Volume Zone Oscillator (VZO)

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Abstract

Most, if not all, volume indicators depend on divergence, which in itself is not a signal. The trader has to wait for a confirmation from the price action before executing a trade, for example Joe Granville's On Balance Volume (OBV) indicator, which is calculated by adding the day's volume to a running cumulative total when the security's price closes up and subtracts the volume when it closes down. The main idea of the VZO was to try to change the OBV to look like an oscillator rather than an indicator, also to include time; primarily to identify which zone the volume is located in during a specific period, in the bulls' zone or the bears' zone, to decide which side we should ride on. The VZO uses the same OBV negative/positive volume separation rule to separate bulls' volume from bears' volume, but instead of running a cumulative total, the VZO smoothes these ± volumes by an Exponential Moving Average (EMA) for a given period, and then divides it with a smoothed EMA of the total volume for the same period. The VZO is a leading volume oscillator; its basic usefulness is in giving leading buy/sell signals based on volume conditions, also to identify overbought/oversold volume conditions, along with mega overbought/oversold situations which lead to a change in sentiment, and most probably, leads to change of the current trend in the timeframe being studied.

Part One: Introduction

Volume is simply the number of shares or contracts that have been traded throughout the day; the higher the volume, the more active the security.

1.1 Why is Volume Important?

Volume is always treated as a secondary indicator, despite its great importance in confirming trends and chart patterns. Any price movement, whether up or down, with relatively high volume is categorised as stronger than a similar move with low volume.

Traders must always look at price patterns in conjunction with their associated volume patterns. For example, a stock may appear to be in a head and shoulders or in a flag formation, but the associated volume must confirm that analysis.

Volume should move with the trend. If prices are moving in an uptrend, volume should increase with rising prices. The opposite should occur in a downtrend; volume should increase with falling prices. If the previous relationship between volume and price movements starts to change, it is usually a sign of weakness in the trend.

Well above normal volume is essential when separating a true from a false breakout above resistance or below support.

Price is preceded by volume; that's another important idea in technical analysis. If volume starts to decrease in an uptrend, it is usually a sign that shows that the upward run is about to end.

From all of the above, we believe that volume should have the same importance as price and should be monitored closely.

1.2 Volume Zone Oscillator (VZO)

Volume Precedes Price is the conceptual idea for the oscillator.

Waves of buying and selling originate as a result of the battle between bullish and bearish activity and is the idea behind separating the bulls from the bears, i.e. to identify the direction of the next move, depending on volume.

Volume's leading characteristic is the basic premise of this oscillator. Unlike the rest of volume oscillators, which depend on divergence (which in itself is not a signal), the trader has to wait for a confirmation from the price action before executing a trade.

This oscillator's basic usefulness is in giving leading buy/sell signals, identifying overbought/oversold volume conditions, along with mega overbought/oversold situations which lead to a change in sentiment and most probably lead to a change of the current trend in the timeframe being studied.

One of the main benefits of the VZO is primarily being able to identify in which zone the volume is positioned, to decide which side we should ride on.

Part Two: The Calculation

The formula depends on only one condition; if the close of today is higher than the close of yesterday, the volume will be considered bullish, otherwise it will be bearish.

Volume zone oscillator =
$100 \times (VP \div TV \frac{VP}{TV})$

Where, VP (Volume Position) =
X-days EMA (± volume).

And, TV (Total volume) =
X-days EMA (volume).

2.1 Formula in depth:

Below is an explanation of the formula and the code as written in AmiBroker software, using sample data containing only the close price and the volume.

- First, a variable is used to daily store an up volume or a down volume.
R= IIf (C> Ref(C,-1), V,-V);

- For smoothing, VP equals exponential moving average of R for a given period.
    VP= EMA (R, period);
- TV equals the exponential moving

Data Sample:

Date	Close	Volume	R
1/1/2008	20	800	-
2/1/2008	20.5	1000	1000
3/1/2008	20	700	-700
4/1/2008	21	900	900
5/1/2008	22	1100	1100
6/1/2008	21.5	500	-500
9/1/2008	22.5	1200	1200
10/1/2008	23	800	800

average of the total volume for the same period.
TV=EMA (V, period);

• Finally the VZO equals VP divided by TV, multiplied by 100 to make the vertical scale oscillate between -100 to 100.
VZO=100 X (VP/TV);

• The table above shows a data sample for 8 days. If we choose a 6-day period, on the last day, we will have the following values:
VP =EMA(R,6) will =585.71
TV= EMA(V,6) will = 898.64
VZO = 100 X(585.71/898.64) = 65.18

• From the example above, we can see that if the cumulative R has a positive value, the oscillator will move up, while if it has negative value, the oscillator will move down.

Part Three: VZO Trading Tactics

3.1 Overall Appearance:
• VZO is located below the price action; it fluctuates between positive and negative 100.
• Near -100, the bears are dominating, while near +100, the bulls are dominating.
• For every seller, there is a buyer and vice versa; it is a zero sum game, so actually the 100 and the -100 levels rarely exist.
• The oscillators' upper and lower boundaries (overbought/oversold) are positive and negative 40.
• The 60/-60 level actually marks extreme optimism or pessimism.

• The zero line demonstrates equilibrium between bulls and bears.
• The VZO tends to fluctuate between -40 and +40, the crossing of each creates buy/sell signals. The default period for the VZO is 14. However, the period can be adjusted for sensitivity or for a preferred timeframe.
• The interpretations of the Positive and Negative 60 depend on the current trend; moving further below -60 in an uptrend is powerfully bearish, which indicates a change in sentiment. Moreover, bouncing from that level most probably won't reach the upper boundary and will retrace from the

zero level. Vice versa with +60 in a downtrend, moving further above +60 in a downtrend is powerfully bullish, indicating a change in sentiment. Moreover, retracing from that level most probably won't reach the lower boundary and will bounce from the zero level.
• In an uptrend, the oscillator tends to fluctuate between the zero and +40 because the bulls are powerful and dominating; vice versa with a downtrend, the VZO tends to fluctuate between -40 and the zero.

3.2 Trading Tactic 1
When the oscillator reaches the zone between -40 and -60, it means that the bears have already offloaded their shares, and this increases the likelihood of the bulls stepping in; just the opposite is true with the zone between +40 and +60.

The basic rule for a buy/sell signal is that crossing the -40 from below gives a buy signal, while crossing the +40 from above gives a sell signal.

From Figure 2, a buy signal is triggered when the VZO crosses below negative 40 and then crosses back up, while a sell signal is triggered when the

Figure 1- The main interface of the VZO

Figure 2- Template demonstrates simple buy/sell signal.

Figure 3- Dow Jones Industrial index (DJI) " ($INDU) "

Figure 4- Ezz Steel (ESRS.CA) Daily chart "Cairo Stock Exchange"

Figure 5- Egyptian telecom (ETEL.CA) Daily chart "Cairo Stock Exchange"

Figure 6- Misr Aluminum (EGAL.CA) Daily chart "Cairo Stock Exchange"

VZO crosses above the 40 level and then crosses back down.

This tactic is considered to be ideal for sideways trends; during those periods, the VZO will tend to fluctuate between -40 and 40.

Figures 3 −6 are some examples from different markets that apply this tactic.

3.3 Trading Tactic 2

Retracing from positive 40 and failure to reach the lower boundary means that bulls have entered early, which indicates strength, and crossing the zero level generates a buy signal.

From Figure 7, in a bullish period, the VZO tends to rebound before reaching the lower boundary. This indicates strength in the market.

This is the ideal case for an uptrend; the VZO will not reach the lower boundary and will rebound from a zone above the -40 level.

Figure 8 demonstrates an ideal VZO movement during an uptrend in which the VZO has a tendency to stay in the upper zone, fluctuating between the zero and the 40 level.

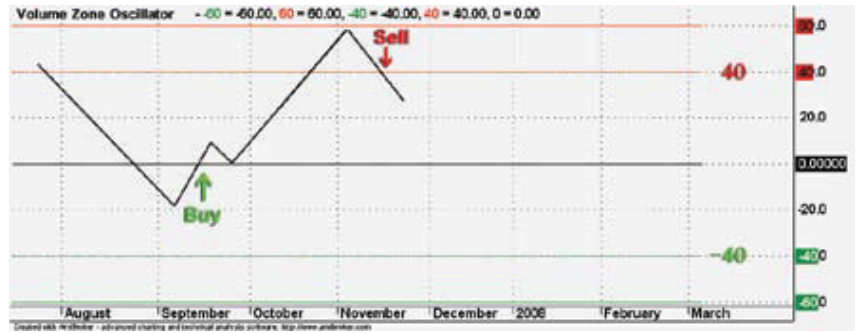**Figure 7- Template demonstrates ideal buy/sell signal during uptrend.**
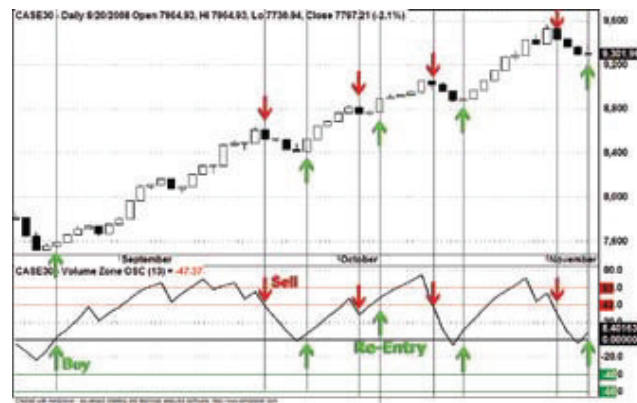

Figure 8- Case30.CA The index of Cairo Stock Market.

Figure 9 - Template demonstrates Re-entry signal.

Figure 10 - Upper Egypt Flour Mill s (UEFM.CA) Daily chart "Cairo Stock Exchange"

Figure 11- Mokhtar Ibrahim Construction (ECMI.CA) Daily chart "Cairo Stock Exchange"

3.3.1 Re-Entry

When the VZO crosses down through the +40 giving a sell signal, but it did not retrace further than the zero line, the VZO bounces back up towards the upper boundary. This is considered as strength, and a re-entry point when the VZO re-crosses +40 from below.

To avoid whipsaws, filters can be used. That's to say, buying on the break of 45 or 50 instead of 40. By using filters, it ensures that the move is powerful enough and increases the possibilities for profit.

3.4 Trading Tactic 3

Rebounding from negative 40 and failure to reach the upper boundary means that the bears have entered early, which indicates weakness, and crossing the zero level from above generates a sell signal.

From Figure 12, during a bears' period and due to their power, the VZO tends to retrace before reaching the upper boundary, indicating weakness in the market.

Figure 13 demonstrates an ideal VZO movement in a downtrend in which the VZO has a tendency to stay in the lower zone, fluctuating between the -40 and the zero level.

3.4.1 Exit Signal:

When the VZO crosses above the -40 giving a buy signal, then retraces toward the lower boundary before touching the zero line, it is considered a sign of weakness, and the trade should be exited once the VZO crosses down below -40 level.

To reduce whipsaws, it is better to use filters in a downtrend by crossing down -50, and in an uptrend by crossing down -45.

Figure 12- Template demonstrates ideal buy/sell signal during downtrend.

Figure 13- HRHO.CA "Cairo Stock Market."

Figure 14 - Template demonstrates Exit signal.

Figure 15 - Bed Bath & Beyond Inc (BBBY) NASDAQ Exchange

Figure 16- Hermes Holding (HRHO) Daily chart "Cairo Stock Exchange

Figure 17- General Motors (GM) weekly chart "NYSE Exchange"

3.5 Trading Examples

Ideal cases don't exist all the time, so all the tactics need to be used. With this in mind, trading in the upper zone between the zero and the 40 level is a sign of strength, while trading in the lower zone between the -40 and zero level is a sign of weakness.

In Figure 16, during November/December, the VZO did not retrace down to negative 40 but rather reversed up. Up until that point, the move would be considered a sign of strength, but the buy doesn't confirm until the VZO crosses above the zero line. In January/February, the VZO gave a buy signal crossing up the negative 40 level, the VZO did not reach the upper boundary (40 level), but rather retraced down. This is a sign of weakness, but the sell doesn't confirm until the VZO crosses below the zero line.

In Figure 17, during March/April, the VZO did not retrace to -40, but rather fluctuated around the zero line with poor signals (whipsaws) before continuing to the lower boundary, at which point a strong buy signal occurs from the crossing above the -40 level.

• Sometimes and as a limitation, when the VZO reaches the zero level, which is considered as an equilibrium level between bulls and bears, it fluctuates around it before making a move in whipsaw action. When this occurs, the strategy should be to exit and wait for the VZO to reach either the upper or the lower boundary to confirm either a buy or sell signal.

• To enhance the system and to reduce whipsaws, we can use filters, for example, buy when crossing 20 instead of zero.

Part Four: Important Interpretations

The VZO does not only give buy/sell signals. It can also be used to identify hidden strength or weakness in the market, by using divergences, swings, support and resistance analysis.

4.1 Divergences:

Divergence analysis is very important, as it shows hidden weakness or strength in the market, which is not apparent in the price action.

Positive divergence occurs when the VZO rises up while the price is still declining, which indicates a hidden strength in the market.

Negative divergence occurs when the price moves to a new or same high while the VZO makes a lower high than its previous one, which indicates hidden weakness in the market.

As seen in Figure 18, during October, a negative divergence took place, as the price reached the same high while the VZO was declining. Then a weakness was seen in the VZO, as it stayed in the lower zone from November to January. On the other hand, during January, a positive divergence took place, as the price made a new low while the VZO was rising. Then, strength was seen in the VZO, as it stayed most of the time in the upper zone.

4.2 VZO support & resistance:

Support and Resistance analysis can be applied to the VZO. The VZO can reach a support level, which it can bounce from up towards the 40 level, or vice versa, it can obtain a resistance level, where it can retrace down towards the -40 level.

In Figure 19, the VZO formed a support level from which it rebounds towards the 40 level, with the prices following the action.

In Figure 20, the VZO formed a resistance level from which it retraces down towards the -40 level, with the prices following the action.

Figure 18 - Electronic Arts Inc (ERTS) "NASDAQ Exchange"

Figure 19 - Nile Cotton (NCGC.CA) Daily chart "Cairo Stock Exchange"

Figure 20 - Media Production City (MPRC.CA) Daily chart "Cairo Stock Exchange"

4.3 Extreme Values:

When the VZO reaches extreme values (over 60 / under -60), this indicates extreme market conditions (optimism/ pessimism). Reaching extreme levels means that the bulls/bears have reached their maximum power and should take a break, and that a change in trend is likely.

If the extreme value happens after a long sharp trend and is followed by another extreme to the other side (swing), then the odds are in favour of reversal.

Figures 21, 22, and 23 highlight the VZO at extreme values above 60 or below -60 with the price changing its direction.

Figure 21 - Caterpillar Inc. (CAT) "http://moneycentral.msn.com/companyreport?symbol=BBB Y New York Stock Exchange (NYSE) "

Figure 22 - ADC Telecommunications (NASDAQ)

Figure 23- General Motors (GM) DAILY chart "NYSE Exchange"

Table 1- back testing results, for using (tactic 1) for 5 years in Egypt Stock Market

Egypt Stock Exchange	01/01/2003 to 01/01/2008		Tactic 1 Statistics
All trades 122	**Net Profit %** 4982.51%	**Avg. Profit/Loss %** 4.95%	**Avg. Bars Held** 10.07
Winners	73 (59.84 %)	**Losers**	49 (40.16 %)
Avg. Profit %	10.55%	**Avg. Loss %**	-3.40%
Avg. Bars Held	10.66	**Avg. Bars Held**	9.18
Largest win	99668.34	**Largest loss**	-44150.55
# bars in largest win	30	**# bars in largest loss**	6
Net Profit %	4982.51%	**Max. trade % drawdown**	-23.84%
Exposure %	71.47%	**Profit Factor**	2.99
Net Risk Adjusted Return %	6971.56%	**Payoff Ratio**	2.01
Annual Return %	119.48%	**Risk-Reward Ratio**	1.46
Risk Adjusted Return %	167.18%	**Sharpe Ratio of trades**	1.61

Table 2- back testing results, for using (tactic 1) for 5 years in New York Stock Exchange

New York Stock Exchange	01/01/2003 to 01/01/2008		Tactic 1 Statistics
All trades	**Net Profit %**	**Avg. Profit/Loss %**	**Avg. Bars Held**
169	611.94%	1.34%	8.54
Winners	89 (52.66 %)	**Losers**	80 (47.34 %)
Avg. Profit %	4.82%	**Avg. Loss %**	-2.53%
Avg. Bars Held	9.08	**Avg. Bars Held**	7.95
Largest win	11708.39	**Largest loss**	-2587.76
# bars in largest win	13	**# bars in largest loss**	6
Net Profit %	611.94%	**Max. trade % drawdown**	-12.84%
Exposure %	97.22%	**Profit Factor**	2.12
Net Risk Adjusted Return %	629.47%	**Payoff Ratio**	1.91
Annual Return %	48.05%	**Risk-Reward Ratio**	1.72
Risk Adjusted Return %	49.42%	**Sharpe Ratio of trades**	1.32

Part Five: Testing the VZO

5.1 Testing Tactic 1

The sideways trend denotes market conditions in which prices may be moving back and forth between levels of support and resistance and is the ideal situation for this tactic. The VZO should fluctuate between -40 and 40. This means that the bulls' power is equal to the bears' power, giving a buy signal crossing up -40 and a sell signal crossing down below the 40 level.

During sideways periods, there can be times when the bulls or bears show some extra strength, and as a result, the VZO may move during this strength period either in the upper zone between 0 and 40 or in the lower zone between -40 and 0. That means more buy and sell signals, keeping in mind the whipsaws mentioned earlier.

To reduce the risk and to reduce whipsaws, the buy signal was triggered by crossing above the 15 level instead of the zero as a confirmation of the bullish power. While a sell signal was triggered by crossing beneath the -5 level to reduce the risk.

To define sideways in the system, stocks with their ADX () below 18 were considered to be moving sideways.

As this oscillator depends on volume, the test was limited to stocks with their 15-day average volumes above 25000 shares.

5.2 Testing Tactic 2

During uptrends, the bulls are in control, so it is unlikely that the VZO would reach maximum bearish power zone (-40). This means that the VZO will rebound from a zone above the -40 (failure to reach the lower boundary); accordingly a buy signal registers crossing above zero, and a sell signal crossing down below the 40 level.

As previously mentioned, volume must confirm any up move and should increase with rising prices, while in the down move, prices can fall by their own weight. So to reduce whipsaws, and also to confirm the up moves, the buy signal was triggered by crossing above the 20 level instead of the zero as a confirmation of the bullish power.

Reaching the oversold level in an uptrend means a great buying opportunity, which means adding one more buying signal by crossing the -40 from below. So, we have two buying signals, one crossing above the -40 and the other crossing above the 20 level, and only one sell signal on crossing below the 40 level.

 If the VZO went below -45 in an uptrend, it would mean that bears had gained in power, and an exit signal would be triggered.

To define the uptrend in the system, stocks above their 60-day EMA () were considered in uptrend.

As this oscillator depends on volume, the test was limited to stocks with their 15-day average volumes above 25000 shares.

Table 3- back testing results, for using (tactic 2) for 5 years in Egypt Stock Market

Egypt Stock Exchange	01/01/2003 to 01/01/2008		Tactic 2 Statistics
All trades	**Net Profit %**	**Avg. Profit/Loss %**	**Avg. Bars Held**
92	2582.11%	3.96%	13.82
Winners	59 (64.13 %)	**Losers**	33 (35.87 %)
Avg. Profit %	8.99%	**Avg. Loss %**	-5.05%
Avg. Bars Held	14.24	**Avg. Bars Held**	13.06
Largest win	49990.17	**Largest loss**	-25106.6
# bars in largest win	24	**# bars in largest loss**	10
Net Profit %	2582.11%	**Max. trade % drawdown**	-27.56%
Exposure %	85.18%	**Profit Factor**	4.09
Net Risk Adjusted Return %	3031.18%	**Payoff Ratio**	2.29
Annual Return %	93.13%	**Risk-Reward Ratio**	1.26
Risk Adjusted Return %	109.33%	**Sharpe Ratio of trades**	1.34

Table 4- back testing results, for using (tactic 2) for 5 years in New York Stock Exchange

New York Stock Exchange	01/01/2003 to 01/01/2008		Tactic 2 Statistics
All trades	**Net Profit %**	**Avg. Profit/Loss %**	**Avg. Bars Held**
81	477.49%	2.58%	17.02
Winners	49 (60.49 %)	**Losers**	32 (39.51 %)
Avg. Profit %	7.68%	**Avg. Loss %**	-5.22%
Avg. Bars Held	16.2	**Avg. Bars Held**	18.28
Largest win	16878.01	**Largest loss**	-6236.78
# bars in largest win	29	**# bars in largest loss**	25
Net Profit %	477.49%	**Max. trade % drawdown**	-20.35%
Exposure %	97.13%	**Profit Factor**	1.86
Net Risk Adjusted Return %	491.61%	**Payoff Ratio**	1.21
Annual Return %	41.98%	**Risk-Reward Ratio**	1.33
Risk Adjusted Return %	43.22%	**Sharpe Ratio of trades**	0.82

Table 5- back testing results, for using (tactic 3) for 5 years in Egypt Stock Market

Egypt Stock Exchange	01/01/2003 to 01/01/2008		Tactic 3 Statistics
All trades	**Net Profit %**	**Avg. Profit/Loss %**	**Avg. Bars Held**
87	953.48%	3.90%	12.55
Winners	52 (59.77 %)	**Losers**	32 (39.51 %)
Avg. Profit %	9.81%	**Avg. Loss %**	-5.22%
Avg. Bars Held	14.62	**Avg. Bars Held**	18.28
Largest win	32617.77	**Largest loss**	-6236.78
# bars in largest win	4	**# bars in largest loss**	25
Net Profit %	953.48%	**Max. trade % drawdown**	-20.75%
Exposure %	62.53%	**Profit Factor**	1.94
Net Risk Adjusted Return %	1524.94%	**Payoff Ratio**	1.3
Annual Return %	60.19%	**Risk-Reward Ratio**	1.05
Risk Adjusted Return %	96.27%	**Sharpe Ratio of trades**	0.97

Table 6- back testing results, for using (tactic 3) for 5 years in New York Stock Exchange

New York Stock Exchange	01/01/2003 to 01/01/2008		Tactic 3 Statistics
All trades	**Net Profit %**	**Avg. Profit/Loss %**	**Avg. Bars Held**
131	577.39%	1.99%	10.48
Winners	87 (66.41 %)	**Losers**	44 (33.59 %)
Avg. Profit %	5.87%	**Avg. Loss %**	-5.69%
Avg. Bars Held	10.72	**Avg. Bars Held**	10
Largest win	9607.72	**Largest loss**	-9436.03
# bars in largest win	22	**# bars in largest loss**	4
Net Profit %	577.39%	**Max. trade % drawdown**	-26.78%
Exposure %	93.67%	**Profit Factor**	1.69
Net Risk Adjusted Return %	616.38%	**Payoff Ratio**	0.85
Annual Return %	46.58%	**Risk-Reward Ratio**	0.44
Risk Adjusted Return %	49.73%	**Sharpe Ratio of trades**	1.05

5.3 Testing Tactic 3

During downtrends, when bears are in control, it is unlikely that the VZO would reach the maximum bullish power zone (40). This means that the VZO will retrace from a zone below 40 (failure to reach the upper boundary). Accordingly, a sell signal is triggered crossing below the zero line.

Due to the bearish power in downtrends and the price's own weight, the buy signal was triggered by crossing above -45 instead of -40 as in the previous two tactics.

Reaching the overbought level in a downtrend means a great selling opportunity and adds one more selling signal by crossing the 40 level.

From the above, basically there have been two selling signals: one when crossing the 40; and the other when crossing below the zero level, with only one buying signal from crossing above the -45 level.

After any buy signal, if the VZO goes below -50, an exit signal is triggered.

To define the downtrends in the system, stocks below their 60-day EMA () were considered in downtrend.

As this oscillator depends on volume, the test was limited to stocks with their 15-day average volumes above 25000 shares.

5.4 Results Summary

Tables 7 and 8 show the results of using the three tactics of the VZO together for a five-year period.

Table 7- sum of using all VZO tactics for 5 years in Egypt Stock Market

Egypt Stock Exchange	01/01/2003 to 01/01/2008		Sum of All Tactics
All trades	**Net Profit %**	**Avg. Profit/Loss %**	**Avg. Bars Held**
301	8518.10%	4.76%	12.15
Winners	184 (61.13 %)	**Losers**	117 (38.87 %)
Avg. Profit %	9.78%	**Avg. Loss %**	-4.56%
Largest win	99668.34	**Largest loss**	-44150.55
# bars in largest win	30	**# bars in largest loss**	6
Min. trade % drawdown	-20.75%	Max. trade % drawdown	-27.56%
Avg. annual Return %	1703.62%	Avg. Sharpe Ratio of trades	1.31

Table 8- sum of using all VZO tactics for 5 years in New York Stock Exchange

New York Stock Exchange	01/01/2003 to 01/01/2008		Sum of All Tactics
All trades	**Net Profit %**	**Avg. Profit/Loss %**	**Avg. Bars Held**
381	1667%	2.78%	12.01
Winners	225(59.06%)	**Losers**	156(40.94%)
Avg. Profit %	6.12%	**Avg. Loss %**	-4.48%
Largest win	16878.01	**Largest loss**	-9436.03
# bars in largest win	29	**# bars in largest loss**	4
Min. trade % drawdown	-12.84%	**Max. trade % drawdown**	-20.35%
Avg. annual Return %	333.40%	**Avg. Sharpe Ratio of trades**	1.06

Part Six: Conclusion

Volume analysis is an area which invites greater investigation. This paper has utilised the separation of bullish and bearish volume to construct an oscillator to lead price moves.

The VZO is a complete system based on volume analysis which produces effective buy and sell signals during different kinds of trends and can highlight hidden strength and weakness in the market.

6.1 Advantages of the VZO:

• IPOs can be bought and sold during their early stages, since the VZO depends on volume and does not require a long history of data to give buy/sell signals.
• The VZO does not move on the price action, but on volume. Thus, it can trade uptrend, downtrend or sideways.
• VZO indicates selling pressure when shares are offloaded in a correction.
• Basing the oscillator on volume overlooks the spikes in prices.
• VZO is primarily used for intermediate or short-term trading purposes.
• All sell signals can also be used to short, and buy signals to cover.

6.2 Disadvantages of the VZO:

• Not applicable to trade FOREX, because the volume data is delayed.
• Stocks hitting limit up or limit down will distort the volume Figure.
• The oscillator provides no price target.
• Sometimes the VZO fluctuates around the zero level causing whipsaws. **IFTA**

Software

All charts created with Ami Brocker, Advance Charting and Technical Analysis Software. www.amibroker.com

Figure 24 - Talat Mostafa Group Holding (TMGH.CA) Daily chart "Cairo Stock Exchange"