The ARMS Index

We take a look at the famous ARMS index and try to establish how best to use the indicator when trading US stocks.

The Arms Index, otherwise know as the TRIN (short for Trading Index), has traditionally been used as a short term indicator for US stocks that uses daily price and volume data to measure relative demand for rising and falling stocks. By using data from all 2250 or so stocks listed on the NYSE, the index acts, in effect, as a volume weighted ratio of rising stocks versus falling stocks. This ratio can then be used as an indicator of how buying or selling pressure in the market is changing.

Although the ARMS Index is calculated using data from all NYSE stocks, it can be refined to include just S&P or Dow stocks. However, Richard Arms warns that the effectiveness of the index is reduced when fewer stocks are used in its calculation. Moreover, despite its widespread use as a short term indicator, Arms insists that the TRIN can be used for long term analysis and that many of his clients are traditional long term fund managers and not necessarily just short term intraday traders.

Arms today runs a consulting firm, ARMS Advisory, from his base in Albuquerque, New Mexico specialising in providing TRIN based research to trading and investment houses. Richard spoke to the Technical Analyst for this feature and his views on using and interpreting the TRIN are included.

The ARMS Index

The ARMS Index is calculated using daily closing prices and volume data from the New York Stock Exchange (NYSE). The formula is familiar enough:

$$\text{ARMS Index} = \frac{\text{Number of advancing stocks}}{\text{Number of declining stocks}} \div \frac{\text{Advancing volume}}{\text{Declining volume}}$$

Advances	the number of NYSE listed stocks that close higher
Declines	the number of NYSE listed stocks that close down
Advancing volume	the volume of stocks closing higher
Declining volume	the volume of stocks ending low

The TRIN calculation produces an index that centres around 1.0, a value where the index is said to be neutral as advancing and declining volume is equally spread over rising and falling issues. Because of the nature of the formula, the index produced is counter-intuitive in nature in that if more volume is going into stocks that are rising in price, the index falls →

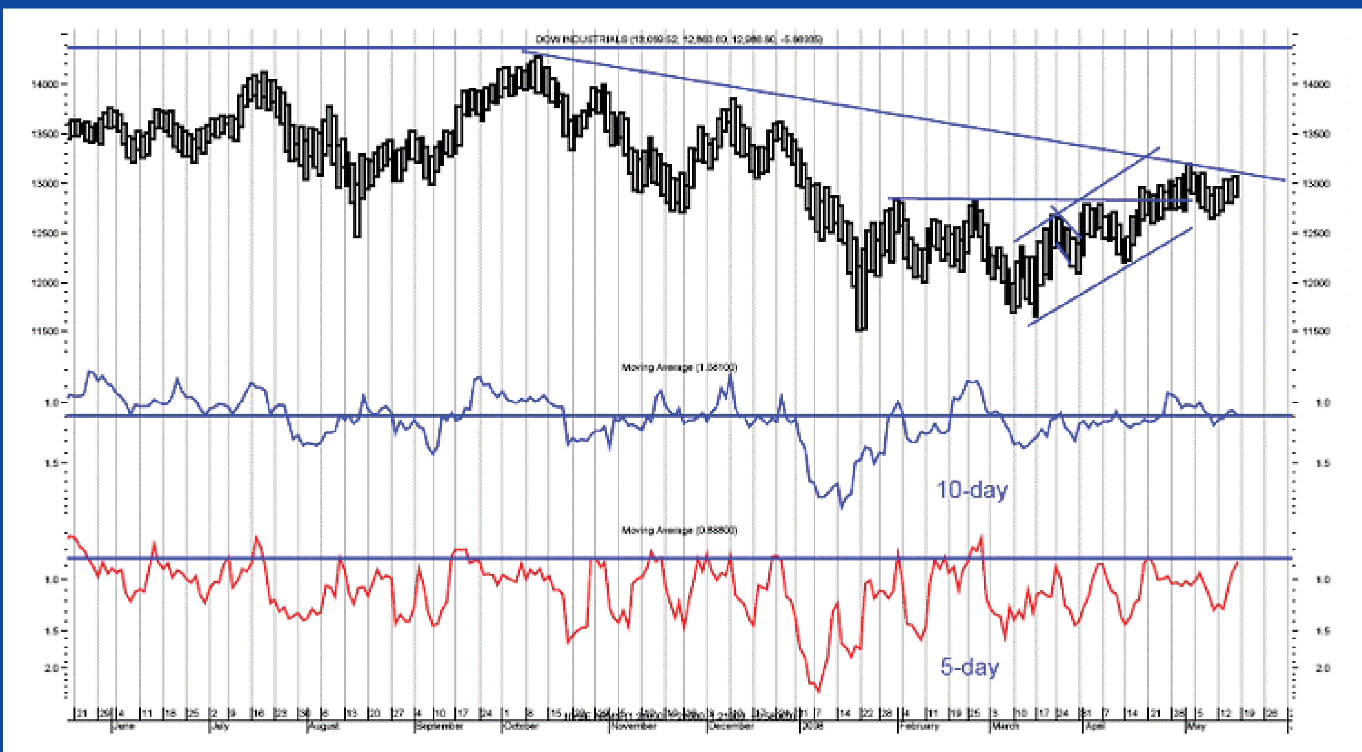

Figure 1.


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"WALL STREET TRADERS AND INVESTMENT MANAGERS HAVE TRADITIONALLY USED THE 10 DAY MOVING AVERAGE"

below 1.0 and visa versa. So if the index is above 1.0 then it is said to be bearish for stocks and below 1.0 is bullish. This is because even if, for example, the number of rising stocks exceeds the number of declining stocks the index will rise if this occurs on low or declining volume.

Using the TRIN

The index or line that this equation produces from daily data is often used smoothed using a moving average. Indeed, many references to using the TRIN are often made in terms of its moving average.

However, beyond that the index is open to a great deal of interpretation. Some users of TRIN tend to adopt their own parameters as to which reading indicates a bullish or bearish signal. Richard Arms himself recommends using the following moving averages for trading different time scales:

Short term: 4 day MA

Intermediate: 10 day MA

Medium term: 21 day MA

Long term: 55 day MA

(Note that 21 and 55 are both Fibonacci numbers).

Wall Street traders and investment managers have traditionally used the 10 day moving average for TRIN. This is probably because before the use of computers, it was an easier figure to work with.

Despite the index being considered bullish when it is below 1.0 and bearish when it is above 1.0, Richard Arms himself concedes that the index appears to be most effective when used as an overbought/oversold indicator. However, there is no consensus on what constitutes overbought or oversold conditions and furthermore, they depend on what moving average of the index is being used. John Murphy states that the TRIN can be used as a contrary indicator, especially in intraday trading. A very high figure (strongly bearish) is therefore bullish as it indicates a turning point.

According to Katie Townshend chief market technician at MKM Partners, a proprietary trading and research firm based in Greenwich, Connecticut, the real value of the TRIN lies in its application as a breadth indicator, as well as an overbought/oversold oscillator. Furthermore, the TRIN should not be used in isolation but only when other indicators confirm it. "I publish the TRIN reading on a daily basis in an email to clients but only heed it when it reaches extremes. Lately, a high extreme has been about >2.0 and a low extreme has been about <0.5."

"When it reaches a high extreme, which usually happens on sharp down days, it can be considered an oversold reading that suggests the next day or two will be more bullish. Conversely, when it reaches a low extreme, which usually is associated with strong up days, it can be considered an overbought reading that suggests the next day or two will be more bearish", she says. →

Trading rules

Richard Arms recommended trading rules based on using the TRIN as an overbought/oversold oscillator are as follows:

Moving Average	Overbought (sell)	Oversold (buy)
Short term (4 to 10 day)	<0.75	>1.25
Medium term (21 day)	<0.85	>1.10
Long term (55 day)	<0.90	>1.05

The TRIN suffers to some extent from a lack of consensus regarding not only which moving averages to use but what readings of the index indicate a buy and sell signal. This is a drawback because it suggests that the ideal parameters may change as market conditions change so the optimal readings to use are likely to remain unknown at any particular time.

"THE INDEX ACTS AS A VOLUME WEIGHTED RATIO OF RISING AND FALLING STOCKS"

In addition, there have been very few proper statistical studies on the TRIN which is surprising given how popular the index is often said to be. What does appear to be agreed on is that using the index in its simplest form without a moving average, (buy<1.0, sell>1.0) does not produce profitable results.

Robert Colby, a US based analyst who has written about and backtested most (if not all) technical indicators* found that the ARMS index has little predictive power for readings between 0.523 and 1.444. However, extreme readings beyond these were profitable with a one year holding period to a 99% confidence level. Although Colby also cites the TRIN's value is being used as an overbought/oversold indicator, he also says that extreme readings of the index in either direction (above 1.444 and below 0.523) give a bullish reading. Backtesting showed this result had a 99% confidence level for a 1-year holding period although the number of signals this strategy has generated since 2000 has gone up considerably, which calls into question whether it is still valid. The low readings of the index are bullish because this usually indicates a (oversold) reversal after the end of a decline or bear market.

The problem with these findings is that TRIN is usually thought of as a short term indicator and used as such which makes a one year holding period unrealistic. Colby states that the 10 day simple moving average above 1.266 is very bullish for a one year holding period to a 99% confidence level. From this Colby proposes a "greater than 1.266 rule". It should be noted that these results are based on data before 2000.

Based on backtesting 16 years of data, for short term trading Colby recommends the following rule:

Buy: 11 day exponential moving average (EMA) > 0.8

Sell: 11 day EMA < 0.8

This strategy according to Colby would have returned 1640% for the S&P500 (with reinvested profits and no costs) during the test period from 1984 to 2000, more than 80% more than a buy and hold strategy (900% return).

Colby also cites the significance of a single day's reading of 2.65 for the index. If the S&P500 had been bought on the close of every day when the index was 2.65 or above over in the 35 years before 2000, it would have yielded a profit 11 out of the 12 instances it happened when held for one year.

Holding period

Although Colby sites a one year holding period in all his testing of TRIN and doesn't vary this, Kirkpatrick and Dahlquist** insist that the holding period is crucial to the profitability of the indicator. For example, with the >2.65 rule, although the signal only occurs every couple of years, if the holding period is reduced from one year to two months or less, the returns are some 100 times greater than a buy and hold strategy. Kirkpatrick suggest the difficulty in establishing these rules for the TRIN comes in applying short term indicators to long (one year) holding periods.

Other signals

According to other literature there are other signals that the TRIN can generate. As Richard Arms explains, "Apart from the well known use of the index moving averages, I have worked a great deal with moving average crossovers. The best, I think, is the 21-day to 55-day. The 55 becomes the baseline and the 21 indicates the extremes. Another simple strategy is two consecutive days of the index over 2.0 which has a very good record of calling important bottoms."

Richard ARMS' new book, *"Stop and Make Money: How to Profit in the Stock Market Using Volume and Stop Orders"* has recently been published by Wiley.

*The Encyclopaedia of Technical Market Indicators (McGraw Hill) by Robert Colby

**Technical Analysis (FT Press) by Charles Kirkpatrick and Julie Dahlquist