, stocks with high volatility and low liquidity, and stocks that are internationally less visible and have greater foreign exchange risk are subject to greater momentum trading.

Konukoglu, A. Emre , Uninformed Momentum Traders (August 15, 2009).

Yafeng Qin of Massey University also finds evidence for profitable momentum strategies in emerging markets that seem related to lack of information. He finds that for stocks with different level of foreign ownership restriction, the profitability of momentum strategies is significantly different. In particular, the momentum strategy on highly investible stocks significantly outperforms the strategies on non-investible stocks. According to the author, the results are consistent with Hong and Stein (1999)'s gradual information diffusion model, suggesting that high foreign investor participation might delay the information transmission among all investors.

Qin, Yafeng, Foreign Ownership Restriction and Momentum - Evidence from Emerging Markets (June 30, 2009).

The Best Behavioural Finance Books



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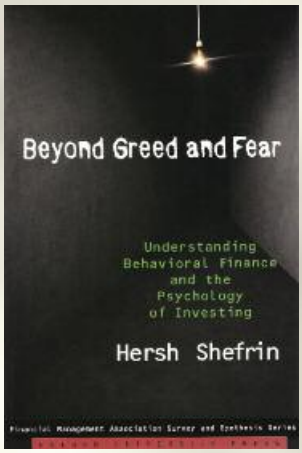

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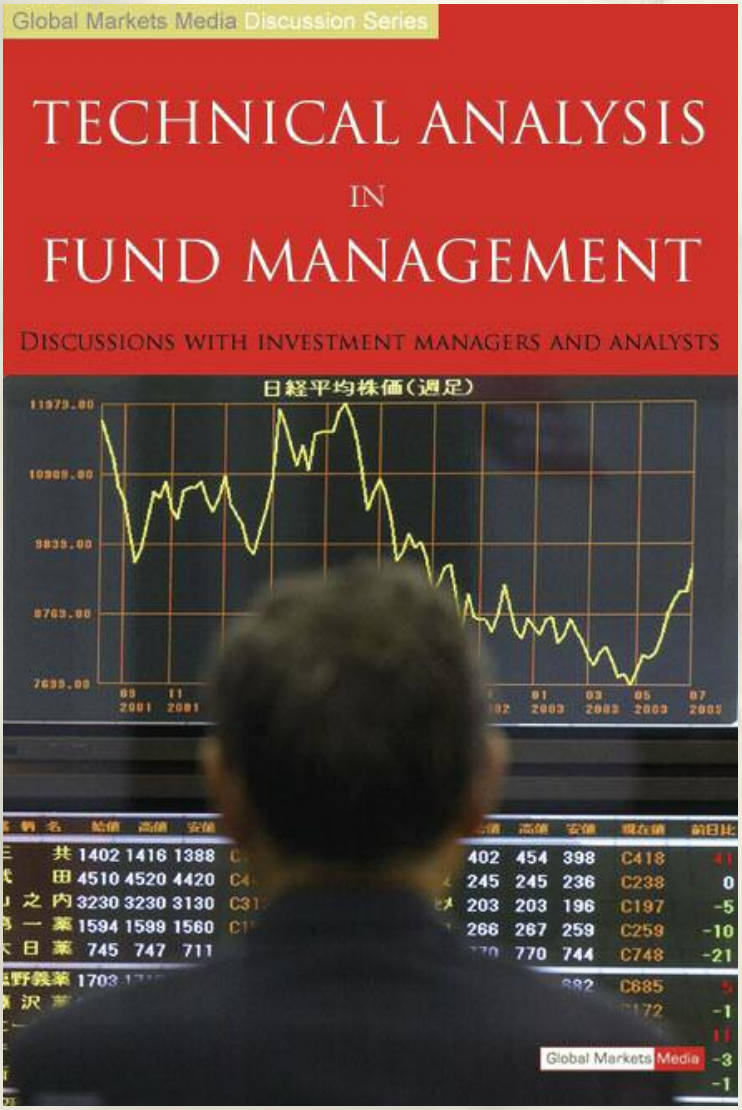

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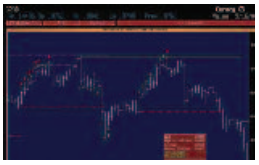

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