RELATIVE ROTATION GRAPHS USER GUIDE

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A Relative Rotation Graph (RRG™) provides a visual presentation of how a group of securities are performing relative to a selected benchmark. It portrays in an easily interpreted manner which securities are currently performing the best against the benchmark, which ones are showing a significant improvement, and which ones are falling away. A typical usage is to examine the relative behaviour of the constituents within the sectors of a specific Equity Index (e.g. the constituents of the Dow Jones Industrial or the sectors of the S&P 500), though the technique can be used for other asset classes as well. This very innovative analysis has been developed over a number of years by Julius de Kempenaer.

Taking equities as the example the starting point for RRG is the Relative Strength of an Index constituent against the Index itself. Better probably to describe it as "Comparative Strength" or "Relative Performance" so as to avoid any confusion with Welles Wilder's well known RSI (Relative Strength Index).

The raw Relative Strength analysis plots the Close price of your chosen constituent against that of another constituent, for Equities the second is usually an Index. This is fine for a single constituent but when you want to compare different constituents against the same Index it falls apart due to the different base values of the first constituent instruments.

What Julius de Kempenaer has succeeded in doing is to devise an algorithm that "normalises" the Relative Strength values so that in comparing one constituent against another you are indeed doing so on a like for like basis which produces a result that is a genuine comparison.

CHART OF RRG AND THE COMPONENT ANALYSES

RRG is plotted as a Scatter graph, the two components are:

- "JdK-RS_Ratio" – X-axis
- "JdK-RS_Momentum" – Y-axis

Note both of the above formulas are proprietary and cannot be revealed.

INTERPRETATION OF A RRG CHART

The chart is broken down into 4 quadrants – in clockwise order starting from the top right LEADING, WEAKENING, LAGGING, and IMPROVING.

If the RS-Ratio and the RS-Momentum are both greater than 100 for the latest point of a RRG Trail then it will be positioned in the LEADING quadrant, if both beneath 100 in the LAGGING quadrant. An "in between" situation for the WEAKENING and IMPROVING quadrants.

Which quadrant the leading point is in determines the colour of the Trail – Green for LEADING, Yellow for WEAKENING, Red for LAGGING, and Blue for LEADING.

Observation of the RRG Trails show that much of the time they move in an orderly fashion that trace out lines having a regular curved shape rather than taking a random zig-zag form. This is especially so the further out the RRG Trail is from the X/Y axis crossover in the middle of the chart. The norm is that a constituent of an Equity Index moves in a reasonably regular manner with respect to the Index itself. It will spend a period of time where it improves relative to the benchmark, and then the improvement will

start to decay and slip away into negative territory where the Index is now outperforming the constituent. Note, however, whilst this smooth transition into outperforming and then dipping away into underperforming is very commonly seen, it is NOT guaranteed! You can and do get instances where violent and sudden changes in the direction the Trail is taking occurs.

The essential point to remember is that a RRG chart is based on relative performance, NOT the absolute performance of the Index constituent itself! Thus if the Index itself is bullish and performing strongly then any stock where the Trail is accelerating from the IMPROVING quadrant into the LEADING quadrant should in normal circumstamces give good profits from just the absolute value of the stock perspective. However, if the Index is performing poorly and bearish, then buying the stock may just lead to lower losses then if you'd bought a stock not so well positioned in the RRG chart.

A key driver for RRG is easily identifying those constituents where the relative price performance is differing significantly from that of the Index benchmark. Ones where the Trail is very close to the X/Y

axis intersection in the middle of the chart aren't of great interest as they're performing very much in line with the benchmark Index itself. What's of interest is those stocks which are significantly outperforming the Index, and for those who are looking to take up a potentially profitable "short" position where it is significantly underperforming. Worthwhile therefore to look to remove the "clutter" concentrated around the mid point of the RRG chart. See below for the Dow Jones Industrial (.DJI).

THINGS YOU CAN DO WITH A RRG CHART

- Change the benchmark Index via "Instrument" and "Index"

- Change "Settings" via the SETTING option

    a.) Change the interval from the default of Daily to Weekly, Monthly, Quarterly, or Yearly. Note intraday intervals currently aren't supported but will be in a future version of the RRG chart which we expect to release in Q1 2014.

    b.) Switch from Today to a previous (Historical) Date

    c.) Change the length of the RRG Trail – minimum value is 1, maximum 20. The very latest point of the Trail is denoted by a square, the preceding points by arrows showing the direction the RRG analysis line is moving in.

    d.) "Zoom" an area of the RRG chart. Note when you are in Zoom mode and with a setting greater than a 100 the "Pan" feature is enabled via the normal arrow cursor being replaced by a hand.
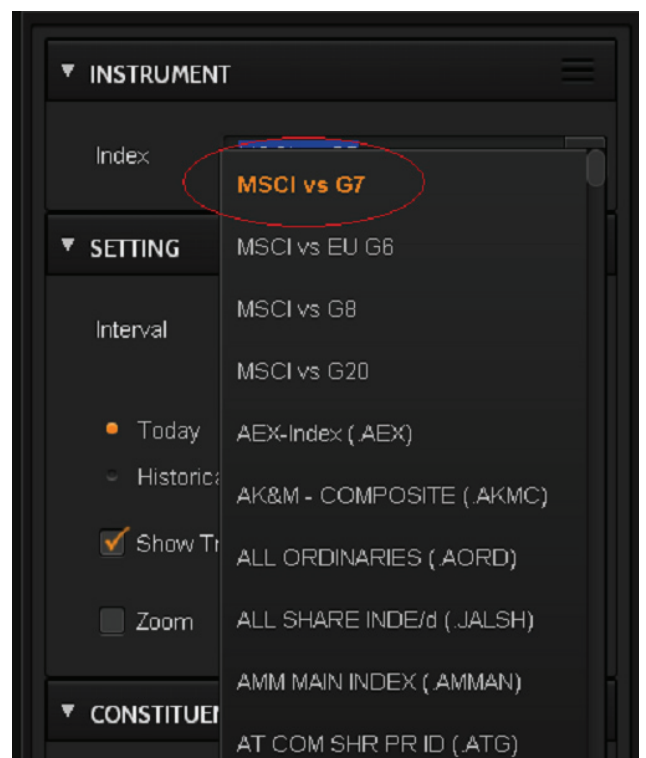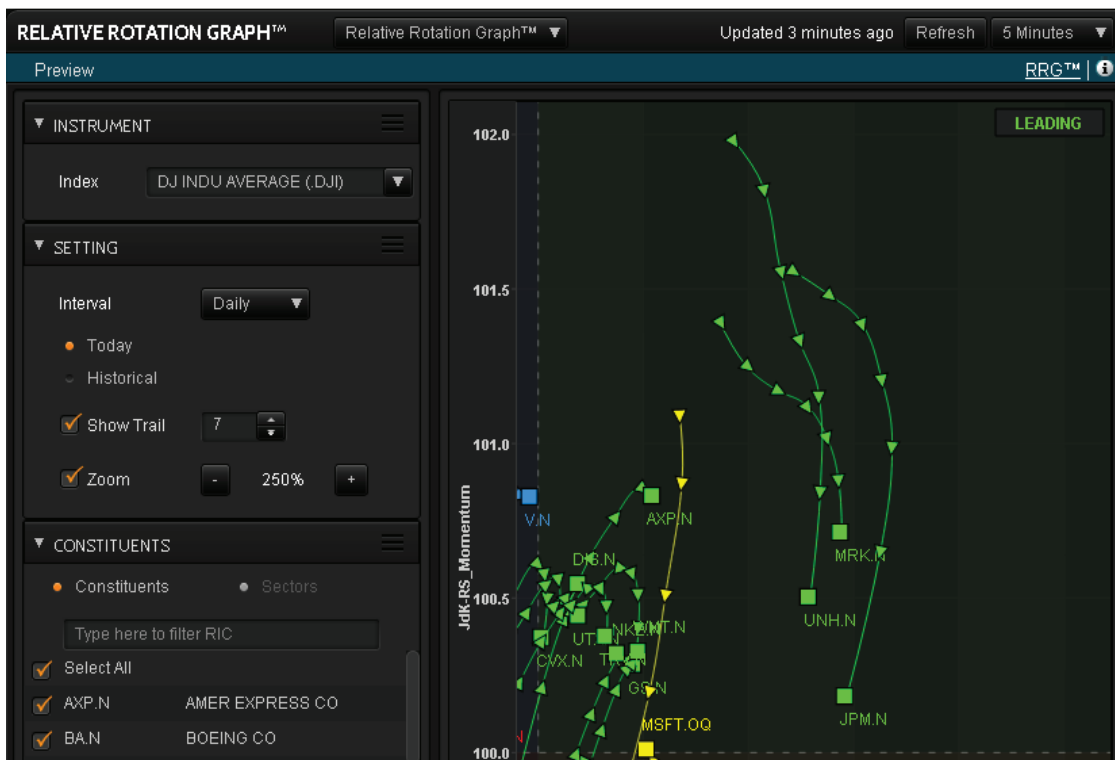
To return to the default display remove the checkmark from "Zoom".

- A RRG chart automatically updates itself at a set interval as shown in the top righthand corner of the chart. The default is set at 5 minutes, but this can be changed from the dropdown menu obtained by clicking on the down pointing arrow. Note clicking on "Refresh" retrieves the very latest data and then redraws the chart

- Change the Index constituents that are displayed in the RRG chart via CONSTITUENTS

You can remove an instrument from the chart by removing the checkmark against it in the constituent list and then clicking on "Update Chart". Multiple instruments can be selected before actioning "Update Chart".

- Switch from displaying the constituents of an Index to the sectors via the "Sectors" button. Note not all Indices have associated sectors and the "Sector" button will be greyed out and unavailable if this is the case
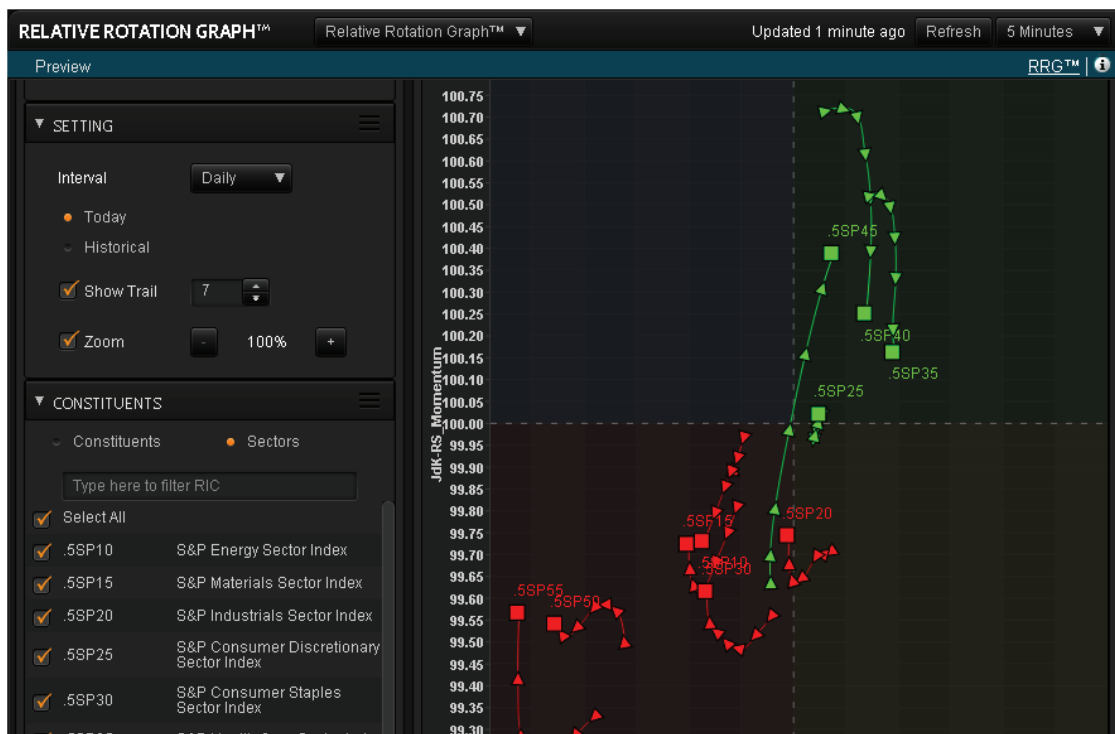
- Hovering the mouse cursor over the latest point of a Trail (a square) produces a data box showing details of that particular constituent.

- Clicking on the "Relative Rotation Graph" dropdown at the top of the chart allows you to switch from the RRG display to a Security Profile chart.

This shows the price performance of both the constituent and the Index benchmark, where both are rebased to a 100 as at the starting date 6 months previously.

- **Number of Index constituents loaded.**
  By default this is 100 which for the great majority of Equity

Indices allows all of the components to be plotted in the RRG chart. In the bottom lefthand corner of the chart, just to the right of "Update Chart" you see "XX of YY items selected". Using the Nikkei 225 (.N225) as example, the default RRG chart will show "100 out of 200". The 100 loaded are the first 100 in the

Constituent list. By clicking on "Select All" this will change to "200 out of 200".

- Maximum number of Index constituents that can be loaded.
  The limit is 200. The limit is in place because a.) The load placed on the back-end server infrastructure that supplies the data for RRG charts has to be controlled, it cannot be open ended. b.) Making sense out of a RRG chart becomes more and more difficult due to the "clutter" factor as the number of charted constituents increases.

- Displaying constituents outside of the first 200 loaded.
  This can only be accomplished by removing selected constituents and then selecting replacements from those not displayed in the original RRG chart.

- "Type here to Filter Ric"
  This provides a quick mechanism to remove selected Rics from the constituent list.

a.) Start typing in the name or Ric code into the "Type here to Filter Ric" box.

b.) As example for the .N225 type "Shimi" (no apostrophes) into the "Type here to Filter Ric".

c.) 1803.T Shimizu Corp appears beneath "Select All". Remove the checkmark against it.

d.) Remove "Shimi" from the "Type here to Filter Ric" box and the amended constituent list appears with 1803.T no longer selected.

e.) Repeat steps a.) to c.) to remove further constituents.

f.) To restore the removed constituents click on "Select All" to put back the checkmark.
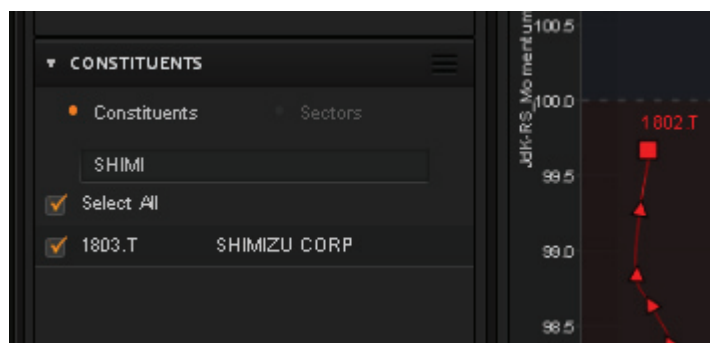
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