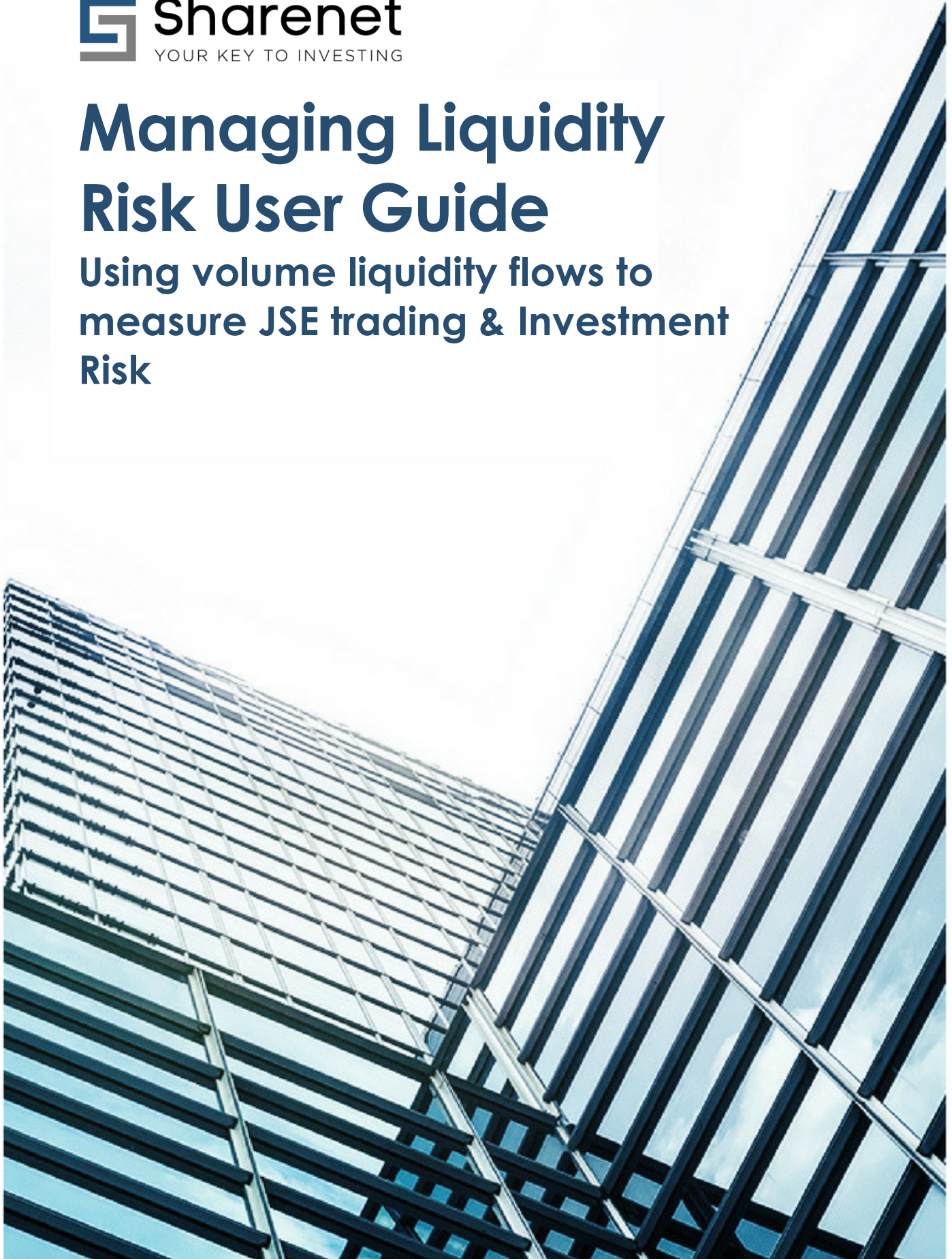




Managing Liquidity Risk User Guide

Using volume liquidity flows to
measure JSE trading & Investment
Risk



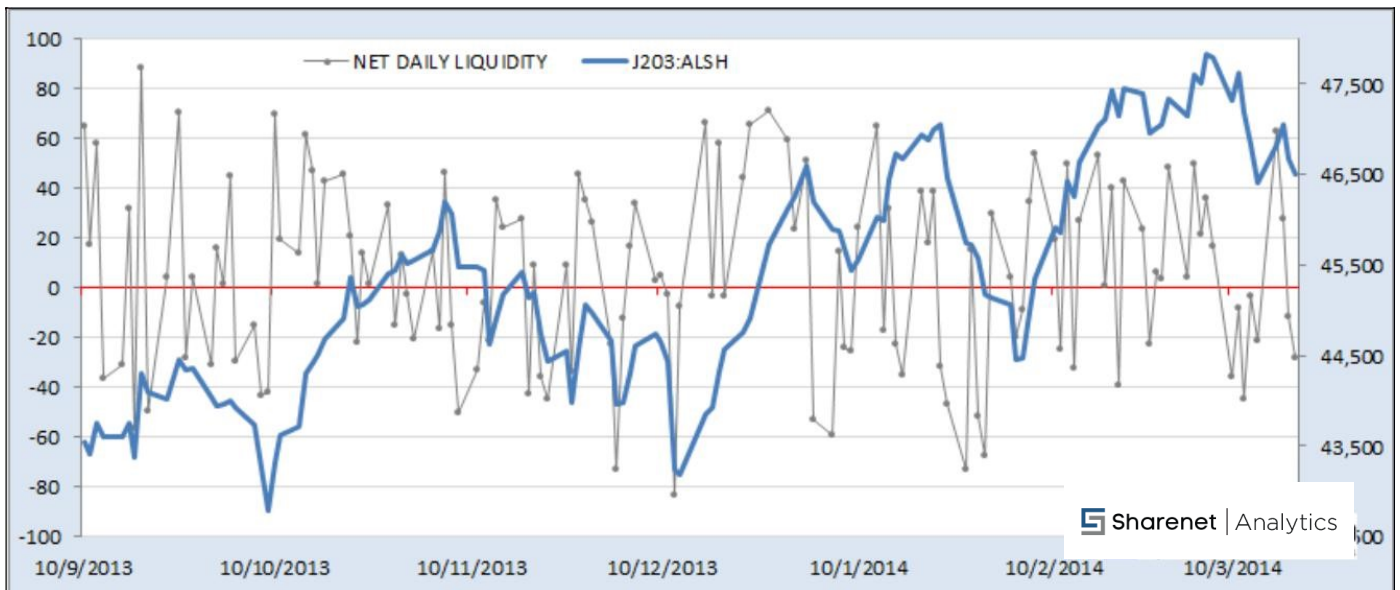
Introduction

To measure short, medium and long-term liquidity flows on the JSE, we deploy the McClellan Volume Oscillator (VMCOS) and companion Summation Index (VMCSI), together with a proprietary Medium Term Liquidity indicator (MTL). These charts are available in the JBAR charts group as VMCOS, VMCSI and MTL tabs respectively, to provide a complete liquidity risk management and alerting mechanism for JSE investors and traders.

The underlying measurement for measuring liquidity is daily advancing and declining volume for all JSE listed ordinary shares excluding debt, derivatives, ETF's and ETN's. It is often said that volume precedes price on the markets and this is certainly true when measuring liquidity. To calculate daily advancing volume, we add up the volume traded of all shares that rose in price for the day. Declining volume is then the sum of all volume for shares that fell in price for the day. To represent net liquidity flow for the day we subtract declining volume from advancing volume. If this is a positive number then the market experienced a "liquidity inflow" and if it is negative, it experienced a "liquidity outflow." To cater for the large and steady increase in volumes traded on the JSE over the last decade we divide the net liquidity by the total volume of the day to represent net liquidity as a percentage of all volume traded. This allows valid comparison of numbers and levels seen today with numbers and levels seen in the distant past.

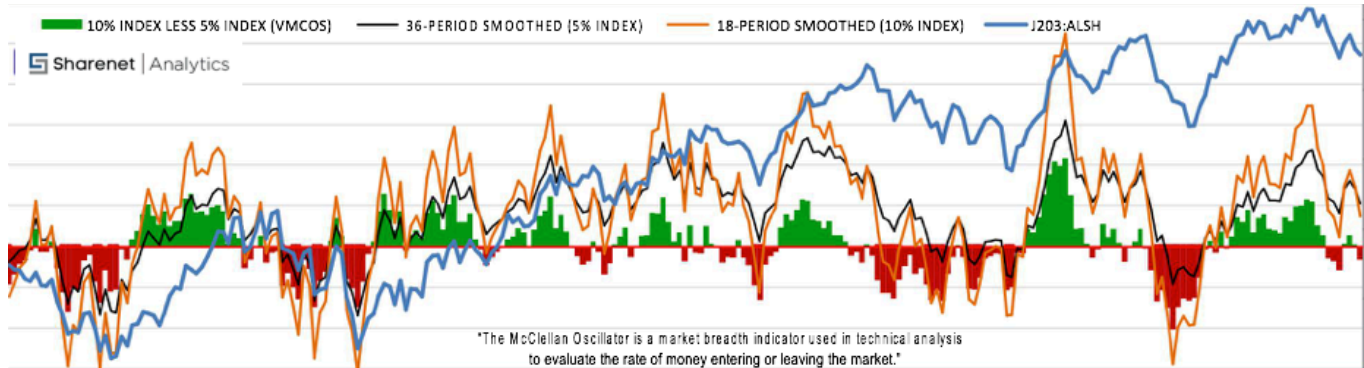
$$\text{NET DAILY LIQUIDITY (NDL)} = (\text{ADVANCING VOLUME} - \text{DECLINING VOLUME}) / \text{ALL VOLUME} * 100$$

NDL can be rather volatile, rendering it less useful in daily raw form, as depicted below. However it forms the key *building block* for the construction of the famous VMCOS, VMCSI and our proprietary MTL:



MEASURING SHORT-TERM LIQUIDITY RISK

Once we have net daily liquidity we can now calculate the famous Volume McClellan Oscillator (VMCOS.) This is just the difference between the 19-period exponential moving average of NDL (commonly known as the 10% smoothed index) and the 39-period exponential moving average of NDL (the 5% index.) Whilst the 19 and 39-period exponential moving averages of NDL are more useful for market timing than the volatile, unsmoothed NDL, it is the *difference between these two* (the VMCOS) we are interested in as this represents money *leaving* the market (negative) or money *entering* the market (positive.)



We see that the 5% and 10% indexes dipping below zero obviously represent net liquidity outflows, but the difference between the two (VMCOS) signals these outflows sooner, providing more timeous warning. VMCOS represents short-term liquidity flows and clearly from the chart, the JSE is generally weak/vulnerable/falling when the VMCOS is less than zero (red shading=negative liquidity) and is strong/rising when VMCOS is positive (green shading=positive liquidity inflows.)

It is important to interpret the VMCOS from the perspective of the positioning of the 5% and 10% indexes used to derive it. A negative VMCOS derived from two positive 5% and 10% indexes thus has less ominous connotations than one derived from two negative 5% and 10% indexes. In most cases the first instance just signals a healthy minor pullback in an otherwise healthy JSE up-trend. Similarly, one should not become too enthused with a swing from negative to positive for the VMCOS when the 5% and 10% indexes are themselves below zero.

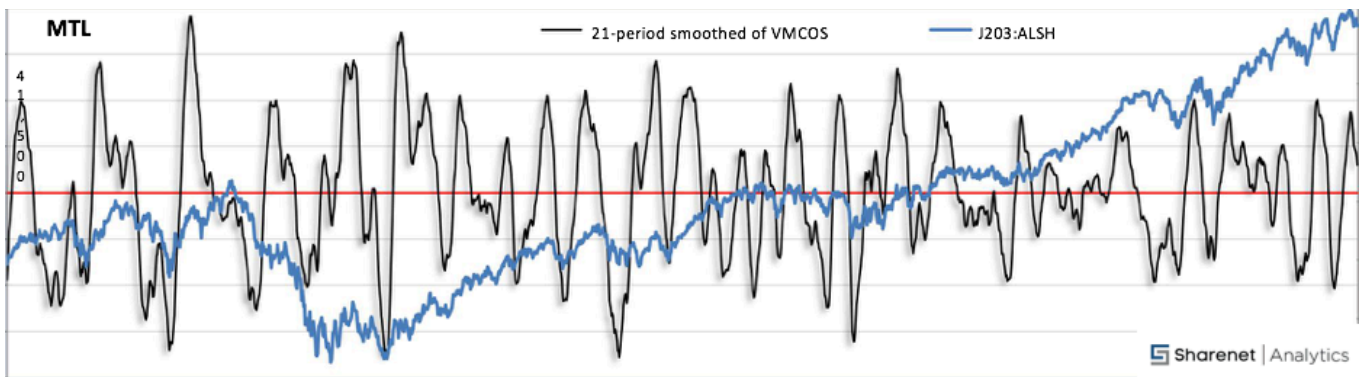
To adequately capture the connotations behind the relationships between the 5% and 10% indexes, the VMCOS and the companion VMCSI at any time, we created the McClellan Diffusion Index (MCDI) which you can read up about in an [older research note](#), but has no bearing on the current topic.

MEASURING MEDIUM-TERM LIQUIDITY RISK

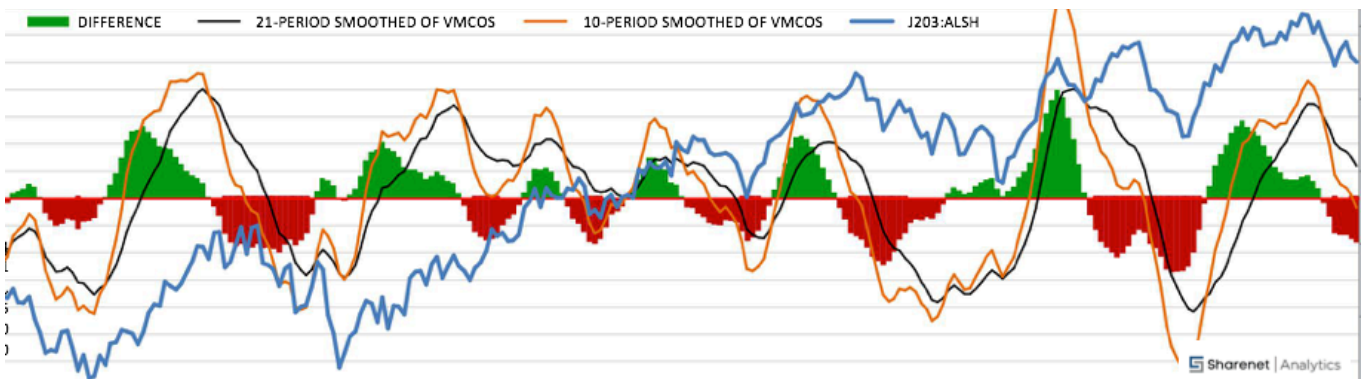
Whilst VMCOS is an excellent representation of short-term liquidity flows, it can tend to whipsaw around zero on occasion, frustrating some market timing efforts. These whipsaws can be significantly reduced by smoothing VMCOS itself. Medium Term Liquidity (MTL) deploys a 21-period front-weighted moving average of VMCOS to measure medium-term liquidity flow into the JSE – a technique we have found that is far superior for market timing efforts than either of the seemingly obvious choices of one of the 5% or 10% indexes used to create VMCOS.

A chart of MTL since 2007 appears below to show how it behaves in bull and bear markets. It is clear that when MTL is below zero, not very good things generally happen to the JSE and when MTL is above zero,

very few bad things happen to the JSE. Furthermore, MTL will dip below zero in *advance* of a “meaningful” JSE correction (such as in April 2008 and January 2013) in a substantial portion of the cases.



MTL is thus an excellent tool for managing medium-term trading risk. Another observation is that when MTL dips below -6 and rises above it again, this signals enormous but rare buying opportunities on the JSE (Great Troughs.) The MTL chart we provide also measures the 10-period exponential moving average of VMCOs together with the 21-period exponential moving average as well as their *difference* to provide excellent early warnings of *directional changes* in medium-term liquidity flows. When the 10-period EMA of MCOS rises above the 21-period EMA, this warns that medium-term liquidity flows are accelerating and the JSE is likely to rise. When the 10-period EMA falls below the 21-period EMA then this warns that medium-term liquidity flows are slowing and the JSE is likely to fall very shortly. The 10-period EMA, 21-period EMA and their difference thus provide the perfect trifecta for traders wanting to manage medium-term market risk, as displayed in the chart below.



You typically have three sets of escalating warnings of a medium-term JSE *correction*, namely:

1. When the 10-period EMA drops below the 21-period EMA (first warning)
2. When the 10-period EMA drops below zero (second warning)
3. When the 20-period EMA drops below zero (final warning)

Similarly, you have three warnings of a *trough reversal*,

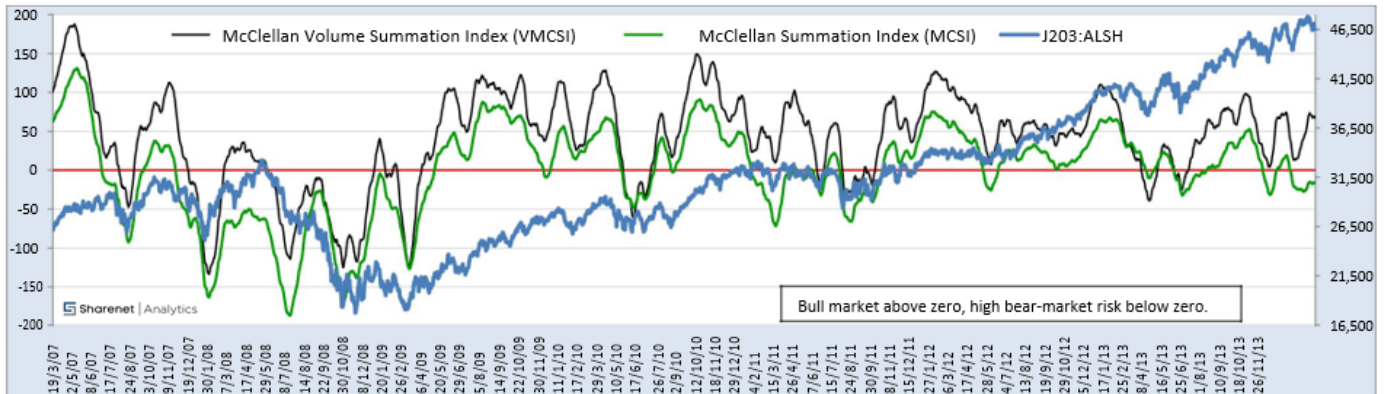
1. When the 10-period EMA rises above the 21-period EMA,
2. when the 10-period rises above zero and finally
3. When the 21-period EMA rises above zero.

It is suggested you deploy a staggered medium-term trading approach with MTL. This requires disposing of 1/3 your positions on the first warning, a further 1/3rd on the second warning and your final third on the last warning. Similarly you can use the same process to deploy funds into the market using the trough reversal signals.

If you want a more “risk-free” approach to medium term trading, then simply deploy funds (go long) on the first trough reversal signal and remove them on the first correction warning. This essentially is a trading strategy focused purely on the fluctuations of the difference of the two EMA's around zero.

MEASURING LONG-TERM LIQUIDITY RISK

The famous Volume McClellan Summation Index (VMCSI) is merely the previous days' VMCSI plus today's VMCO and represents *long-term liquidity* as displayed below. It is less useful for traders but very useful for investors gauging risk of a bear market. It is included in the Composite Market Health Index (CMHI) for this very reason. It is shown with the standard McClellan Advance/Decline Summation Index (MCSI, in green) for comparative purposes.



Whilst the green MCSI line, calculated from advance /decline data (as opposed to advancing/declining *volume*) is also excellent at representing long-term liquidity risk, it is far more sensitive to the extreme selectivity among investors that normally precedes major stock market tops and is guilty of “crying wolf” too often for market timing purposes. Our back tests over 20 years of historical data show that the VMCSI is a far more effective tool for measuring long term liquidity risk in the JSE. MCSI does however provide a useful warning of possible VMCSI weakness ahead and should not be entirely ignored.

Note that during the course of the 2009 to 2014 bull market, VMCSI provided no less than 4 bear market warnings. Whilst JSE exits executed on these occasions will have resulted in returns being lower than the comparable period buy-and-hold, we contest that *risk-adjusted returns* for the market timer were far higher. This is because the buy-and-hold strategy, by definition, will fail to move to cash in the next bear market and likely suffer horrendous drawdowns – the magnitude of which took 3 years to recover in the aftermath of the 2008 crash.

The bear market signals and their implied JSE exits are thus like *insurance* – insurance costs money and nobody likes to pay it, but the insurance premiums are likely less than the costs to recover from a disaster with a non-trivial likelihood.

CONCLUSIONS

1. Advancing and declining volume provide very accurate representations of short, medium and long-term liquidity flows and hence risk inherent in the JSE.
2. Whilst daily MCOS readings are useful to gauge short-term risk, you are advised to also monitor a 5-period EMA of the MCOS to get better trend-locked measurement of short-term risk devoid of most whipsaws. This 5-period EMA is also provided for you on the MTL chart.

3. The 10-period EMA and the 21-period EMA and their crossovers displayed in the MTL chart are however the best instruments to use to gauge medium-term stock market liquidity risk.
4. The VMCSI is the best breadth indicator to use to gauge long-term JSE liquidity risk. It is so good over history at doing this, both on local and international markets, that it is included as one of the components in the Composite Market Health Index (CMHI).
5. Visitations of the 21-period EMA of VMCOS below -6 provide rare Great Trough “buy on the dip” opportunities.
6. If any of the MTL components signal weakness in the JSE and the VMCSI is signaling high risk of a bear market, then the MTL signal has more significance.
7. If any of the MTL components signal strength in the JSE and the VMCSI is signaling high risk of a bear market, then the MTL signal has less significance.
8. If any of the MTL components signal strength in the JSE and the VMCSI is signaling a bull market then the MTL signal has more significance.
9. If any of the MTL components signal weakness in the JSE and the VMCSI is signaling a bull market then the MTL signal has less significance.
10. The VMCOS, VMCSI and MTL charts in the JBAR chart group provide all the indicators and SMS/email alerts you need to manage volume-derived JSE liquidity risk on the short, medium and long-term horizons.
11. Whilst advance/decline data (not the volume associated with it) also provides excellent liquidity measurement tools as displayed in our MCOS and MCSI charts, volume-derived breadth as discussed in this guide provides the best indication of liquidity over the decades.
12. However it is very useful (and prudent) to compare the standard MCSI and the volume version (VMCSI) together when evaluating long-term investment risk, since the standard MCSI appears to flag bear markets before the VMCSI (almost too soon for market timing purposes) due to its higher sensitivity to market selectivity around great market tops and thus provides early warning of a VMCSI flagged bear market warning.
13. For more history, background and technical data related to the famous McClellan breadth indices, see <http://powerstocks.co.za/mcclellan.php>
14. Short term traders may also be interested in the McClellan Diffusion Index, also displayed in the MCSI and VMCSI charts and discussed at <http://powerstocks.co.za/mcclellan-diffusion.php>

Tygervalley Office

301, 3rd Floor, Imperial Terraces,
Tygervalley Waterfront, 7530

Tokai Office

4 Silverwood Close, Steenberg
Office Park, Tokai, 7945

T: +27 (0)21 700 4800
support@sharenet.co.za
www.sharenet.co.za

Sharenet (Pty) Ltd,
a juristic representative of
Sharenet Securities (Pty) Ltd
(FSP #28430)

APPENDIX-ONE: THE MTL CHART PROVIDED IN THE JBAR TAB



APPENDIX-TWO: ALERTS PROVIDED FOR IN THE MTL CHART

		BETA	SMS	EMAIL
MTL-2584	VMCOS FELL BELOW ZERO ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
The VMCOS fell below zero, which means short term daily liquidity is in an outflow situation. Two or more days of the VMCOS below zero hints at a more serious situation which could develop into medium-term liquidity outflows.				
MTL-2594	EMA(10) OF VMCOS FELL BELOW EMA(21) OF VMCOS ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
Short-term momentum of VMCOS fell below medium-term momentum, which is usually your first warning of fading medium-term liquidity inflows. This warning normally precedes a JSE correction by a few days.				
MTL-2604	EMA(10) OF VMCOS FELL BELOW ZERO ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
Short-term momentum of VMCOS fell below zero, which is usually your second warning of fading medium-term liquidity inflows. This warning is normally accompanied by further declines in the JSE.				
MTL-2614	EMA(21) OF VMCOS FELL BELOW ZERO ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
Medium-term momentum of VMCOS fell below zero which is usually your third and final notice that medium-term liquidity is draining from the JSE. This warning is normally accompanied by further serious declines in the JSE. You now need to watch the VMCSI for long-term liquidity outflows which will be a more serious bear-market warning.				
MTL-2624	EMA(10) OF VMCOS ROSE ABOVE EMA(21) OF VMCOS ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
Short-term momentum of VMCOS rose above medium-term momentum, which is usually your first clue of returning medium-term liquidity inflows. This warning normally precedes a JSE rise by a few days.				
MTL-2634	EMA(10) OF VMCOS ROSE ABOVE ZERO ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
Short-term momentum of VMCOS rose above zero, which is usually your second clue of returning medium-term liquidity inflows. This warning is normally accompanied by further rises in the JSE over the next few days.				
MTL-2644	EMA(21) OF VMCOS ROSE ABOVE ZERO ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
Medium-term momentum of VMCOS rose above zero which is usually your third and final notice that medium-term liquidity inflows have returned to the JSE. This warning is normally accompanied by further rises in the JSE over the course of the next few weeks.				
MTL-2654	GREAT TROUGH BUYING OPPORTUNITY ⓘ		<input type="checkbox"/> (0)	<input type="checkbox"/> (1)
The 21-period EMA of VMCOS rose above -6 which is a rare buy-on-the-dip opportunity and usually marks the start of new bull markets after a period of sustained JSE declines.				

APPENDIX-THREE: THE VMCOS CHART PROVIDED IN THE JBAR TAB



APPENDIX-FOUR: THE ALERTS PROVIDED FOR IN THE VMCOS CHART

	BETA	SMS	EMAIL
<p>VMCOS-1784 INCREASED ACCELERATION IN JSE LIQUIDITY ⓘ</p> <p>The Volume McLellan Oscillator has turned positive, whilst the Volume McLellan Summation is in a net positive liquidity inflow situation (above zero) meaning the rate of change of JSE liquidity inflows is likely to increase in pace. This could propel the JSE higher at a faster rate.</p>		<input type="checkbox"/> (3)	<input checked="" type="checkbox"/> (8)
<p>VMCOS-1794 DECREASED ACCELERATION IN JSE LIQUIDITY ⓘ</p> <p>The Volume McLellan Oscillator has turned negative, whilst the Volume McLellan Summation is in a net positive liquidity inflow situation (above zero) meaning the rate of change of JSE liquidity inflows is likely to slow in pace. This could weaken JSE momentum or lead to a short term correction.</p>		<input type="checkbox"/> (2)	<input checked="" type="checkbox"/> (8)
<p>VMCOS-1804 LOWER DECELERATION IN JSE LIQUIDITY ⓘ</p> <p>The Volume McLellan Oscillator has turned positive, whilst the Volume McLellan Summation is in a net negative outflow liquidity situation (below zero) meaning the rate of change of JSE liquidity outflows is likely to decrease in pace. This could slow down the current JSE down-trend or lead to a short term rally.</p>		<input type="checkbox"/> (1)	<input checked="" type="checkbox"/> (7)
<p>VMCOS-1814 HIGHER DECELERATION IN JSE LIQUIDITY ⓘ</p> <p>The Volume McLellan Oscillator has turned negative, whilst the Volume McLellan Summation is in a net negative outflow liquidity situation (below zero) meaning the rate of change of JSE liquidity outflows is likely to increase in pace. This could steepen the current JSE down-trend or lead to a selling bout (sell-off).</p>		<input type="checkbox"/> (2)	<input checked="" type="checkbox"/> (7)
<p>VMCOS-1824 VOL MCOS 90% OVER-EXTENDED ⓘ</p> <p>The Volume McLellan Oscillator has risen above the 90% over-extended threshold above which it has spent less than 10% of its time since 1996 and represents a rare bout of bullishness.</p>		<input type="checkbox"/> (2)	<input checked="" type="checkbox"/> (8)
<p>VMCOS-1834 VOL MCOS 95% OVER-EXTENDED ⓘ</p> <p>The Volume McLellan Oscillator has risen above the 95% over-extended threshold above which it has spent less than 5% of its time since 1996 and represents an extremely rare bout of bullishness. It is highly likely that the VOL MCOS will pull back and decrease from here, weakening the pace of liquidity inflows.</p>		<input type="checkbox"/> (1)	<input checked="" type="checkbox"/> (8)
<p>VMCOS-1844 VOL MCOS 90% UNDER-EXTENDED ⓘ</p> <p>The Volume McLellan Oscillator has fallen below the 90% under-extended threshold below which it has spent less than 10% of its time since 1996 and represents a rare bout of bearishness.</p>		<input type="checkbox"/> (2)	<input checked="" type="checkbox"/> (8)
<p>VMCOS-1854 VOL MCOS 95% UNDER-EXTENDED ⓘ</p> <p>The Volume McLellan Oscillator has fallen below the 95% under-extended threshold below which it has spent less than 5% of its time since 1996 and represents an extremely rare bout of bearishness. It is highly likely that the VOL MCOS will pull up and increase from here, weakening the pace of liquidity outflows.</p>		<input type="checkbox"/> (2)	<input checked="" type="checkbox"/> (8)

APPENDIX-FIVE: THE VMCSI CHART PROVIDED IN THE JBAR TAB



APPENDIX-SIX: ALERTS PROVIDED FOR IN THE VMCSI CHART

	BETA	SMS	EMAIL
VMCSI-1864 VMCSI DIFFUSION ROSE ⓘ The Volume McClellan Diffusion Index (VMCDI) which uses all the 5 components of the VMCOS and the VMCSI to recommend how much % you should have in the markets, rose from aaa to bbb.		<input type="checkbox"/> (1)	<input checked="" type="checkbox"/> (8)
VMCSI-1874 VMCSI DIFFUSION FELL ⓘ The Volume McClellan Diffusion Index (VMCDI) which uses all the 5 components of the VMCOS and the VMCSI to recommend how much % you should have in the markets, fell from aaa to bbb.		<input type="checkbox"/> (1)	<input checked="" type="checkbox"/> (8)
VMCSI-1884 JSE IN NET LIQUIDITY IN-FLOW SITUATION ⓘ The VMCSI rose above zero meaning the JSE has moved from a net liquidity outflow to a net liquidity inflow situation, which is bullish. On both the US markets and the JSE, there has NEVER been a recession or bear market with the VMCSI above zero.		<input type="checkbox"/> (2)	<input checked="" type="checkbox"/> (8)
VMCSI-1894 JSE IN NET LIQUIDITY OUT-FLOW SITUATION ⓘ The VMCSI fell below zero meaning the JSE has moved from a net liquidity inflow to a net liquidity outflow situation, which is bearish.		<input type="checkbox"/> (1)	<input checked="" type="checkbox"/> (9)
VMCSI-1904 MARTIN PRING BUY SIGNAL ⓘ The VMCSI has crossed above its medium term moving average trend line which is a BUY signal if you are following the Martin Pring breadth long-term trading strategy.		<input type="checkbox"/> (2)	<input checked="" type="checkbox"/> (10)
VMCSI-1914 MARTIN PRING SELL SIGNAL ⓘ The VMCSI has crossed below its medium term moving average trend line which is a SELL signal if you are following the Martin Pring breadth long-term trading strategy.		<input type="checkbox"/> (3)	<input checked="" type="checkbox"/> (8)