

Chart User Manual

- 24th June 2011 -

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1 INTRODUCTION

The charts provide three core functions:

1. The ability to view price charts and technical analysis indicators,
2. Create alerts that provide a notification via email and instant messenger when price, trendline and technical analysis conditions are met,
3. Back test and optimise trading strategies that are based price, trendline and technical analysis rules

This document provides information on how to use the charts, create alerts, back test trading strategies and optimise them.

2 CHARTS

The Charts provide the base platform for viewing price and technical analysis indicators, creating alerts, and developing trading strategies using the back test and optimisation features. To view the charts a current version of Adobe Flash player must be installed.

The Interactive Charts provide a range of features that include:

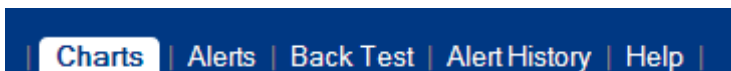
- Full screen
- Chart and mountain view zoom controls
- Line, candle, bar, area and bordered candle chart display options
- Track ball and cross hair display options for price and technical indicator values
- The ability to save a default price, technical indicator, chart interval settings
- Chart time zone setting options that adjust the chart display time to exchange, feed or the time of a selected city
- Dynamic candle and line updates as tick data arrives
- A range of technical analysis indicators that include Parabolic SAR, moving averages, Stochastic, MACD, RSI, Williams % R, TSI, Bollinger Bands etc.
- Extensive range of drawing tools including trendlines, Fibonacci retracements, fans and arcs with the ability to save drawings so that they can be view on the next log-in
- Snap to open, high, low and close values when using the drawing tools, with the ability to toggle the snap to functionality on or off via settings or when using the charts
- Tick by tick display of all bid prices
- Dynamic resizing that hides display options as the chart is reduced in size

The following sections provide details on how to use these features.

2 CHARTS

2.1 Navigation

To navigate between the various Chart features click on the **'Charts'**, **'Alerts'**, **'Back Test'**, **'Alert History'** and **'Help'** navigation links on the top left of the screen. The background colour for the currently selected tab is white:



2.2 Chart Settings

To change the chart display options, such as add or remove technical analysis indicators, click on the **'Settings'** cog button on the charts:



After clicking on the **'settings'** button, the settings panel will appear to the right of the chart. From here you can adjust the price and technical chart display to suit your preferred set up.

The settings panel is also used to manage the alert notification settings. For example, if you want to receive an Email and/or MSN Messenger alert when your price, trend line or technical analysis conditions are met, enter your email address and MSN contact details here.

Clicking the **'save'** button will store your chart and alert notification settings, next time you use the charts the display will automatically default to your preferred set up.

Clicking on the **'save'** or **'settings'** cog will close the settings.

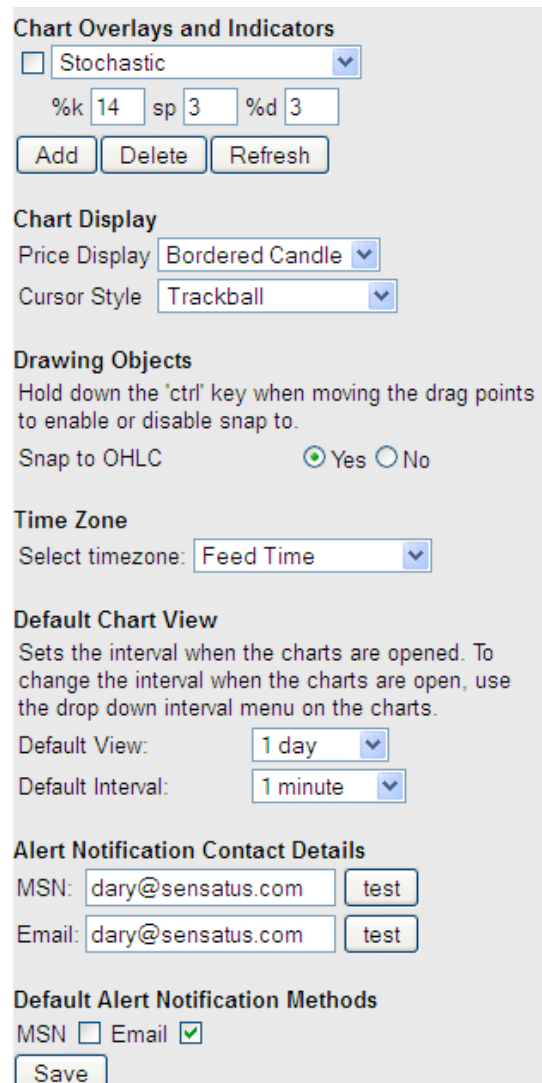


Chart Overlays and Indicators

Stochastic ▼

%k 14 sp 3 %d 3

Chart Display

Price Display Bordered Candle ▼

Cursor Style Trackball ▼

Drawing Objects

Hold down the 'ctrl' key when moving the drag points to enable or disable snap to.

Snap to OHLC Yes No

Time Zone

Select timezone: Feed Time ▼

Default Chart View

Sets the interval when the charts are opened. To change the interval when the charts are open, use the drop down interval menu on the charts.

Default View: 1 day ▼

Default Interval: 1 minute ▼

Alert Notification Contact Details

MSN:

Email:

Default Alert Notification Methods

MSN Email

2 CHARTS

2.2.1 Chart Overlays and Indicators

The 'Chart Overlays and Indicators' section manages the display of technical analysis indicators and settings. To select technical analysis indicators use the drop down menus and edit their settings using the text boxes that appear below indicator. Additional indicators can be added by clicking on the 'add' button below the drop down menus. To remove indicators tick the check boxes to the left of the indicators and then click on the 'delete' button.

2.2.2 Price Display

To change how the price is displayed, use the 'Price Display' drop down menu. Choose from: Line, Candle, Bar, Bordered Candle or Area by clicking on the corresponding radio button under 'Price Display'.

The 'Line' chart displays the price at the end of each interval.

The 'Candle', 'Bar' and 'Border Candle' charts display the 'open' price at the start of the interval, the 'highest' and 'lowest' price during the interval and the 'closing' price at the end of the interval.

The 'Area' option displays a line chart with the area under the chart highlighted.

2.2.3 Cursor Style

When moving the mouse over the chart, the related price and time information can be displayed in various ways using the 'Cursor Style' drop down menu in the 'Chart Display' section.

The 'Trackball' option displays the Open, High, Low, Close and time in the top left of the chart window. The values displayed are based price information relating to the position of the mouse pointer on the time axis.

The 'Labelled Trackball' and 'Cross Hair' options display the price and time stamp on the price and time axis. The values displayed are based price information relating to the position of the mouse pointer on the time axis.

The 'Screen Crosshair' displays the price and timestamp values on the relevant axis based on the location of the cross hairs on the chart.

2 CHARTS

2.2.4 Drawing Objects

When using the drawing tools, such as the trendline or Fibonacci retracements, if 'Snap to OHLC' is enabled then the selected drawing tool drag points will snap to the nearest open, high, low or close (OHLC) values. Use the settings to enable or disable this functionality. While using the drawing tools, the snap to functionality can be toggled on and off by holding down the 'CTRL' key on the keyboard. Alternatively right click on the chart to enable or disable the snap to feature.

2.2.5 Time zone

The time stamp on the chart can be changed to align with the time in a selected city, the timestamp on the price feed or the exchange time. To change the display time on the chart use the 'Select timezone' drop down menu.

2.2.6 Default View & Interval

The default chart view and interval period that is displayed when you open the charts window, can be set using the 'Default View' and 'Default Interval' drop down menus. The 'view' refers to the time frame between the start and end date on the chart display, whereas the chart 'interval' refers to how frequently the price is plotted on the chart.

2.2.7 Alert Notification Contact Details

Alerts can be created to provide a notification of when price, trend line and technical analysis chart conditions are met. Before alerts can be created, you need to use the chart 'settings' button to enter your notification details. Alerts can be sent by one or more of the following notification methods:

- Email
- MSN instant messenger

To receive alerts by one or more of these notification methods enter your details in the relevant text boxes.

- MSN - an alert notification can be sent to your 'Windows Live Messenger' account. Please remember to add 'alert@timetotrade.eu' to your contacts. To do so click on 'Contacts' in your MSN toolbar, then click on 'Add A Contact', then add 'alert@timetotrade.eu' to the 'Instant Messaging Address' text box and enter 'alert' in the 'Nickname' text box.
- Email - by default an alert notification will be sent to you by email. The email will include charts of the alert conditions that have just been met.

2 CHARTS

When the alert notification methods have been entered, click on the 'test' button to the right of each text box.

Frequently Asked Questions:

Q. Email alerts are not working?

A. Please check that you have entered your email address correctly. Check your junk or spam folder. Add alert@timetotrade.eu to your safe email addresses.

Q. MSN alerts are not working?







A. Add 'alert@timetotrade.eu' to your contact list.

2.2.8 Exit Chart Settings

To save the chart settings for the next time you open a chart window, click on the 'save' button. Alternatively click on the settings cog to exit.

2.3 Chart Display and Zoom

The buttons on the top left of the chart control the display, save and zoom. The following table explains the related functionality:

Chart Button	Description
	Display the charts in full screen mode. To return the chart to the normal size, click on the button when in full screen or press the 'Esc' button on the keyboard.
	Saves the chart image as a JPEG file on your desktop, which can then be used to print.
	Drag chart to move; click on this button to move the chart up, down and left and right around the grid.
	Fit to window; click this button to adjust the chart to fill grid area
	Zoom in; after clicking on this button, click on the chart and drag the mouse pointer across the area of the chart you wish to zoom in on
	Zoom out; click the button to remove the zoom

In addition to the zoom buttons, the zoom can be controlled using the mountain view at the bottom of the screen. The mountain view charts displays all available historical data for the selected interval period.

2 CHARTS

To adjust the zoom using the mountain view, click on the grey drag points on the mountain view chart and move them left or right.

Holding down the mouse button either side of the drag points will step the zoom left or right.

Double clicking either side of the drag points will make the zoom jump to the location of the click.



2.4 Interval



The interval period defines how frequently the price data is plotted on the chart. For example if the interval period is set to '1hr' (one hour), then the price data at the end of each hour, is plotted on the chart.

To change the interval periods used when displaying chart data, click on the 'interval' drop down menu on the chart as illustrated.










2.5 Drawing Tools



To draw trend lines, Fibonacci retracements, fans, arcs or time zones, click on the appropriate drawing buttons on the top left hand border of the charts. The drawing buttons remain selected until they are clicked again to release them from drawing mode. While drawing the snap to open, high, low, close feature can be toggled on / off by holding down the 'CTRL' key. Alternatively the snap to can be toggled on / off by right clicking on the chart screen.

2 CHARTS

To save drawings so that they are visible the next time the charts are opened for the selected market, click on the save button. If a drawing is selected additional buttons will appear that enable the drawing to be deleted or copied. To select a drawing, click on the drawing on the chart screen.

Chart Button	Description
	Create copy; select the trend line you would like to create a copy of, then click on the copy button
	Delete; use this to delete any line studies you have added to the chart. Select the trend line or Fibonacci study you wish to delete, then click the delete button.
	Draw trend line; after clicking on this button, click on the chart where you would like the trendline to begin, drag the cursor across the chart until the trend line is positioned and release the cursor.
	Draw horizontal line; after clicking on this button, move the mouse pointer over the chart to position; when positioned click the mouse button to place the line.
	Fibonacci Retracement; click on the button and then click on a significant price high on the chart; drag the cursor to the significant price low (or vice versa) and release. A series of Fibonacci levels will be drawn between the two points.
	Fibonacci Fan; click on the button and then click on the extreme high (or low) price point on the chart and drag the cursor to the corresponding extreme low (or high) points of the trend you are analysing, release the cursor and a series of Fibonacci fans will be drawn between the two points.
	Fibonacci Arc; click on the button and then click on the chart as you would to draw a trendline between two extreme points, a series of Fibonacci arcs will be drawn between the two points.
	Fibonacci Timeline; click on the button and then click on the chart. Keeping the mouse held down, a series of Fibonacci time lines will appear. Move the cursor to set the base interval.
	Save: the save button is used to save the drawings between log-ins. After creating drawings or making changes to them, the dark save button will appear. This indicates that the changes made have not been saved. After saving the changes by clicking on the button, the button will fade in colour to indicate that the current drawings have been saved.

3 ALERTS

Alerts can be created to provide a notification of when price, trend line and technical analysis rules are met; in addition alerts can be used to back test trading strategies. Alerts can have one or many rules. Rules are added to alerts using alert trigger buttons on the chart.











Before creating an alert, ensure that the alert notification contact details (email or instant messenger address) are correct in the **'settings'** panel. This is accessed by clicking the **'settings'** cog button on the charts.

To create an alert, click on the alert 'trigger' buttons that are situated on the lower left corner of each chart area. The displayed alert trigger choices are specific to each chart. When an alert trigger is selected the transparency will be replaced with a solid button with a tooltip describing the alert functionality as illustrated if the mouse hovers over the button for one second:



3 ALERTS

The following table provides an overview of the alert trigger types that can be used to add rules to an alert:

Trigger	Description	The trigger conditions are true when:
	Resistance Trend Line Trigger	The chart value rises above the selected line; to add a trend line trigger, first select the line on the chart and then click on the 'resistance trigger'
	Support Trend Line Trigger	The chart value falls below the selected line; to add a trend line trigger, first select the line on the chart and then click on the 'support trigger'
	Positive Cross Over	The lower line rises above the upper line e.g. the price rises above its 50 day moving average
	Negative Cross Over	The upper line falls below the lower line e.g. the stochastic %k value fall below the %d value
	Rising Threshold	The chart value rises above a user defined value e.g. price rises above 300 pence
	Falling Threshold	The chart value falls below a user defined value e.g. RSI falls below 30 %
	Break Out	The chart value increases by more than a user defined value within a selected interval e.g. price increases by 1 within a 10 minute interval period
	Pull Back	The chart value decreases by more than a user defined value within a given interval e.g. MACD decreases by 0.001 in a 1 day interval period
	Percentage Break Out	The chart value increases by more than a user defined percentage value within a given interval e.g. price increases by 1 % within a 1 hour interval period
	Percentage Pull Back	The chart value decreases by more than a percentage value within a given interval e.g. RSI decreases by 5 % within 1 minute interval period

** note that multiple triggers can be added to an alert in any combination*

3 ALERTS

3.1 Alert Creation Basics

To create an alert, start by clicking on an alert trigger button. The associated alert rule will appear on the right hand side of the chart as illustrated.

A personal message can be added to the 'Message' field to provide a reminder of why the alert was created e.g. 'Trend change' as per the screen shot example. A brief description of the trigger rule that has been added to the alert will be displayed. The interval period upon which the alert is based is displayed in brackets at the end of the description e.g. "(5min)". Hover the mouse over each alert rule for more information.

The alert can be used to send a notification or to back-test trading strategies. To receive an alert notification when alert conditions are met, leave the default 'Action' field as 'send alert notification'. Please ensure that the notification contact details in the Notification Methods chart settings section are correct.

The screenshot shows the alert configuration interface for a MACD alert. At the top, there is a blue header with the text "MACD". Below this, there is a "Message" field containing the text "Trend change". Underneath the message field, it states "This RULE must be met, before any ACTION is taken:". The rule description is "MACD of market rises above Smoothed MACD of market (5min)". Below the rule description, there is an "Action" dropdown menu set to "send alert notification". Underneath the action menu, there is a section titled "NOTIFICATION METHODS" with two options: "Email (email@email.com)" which is checked, and "MSN (msn@msn.com)" which is unchecked. Below the notification methods, there is a "Once triggered, reactivate after:" dropdown menu set to "send once". At the bottom of the configuration, there are three buttons: "activate", "pause", and "delete".

Alerts can be set up to automatically re-activate after a period of time has passed since the alert trigger conditions were previously met. To do so, select how long the alerting system should wait before the alert is re-activated using the "Once triggered reactivate after" drop down menu.

When finished editing the alert, click on the 'activate' button to start the process of checking for the alert conditions. Click the 'pause' button to use the alert at a later date i.e. paused alerts are not checked until activated; or click the 'delete' button to delete the alert.

NB: IN ORDER FOR THE ALERT TO BE ACTIVATED REMEMBER TO CLICK THE 'ACTIVATE' BUTTON. THE ALERT WILL STAY IN THE PAUSED EDIT MODE OTHERWISE.

3 ALERTS

3.2 Creating Threshold, Break Out And Pull Back Triggers

When creating ‘**threshold**’, ‘**break out**’ and ‘**pull back**’ alerts a value has to be entered. For example, to receive an alert when the price rises above 470, click on the ‘Rising Threshold’ trigger button and enter the value 470 in the overlay text box.

For some alert trigger types, the interval period that defines how frequently the alert rule is checked, can be specified when adding the alert rule after clicking on the alert trigger buttons; if the interval period cannot be changed, then it will be the same as the selected chart interval period.

In the following example the ‘Rising Threshold’ trigger was clicked. An overlay describing the rule that will be added to the alert is displayed, with a text box for entering the threshold value. In this example the closing price of a 1 minute interval data point has to rise above a threshold value of ‘470’ before the trigger rule is met; the interval period used to test if the price has risen above 470 is one minute i.e. every minute the price is checked to see if the interval closing price is greater than 470.



After clicking on the alert trigger button and entering values and adjusting the interval period if applicable, click on the ‘create trigger’ button to add the rule to the alert; to cancel and not add the rule to the alert click ‘cancel’.

The alert condition will then appear in the Alert Editing Panel to the right hand side of the chart. Once you have finished editing the alert, you must click the ‘activate’ button to activate the alert trigger checking.

3 ALERTS

3.3 Creating Trend Line Triggers

To create a trend line alert, firstly draw a trend line on the chart. Using the mouse click on the trend line to highlight it, and then click on the Resistance or Support Trend Line Trigger buttons.



A pop-up message will appear over the chart describing the trend line trigger that you selected.

You can now select the interval period that will be used to test if the closing price has risen above or fallen below the selected trend line; to do so hover the mouse over the '1 minute' interval period, and select the new interval period using the up and down arrows. For example if you click on the '1 hour' interval choice then at the end of each hourly interval, the closing price will be checked to test if it is above or below the trend line.

After selecting the interval period, click on the 'create trigger' button.

The alert condition will then appear in the Alert Editing Panel to the right hand side of the chart. Once you have finished editing the alert, you must remember to click the "activate" button to activate the alert trigger checking; or click the "pause" or "delete" buttons to pause the alert trigger checking or to delete the alert from the system.

Trend Line

Message

This RULE must be met, before any ACTION is taken:

price of market rises above market's trend line (1h)

Action

NOTIFICATION METHODS

Email (email@email.com)

MSN (msn@msn.com)

Once triggered, reactivate after:

3 ALERTS

3.4 Creating A Multi-Condition Alert

You can combine technical indicator rules to create alerts that will trigger when a combination of conditions are met. To do so, with an alert displayed on the right hand side of the chart, simply click on different trigger buttons on the chart to add rules. As you add rules they will appear on the right of the chart. In the screen shot example an RSI and MACD rule have been added to the alert.

To delete an alert rule, click on the **'trash can'** buttons to the left of the rule. The order of the alert rules can be changed by clicking on the **'up & down'** arrows, which are located between the **'trash cans'**.

If more than one rule is added to the alert, the order that the rules are checked in and the timeframe that can elapse between the first and last rule being met can be adjusted using the **'Sequence'** and **'Timeframe'** drop down menus.

If the **'Sequence'** is set to **'any sequence'**, then the alert will be sent once ALL of the rule conditions have been met, regardless of the order in which they occur. If the **'Sequence'** is set to **'the listed sequence'**, the alert will only be sent when ALL of the rules have been met in the specified order. In the above example an alert will be sent if a MACD crossover occurs within 30 minutes of the RSI rising above 70.

After the alert is sent, it will be paused, and then after 1 minute it will be automatically reactivated because the **'once triggered, reactivate after:'** drop down menu has been set to **'1 minute'**.

The screenshot shows the configuration for an alert titled "RSI, MACD". It includes a "Message" input field, a note that "All RULES must be met, before any ACTION is taken:", and two rules: "market's RSI rises above 70 (1h)" and "MACD of market drops below Smoothed MACD of market (1h)". The rules are connected by an "AND" operator. Below the rules are dropdown menus for "Sequence" (set to "any sequence"), "Timeframe" (set to "30 minutes"), and "Action" (set to "send alert notification"). Under "NOTIFICATION METHODS", "Email (email@email.com)" is checked and "MSN (msn@msn.com)" is unchecked. A "Once triggered, reactivate after:" dropdown is set to "1 minute". At the bottom are "activate", "pause", and "delete" buttons.

3 ALERTS

3.5 Managing Active And Paused Alerts




A summary of all Paused and Active Alerts for a particular market are listed to the right hand side of the chart.

When the rules associated with an active alert are met, an alert notification will be sent.

When an alert is paused, the rules related to the paused alert will not be checked.

The selected notification methods associated with each active and paused alert are displayed to the right of the alert. In this example emails will be sent when the alert rules are met.

Alerts can be quickly activated, paused and deleted by clicking on the following buttons:

Button	Description
	Activates a paused alert
	Pauses an active alert
	Deletes an alert

To view the rules and details associated with an alert, click on the alert description.

To make changes to an active alert click on the **'pause & edit'** button; Note that active alerts will be paused during editing.



Click on the **'no change'** button if no changes are required to the active alert.

Create Alerts

Click on alert trigger icons to create a new alert.

Active Alerts



 Barclays Rolling Daily's RSI drops below 30 and MACD of market rises above Smoothed MACD of market 

 Barclays Rolling Daily's RSI rises above 70 

Paused Alerts

 Crossed Resistance price of Barclays Rolling Daily rises above market's trend line 
Last Triggered: 15 Oct 10 13:00 hrs


The symbols used to convey the selected notification methods are:

Button	Description
	Email
	MSN

Barclays Rolling Daily: RSI


Message ****

This RULE must be met, before any ACTION is taken:

 market's RSI rises above 70 (1d)

Action send alert notification

NOTIFICATION METHODS

 Email (demo@email.com)

SLEEP PERIOD

1 minute

3 ALERTS

3.6 Alert Notification Methods

Alerts will be sent to the email or instant messenger account of your choice.

To change the email or msn address you would like alerts sent to, click the chart “settings” button to open up the settings panel. Input the email address or hotmail address you would like alert notifications sent to and remember to click the “save” button to store the changes.



If you are viewing charts at the time an alert is triggered, an on screen pop-up will appear to notify you that the alert conditions are met.

Clicking on the pop-up will take you to the chart relating to the particular market the alert is for; or click the ‘cross’ in the top left hand corner of the pop up to close the pop-up message.

3 ALERTS

3.7 Alert History

Click the “Alert History” tab to view a summary of all alerts that you have created along with dates and times the alerts have been triggered.

Click on the alert title such as the “price of X GBP/USD Rolling Daily drops below market's trend line of X GBP/USD Rolling Daily drops below market's trend line” in the screen shot example.

A list of all occasions the alert has triggered will appear.

Click on a ‘Last Triggered’ timestamps to see a snapshot of the market chart at the time the alert conditions were met.



Notification History

Click on an alert description to view or hide details:

price of X GBP/USD Rolling Daily drops below market's trend line
Last Triggered:
11 Oct 10 01:23 hrs

price of X GBP/USD Rolling Daily rises above market's trend line
Last Triggered:
13 Oct 10 18:45 hrs

%k of Barclays Rolling Daily rises above 20
Last Triggered:
15 Oct 10 09:00 hrs



Notification History

Click on an alert description to view or hide details:

price of X GBP/USD Rolling Daily drops below market's trend line

Click on time stamp:
11 Oct 10 00:01 hrs
11 Oct 10 00:43 hrs
11 Oct 10 01:05 hrs
11 Oct 10 01:12 hrs
11 Oct 10 01:23 hrs

price of X GBP/USD Rolling Daily rises above market's trend line
Last Triggered:
13 Oct 10 18:45 hrs

%k of Barclays Rolling Daily rises above 20
Last Triggered:
15 Oct 10 09:00 hrs



4 BACK TEST & OPTIMISATION

The back test feature can be used to develop, test and optimise price, trendline and technical analysis trading strategies.

4.1 Create An Alert Based Trade

To begin, start by creating alert rules by clicking on the chart trigger buttons as discussed in the previous section. After the rules have been added to the alert, change the 'action' drop down menu from 'send alert notification' to the 'backtest' option.

Trading fields will be displayed below the alert. Enter the trade completing the various fields. Each time the trigger conditions are met, the back test will simulate a trade.

The 'buy limit' and 'buy stop' fields can be left blank, or completed with simulated limit and stop orders based on fixed price, change or percentage change values. If limit and stop order values are entered, when one is met, the other will be cancelled.


In this example when the RSI value decreases by 1 within 30 minutes of the RSI rising above 70, a short opening trade (sell to open) will be executed. Each time the rules are met over the back-test period the trade will be executed regardless of whether or not there is an existing open position.


Additional logic is available to control whether or not a trade should be executed in the back test. The 'Condition' field defines when a trade should be executed based on whether or not there is an existing long, short position.


The 'On event' field can be used to 'activate' or 'pause' alerts when trading rules are met. This enables strategies to be tested that involve toggling different strategies based on varying market conditions.

Message

All RULES must be met, before any ACTION is taken:

 CX:GBPUSD's RSI rises above 70 (5min)

 AND

 CX:GBPUSD's RSI decreases by 1 within the specified interval (5min)

Sequence

Timeframe

Action

Order

Lot Size x lots

Type




buy limit

buy stop

Condition

On event

NOTIFICATION METHODS

-  SMS (+447766114477)
-  MSN (demo@msn.com)
-  Email (demo@email.com)

Once triggered, reactivate after:

4 BACK TEST & OPTIMISATION

4.2 Terminology

The following discusses terminology and options used when developing trading strategies:

- **Buy to Open:** Creates an opening 'long' position by buying.
- **Sell to Close:** Closes a long position by selling.
- **Sell to Open:** Creates an opening 'short' position by selling.
- **Buy to Close:** Closes a short position by buying
- **Buy Switch:** used to send 'buy to close' and then 'buy to open' trades in sequence; if for example you have a short position when 'buy switch' rules are met, the short position will be closed by sending a 'buy to close' order and a long position created by sending a 'buy to open' order. If there is no existing short position when the buy switch rules are met, then only a 'buy to open' order will be sent.
- **Sell Switch:** used to send 'sell to close' and then 'sell to open' trades in sequence; if for example you have a long position when 'sell switch' rules are met, the long position will be closed by sending a 'buy to close' order and a short position created by sending a 'sell to open' order. If there is no existing long position when the 'sell switch' rules are met, then only a 'sell to open' order will be sent.
- **Order Sends Order:** after an opening trade is executed, limit and stop orders can be immediately sent. To implement 'order sends order' enter 'limit' and 'stop' orders when executing an opening trade or setting up a trade based on alert triggers.

In this example after the 'buy to open' long 'limit order' is executed at a price of 1.4540, the limit and stop loss orders will be sent. If the price rises above 1.4560 the sell limit order will be executed and the stop loss order will be cancelled. If however the price falls below 1.4520 the stop loss order will be executed and the limit order will be cancelled.

Order	buy (to open) ▾
Lot Size	100,000 ▾ x 1 lots
Type	limit ▾
Price:	1.4540
sell limit	1.4560 price ▾
sell stop	1.4520 price ▾

4 BACK TEST & OPTIMISATION

- **Order Cancels Order:** if a limit and stop order is associated with an opening trade, as per the 'order sends order' example, when the limit order is executed the stop loss order is cancelled, or when the stop loss order is executed the limit order is cancelled.
- **Execute Action:** each time the alert conditions are met the trade will be executed, regardless if you have an existing open long or short position
- **If No Position, Execute Action:** each time the alert conditions are met the trade will only be executed if there is no open long or short positions.
- **If Long, Execute Action:** each time the alert conditions are met the trade will only be executed if there is an existing long open position.
- **If Short, Execute Action:** each time the alert conditions are met the trade will only be executed if there is an existing short open position.
- **If Not Long, Execute Action:** each time the alert conditions are met the trade will only be executed if there is either no open position or a short open position.
- **If Not Short, Execute Action:** each time the alert conditions are met the trade will only be executed if there is either no open position or a long open position.
- **Pause Active Rules:** All active alerts are paused after the trade is executed.
- **Activate Paused Rules:** All paused alerts are activated after the trade is executed.
- **Pause Active, Activate Paused:** After the trade is executed, all active alerts are paused and all paused alerts are activated.

4 BACK TEST & OPTIMISATION

4.3 Back Test Trading Strategy

After alerts have been created, with or without trades associated with them, they can be back tested.

To do so select the rules that you want to test by clicking on the check box beside each rule. Then simply set the start or end back test dates or click on 'use the maximum date range' and back test the strategy.

Taxation and commission charges can be added to the back test results. In addition 'slippage' can be included, which is an offset that is added or subtracted from the alert price depending on whether the trade is a 'long' or 'short'. The net result of adding slippage is that profit is reduced and losses increased. Slippage should be added inline with the bid offer spread.

A key feature is the ability to optimise a strategy by testing varying limit and stop orders, with the view to maximising profit. To do so enter the starting limit and stop order value and then increment values. The back test will systematically test the alerts based trades with the varying stop and limit values, starting at the values entered and then incrementing the limit and stop values 10 times each. In total 100 combinations of stop and limit values will be tested and the optimised results will be displayed below the chart as illustrated in the next section.

Previous back tests results can be viewed, by clicking on the date link in the results section below. When back testing strategies, if a 'strategy name' is entered, this will be displayed in the back test results section.

Tick the check boxes beside the rules and trading strategies that you would like to test, then complete the following fields:

test interval	days
back test data	10 years
strategy name	<input type="text"/>
start date & time	<input type="text" value="2000-06-02 16:22"/>
end date & time	<input type="text" value="2010-06-02 16:22"/>
taxation (open:close)	<input type="text"/> <input type="text"/>
commission	<input type="text"/>
slippage	<input type="text"/>

Backtest Optimisation:

start (limit:stop)	<input type="text" value="0.0050"/>	<input type="text" value="0.0020"/>
increment (limit:stop)	<input type="text" value="0.0010"/>	<input type="text" value="0.0005"/>

use maximum date range

Active Alerts / Trades

no active alerts to display

Paused Alerts / Trades

buy (to open) 100,000 at market
 MACD of CX:AUDUSD drops below Smoothed MACD of CX:AUDUSD (1d)

Back Test Results

currently displaying back tests 1 to 3 out of 3
show: previous next

date: 2010-06-02 16:23:26
profit: 13,200 performance: 25.1%

date: 2010-06-02 16:22:53
profit: 9,500 performance: 19.7%

4 BACK TEST & OPTIMISATION

4.3.1 Price Analysis

If alerts are back tested without any trades associated with them, then an analysis of the price movement between each time an alert occurred is provided, along with a table containing the time and price values when each alert occurred. This provides a basic foundation for deciding whether long or short trades should be associated with the alert.

The 'price range analysis between alerts' section analyses the difference between the alert price and the high and low prices at each interval between alerts. The average figures indicate the average range of high or low price movement between alerts, whereas the standard deviation figures help in understanding the variation of price movement from the average high or low price range.

A large standard deviation value indicates that the high or low price range is far from the average value and a small standard deviation indicates that they are grouped closely around the average.

The standard deviation figures quoted are for one standard deviation. This means that 68 % of the high or low price movement around the average is within the standard deviation value. 95 % of the price range movement around the average will be within twice the quoted standard deviation figure.

In this example the average high price range was 0.0202; this means that on average if the alert price was for example 0.9116 the average high price until the next alert occurs will be 0.9318 (i.e. $0.9116 + 0.0202$). The high price range standard deviation was 0.0187, which means that 68 % of the price movement around the average was within plus or minus 0.00935 (i.e. 0.0187 divided by 2); 95 % of the price movement was within 0.0187 (i.e. 0.0187 multiplied by 2 deviations divided by 2). Therefore 95 % of the high values at each price interval was within 0.9505 ($0.9318 + 0.0187$) and 0.9131 ($0.9318 - 0.0187$). If therefore you bought when the alert triggered at 0.9116 and set a limit sell price at 0.9131, there is a greater than 95 % chance that the limit order would execute before the next alert. If however you set the limit sell price at 0.9505 then there is less than 5 % probability that the order will execute, before the next alert is triggered.

rules associated with back test

test start date: 2000-06-02 15:59:00
test end date: 2010-06-02 15:59:00

MACD of CX:AUDUSD drops below Smoothed MACD of CX:AUDUSD (14)

hover mouse over text for more information

price range analysis between alerts

high price range (average)	0.0202
high price range (standard deviation)	0.0187
low price range (average)	0.0171
low price range (standard deviation)	0.0191

date	symbol	event	price
2010-04-17 00:00:00	CX:AUDUSD	notification	0.9241
2010-03-25 00:00:00	CX:AUDUSD	notification	0.9116
2010-01-21 00:00:00	CX:AUDUSD	notification	0.9067
2009-11-19 00:00:00	CX:AUDUSD	notification	0.9277
2009-10-27 00:00:00	CX:AUDUSD	notification	0.9154
2009-10-02 00:00:00	CX:AUDUSD	notification	0.8711
2009-09-24 00:00:00	CX:AUDUSD	notification	0.8697
2009-09-22 00:00:00	CX:AUDUSD	notification	0.8631
2009-09-02 00:00:00	CX:AUDUSD	notification	0.8262
2009-08-12 00:00:00	CX:AUDUSD	notification	0.8292
2009-06-06 00:00:00	CX:AUDUSD	notification	0.7930
2009-05-28 00:00:00	CX:AUDUSD	notification	0.7765
2009-05-16 00:00:00	CX:AUDUSD	notification	0.7491
2009-04-17 00:00:00	CX:AUDUSD	notification	0.7206
2009-03-10 00:00:00	CX:AUDUSD	notification	0.6320
2009-03-03 00:00:00	CX:AUDUSD	notification	0.6300
2009-02-18 00:00:00	CX:AUDUSD	notification	0.6362
2009-01-13 00:00:00	CX:AUDUSD	notification	0.6819
2008-11-21 00:00:00	CX:AUDUSD	notification	0.6107
2008-10-25 00:00:00	CX:AUDUSD	notification	0.6213

currently displaying results 1 to 20 out of 126
show: previous next

4 BACK TEST & OPTIMISATION

It is not necessary to fully understand the mathematics, rather the key thing to remember is that average values give an indication of the average high or low price movement between alerts and this combined with the standard deviation can be used to help establish where limit and stop loss orders should be placed. If the standard deviation is a large number then it suggests that the price is volatile and you may need to adjust the stops and limits accordingly. If the average high is much greater than the average low, then typically the strategy should be developed around long positions; if however the average low is greater than the average high, then typically a strategy should be developed around short positions.

4.4 Back Test Trade Results Analysis

If a trade is associated with a back test, a detailed analysis of the back test results will be displayed below the chart as illustrated:

rules associated with back test	win loss analysis	results analysis
test start date: 2000-06-02 16:22:00	average reward 1,096.58	total profit 13,200.01
test end date: 2010-06-02 16:22:00	average risk 796.89	highest cash value 24,700.01
buy (to open) 100,000 at market	reward to risk ratio 1.4:1	highest portfolio value 25,060.01
MACD of CX:AUDUSD drops below	win loss ratio 1:1.1	lowest cash value (1,200.00)
Smoothed MACD of CX:AUDUSD (16)	performance 25.1%	lowest portfolio value (2,430.00)
	longest winning streak 7	transactions 252
	longest losing streak 7	open position value 0

hover mouse over text for more information

analysis of long trades	my ledger	analysis of short trades	my ledger
profit from long transactions	13,200.00	profit from short transactions	0.00
winning long transactions	60	winning short transactions	0
losing long transactions	66	losing short transactions	0
long limit (average)	0.0071	short limit (average)	0.0000
long limit (standard deviation)	0.0043	short limit (standard deviation)	0.0000
long stop (average)	0.0067	short stop (average)	0.0000
long stop (standard deviation)	0.0041	short stop (standard deviation)	0.0000
time between winning trades	8d 1hr	time between winning trades	0
time between losing trades	3d 23hr	time between losing trades	0

date	symbol	event	order	price	quantity	taxation	commission	profit	total
2010-04-19 00:00:00	CX:AUDUSD	stop	sell (to close)	0.9161	100,000	0.00	0.00	(800.00)	13,200.01
2010-04-17 00:00:00	CX:AUDUSD	open	buy (to open)	0.9241	100,000	0.00	0.00	0.00	14,000.01
2010-03-26 00:00:00	CX:AUDUSD	stop	sell (to close)	0.9036	100,000	0.00	0.00	(800.00)	14,000.01
2010-03-25 00:00:00	CX:AUDUSD	open	buy (to open)	0.9116	100,000	0.00	0.00	0.00	14,800.01
2010-01-22 00:00:00	CX:AUDUSD	stop	sell (to close)	0.9007	100,000	0.00	0.00	(800.00)	14,800.01
2010-01-21 00:00:00	CX:AUDUSD	open	buy (to open)	0.9087	100,000	0.00	0.00	0.00	15,600.01
2009-11-19 00:00:00	CX:AUDUSD	stop	sell (to close)	0.9197	100,000	0.00	0.00	(800.00)	15,600.01
2009-11-19 00:00:00	CX:AUDUSD	open	buy (to open)	0.9277	100,000	0.00	0.00	0.00	16,400.01
2009-10-28 00:00:00	CX:AUDUSD	stop	sell (to close)	0.9074	100,000	0.00	0.00	(800.00)	16,400.01
2009-10-27 00:00:00	CX:AUDUSD	open	buy (to open)	0.9154	100,000	0.00	0.00	0.00	17,200.01
2009-10-02 00:00:00	CX:AUDUSD	stop	sell (to close)	0.8631	100,000	0.00	0.00	(800.00)	17,200.01
2009-10-02 00:00:00	CX:AUDUSD	open	buy (to open)	0.8711	100,000	0.00	0.00	0.00	18,000.01
2009-09-25 00:00:00	CX:AUDUSD	stop	sell (to close)	0.8617	100,000	0.00	0.00	(800.00)	18,000.01
2009-09-24 00:00:00	CX:AUDUSD	open	buy (to open)	0.8697	100,000	0.00	0.00	0.00	18,800.01
2009-09-22 00:00:00	CX:AUDUSD	limit	sell (to close)	0.8741	100,000	0.00	0.00	1,100.00	18,800.01
2009-09-22 00:00:00	CX:AUDUSD	open	buy (to open)	0.8631	100,000	0.00	0.00	0.00	17,700.01
2009-09-02 00:00:00	CX:AUDUSD	limit	sell (to close)	0.8372	100,000	0.00	0.00	1,100.00	17,700.01
2009-09-02 00:00:00	CX:AUDUSD	open	buy (to open)	0.8262	100,000	0.00	0.00	0.00	16,600.01
2009-08-12 00:00:00	CX:AUDUSD	stop	sell (to close)	0.8212	100,000	0.00	0.00	(800.00)	16,600.01
2009-08-12 00:00:00	CX:AUDUSD	open	buy (to open)	0.8292	100,000	0.00	0.00	0.00	17,400.01
<i>currently displaying results 1 to 20 out of 252</i>						0.00	0.00	(4,200.00)	
<i>show: previous next</i>									

4 BACK TEST & OPTIMISATION

The results include:

- a summary of the trading rules associated with the back test
- win loss analysis
- profitability and related cash flow analysis
- analysis of long and short trades and related price movement between trades when there is an open position
- a detailed list of the trades generated by the back test

If you have included stop and limit optimisation values in the backtest then a table detailing the profitability for each combination of limit and stop loss values will be displayed as shown:

Optimised Limit: 0.0110
Optimised Stop Loss: 0.0080
Optimised Profit: 13,200.01

limit	stop loss	profit
0.0050	0.0050	(6,000.00)
0.0050	0.0060	(8,500.00)
0.0050	0.0070	(3,000.00)
0.0050	0.0080	(2,000.00)
0.0050	0.0090	(1,400.00)
0.0050	0.0100	(4,500.00)
0.0050	0.0110	(4,200.00)
0.0050	0.0120	100.00
0.0050	0.0130	0.00
0.0050	0.0140	(1,600.00)
0.0060	0.0050	(4,700.00)
0.0060	0.0060	(6,000.00)
0.0060	0.0070	1,500.00
0.0060	0.0080	4,200.00
0.0060	0.0090	3,600.00
0.0060	0.0100	400.00
0.0060	0.0110	800.00
0.0060	0.0120	5,400.00
0.0060	0.0130	7,200.00
0.0060	0.0140	5,600.00
0.0070	0.0050	(1,800.00)
0.0070	0.0060	(4,100.00)
0.0070	0.0070	2,800.00
0.0070	0.0080	7,200.00
0.0070	0.0090	6,600.00

currently displaying rows 1 to 25 out of 100

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5 TECHNICAL INDICATORS

5.1 Introduction

“History repeats itself”. Certainly in the stock markets, if we look at past price movements we see patterns repeating over and over again. Technical analysis is a method of categorising those patterns and statistically analysing historical trading data to identify trends to help forecast how a security might perform in the future.

There are a variety of different classes of technical analysis tools and indicators available to use with the charts. The indicators can be grouped as follows:

- **Trend lines, Support & Resistance levels and Fibonacci Studies** are used to predict where and how a price is likely to move and to identify potential price reversal points.
- **Trend Following Momentum Indicators** “follow the trend”. They are useful in helping to confirm the overall direction of price movement. These indicators are considered “lagging indicators” as they lag behind the current price movement -and so whilst good at keeping you on the right side of the trend, they can be late in signalling buy and sell opportunities. Examples of trending indicators include Moving Average or MACD.
- **Momentum Oscillators** measure price momentum and oscillate up and down between set limits over a centre line. These indicators are typically “leading indicators”, that is they may give insight into where the price may go in the future. Examples of momentum indicators are RSI and Stochastic.
- **Volatility Indicators** measure the degree of fluctuation in price movement over a specified timeframe. High volatility means the price is fluctuating dramatically, low volatility means the price is stable and remaining relatively constant. Examples of volatility indicators are Bollinger Bands (which compare a market’s current price to its moving average) and Chaikin Volatility (which compares price to its high-low price range). Volatility indicators are best used in combination with other indicators (eg trend / oscillators) to confirm the direction of the price movement.

5 TECHNICAL INDICATORS

General Tips

It is worth bearing in mind some general pointers when using technical analysis:

- Before using any indicators, it is important to determine the direction of the major trend. Which indicators to use and their interpretation varies depending on whether the security is trending up / down or trading in a sideways range. For example, if the market is trading sideways then Stochastics or RSI are useful in identifying overbought / oversold conditions.
- Set indicator parameters and chart interval to suit the trading style or particular strategy. It is generally suggested to use longer periods if you are long term buy and hold or swing trader. Use shorter periods for day trading.
- Don't rely on signals from one technical indicator in isolation or signals from a combination of indicators of the same grouping. If a technical indicator gives a buy or sell signal, look for confirmation of the signal from the indicators in other groupings before acting.

The following provides a brief description of each of the technical indicators available on the charts and some examples of how technical analysts interpret and use the indicators. The descriptions and examples provided are intended as a general guide only and do not constitute advice or recommendation. This is not a definitive guide – there are many other ways to use and interpret the indicators depending on market conditions and personal preference.

It is important to remember that markets fall as well as rise; that all technical indicators are based on past price performance and that past performance is not necessarily indicative of future performance. Before using any indicators you must do your own research.

5 TECHNICAL INDICATORS

5.2 Average Directional Index

The Directional Movement Index is an oscillator that indicates whether or not a market is trending. The indicator consists of two lines: the Plus Directional indicator line (+DI) and the Minus Directional Indicator (-DI). They are usually plotted on the same chart as their associated moving average, the Average Directional Index (ADX).

The indicators range in value between 0 and 100. A low value indicates the trend is weak, a high value that the trend is strong.

The +DI measures how strongly the price is moving upwards. The -DI shows how strongly price is moving in a downward direction. +DI generally moves with price; if price increases +DI increases; as price decreases +DI decreases. -DI on the other hand, generally moves opposite to price, rising as price falls and falling as price rises.

If the +DI is above the -DI and rising, then the dominant trend is upwards. If the -DI is above the +DI and rising, then the dominant trend is downwards.

When +DI crosses above -DI this can be interpreted as a bullish buy signal.



When -DI crosses above the +DI this can be interpreted as a bearish sell signal.

The +DI and -DI are shown in combination with the ADX indicator, which shows the strength of a current trend.

As with the DI, the ADX indicator fluctuates between 0 and 100. Unlike the +DI and -DI, the direction in which the ADX moves does not indicate if the trend is up or down, rather it shows if the trend is strong or weak. Values below 20 indicate a weak non-trending market whilst values above 40 indicate a strong trend. The indicator is useful in providing a warning that the market is changing direction from trading sideways to trending (and vice-versa).

As a trend starts to emerge, the ADX will strengthen moving from below 20 to above 20. Further increases between 20 and 40 provide confirmation of an emerging trend; a value of 40 or above indicates that there is a very strong trend; then as the ADX again turns lower, this indicates the market is reversing the current trend.

The default period used to calculate the +DI and -DI is 14. This can be adjusted to suit the trading strategy and style.

Signals	Description and example strategies
	Bullish signal: +DI crosses above -DI Bearish signal: -DI crosses above +DI
	ADX rising above 20 implies trend beginning to emerge; ADX rising above 40 implies strong trend ADX falling implies change of trend.

5 TECHNICAL INDICATORS

5.3 Bollinger Bands

Bollinger Bands are a volatility indicator, made up of an upper and lower band, which are standard deviations of the moving average of the market's price over a defined period. The Bollinger Bands are overlaid on the price chart and provide a means for determining the range of price volatility around the moving average. The wider the distance between the upper and lower Bollinger Bands the greater the price volatility.

The default parameter settings are 2, 20. The number (20) is the period for the calculating the moving average i.e. if the chart interval is hours, then the closing price over the previous 20 hours is used to calculate the moving average. The number (2) sets the standard deviation multiplier for the upper and lower bands, by default the bands are set 2 standard deviations. Both the period and standard deviation parameters can be adjusted to suit the trading strategy. If the standard deviation figure is set to 1, then the distance between the upper and the lower Bollinger Band will represent 68.2% of the range of price movement around the moving average. If the standard deviation is increased to 2, then the distance between the upper and lower bands will represent 95.3% of the range of price movement and if increased to 3 standard deviations it will represent 99.5%. For 'range' bound non-volatile markets, or if using a short period, a lower standard deviation is typically used. For more volatile markets 2 standard deviations are typically used.

Bollinger Bands show you the price range within which the price is expected to move. The price usually remains within the limits of the upper and lower bands, so can be used to give an indication of whether price is relatively high or low compared to the recent past



A market which approaches the upper band is considered overbought (which could be considered a sell signal) and a market which approaches the lower band is oversold (which could be considered a buy signal). However, there are further considerations and the direction and strength of price trend must be taken into consideration.

The Bollinger Bands are best interpreted in conjunction with the moving average of the same period. If the price is in a strong upward trend the price will tend to straddle the upper Bollinger band, moving between the Upper Band and the moving average. When price is in a strong downward trend, the price will straddle the lower Bollinger Band, moving between the Lower Bollinger Band and the moving average.

5 TECHNICAL INDICATORS

The spacing between the upper and lower bands is determined by volatility. If the recent prices have a larger range than the previous prices, the Bollinger Bands will move apart. If the recent prices have a smaller range than the previous prices, the Bollinger Bands will contract. The bands widen when prices are volatile and contract when prices are stable. It is worth noting that a contraction frequently precedes a sharp change in prices and increase in volatility; so when upper and lower bands narrow, it is a signal that the price is in consolidation and a breakout could be imminent.

As with all moving average based indicators, Bollinger Bands suffer a lag and as such it is suggested that Bollinger Bands are used in combination with other additional indicators, for example RSI. If price touches the upper band this could be a continuation signal if the other indicator confirms it, or a sell signal if the other indicator implies oversold.

Signals	Description and example strategies
	Bullish signal: Price rises above Upper Bollinger Band Bearish signal: Price falls below Upper Bollinger Band
	Bearish signal: Price crosses below Lower Bollinger Band Bullish signal: Price rises above Lower Bollinger Band

5 TECHNICAL INDICATORS

5.4 Chaikin Volatility

Chaikin Volatility is a volatility indicator which shows the exponential moving average of the difference between an interval's high and low prices, expressed as a percentage of the exponential moving average of the difference a specified number of periods previously.

The indicator fluctuates around zero, with high values indicating that prices are changing sharply compared to the recent past, whilst low values indicate that prices are stable and staying relatively constant.

The default parameters used to calculate Chaikin's Volatility indicator are 10 periods for the moving average time frame and 10 for the number of data periods used to calculate the percent change (the "rate of change" period - ROC). Increasing the number of periods decreases the sensitivity of the indicator, whilst decreasing the number of periods increases the sensitivity, generating more signals.





There are different ways in which to use and interpret the indicator, based on the following premises:

Volatility is low if the market is trading in a side-ways range.

Prices in a strong upward trend over a long time period are accompanied by decreasing volatility.

Prices in a strong downward trend over a short time period are marked by an increase in volatility.

Price reversals (market bottoms or tops) are usually associated with a sudden increase in volatility.

Signals	Description and example strategies
 	Bullish signal: volatility decreasing over long time frame Price reversal: volatility high
 	Bearish signal: volatility increasing over a short time frame Side-ways trading range: volatility low

5 TECHNICAL INDICATORS

5.5 Fibonacci Studies

The Fibonacci sequence is a numerical series where every number is the sum of the preceding two: 1, 1, 2, 3, 5, 8, 13, 21, 34 etc. The sequence of numbers has some interesting properties, for example any number in the series is a multiple of approximately 1.618 of its preceding number. In technical analysis the inter-relationship of the numbers in the sequence forms the basis for a variety of studies which are used to identify where potential changes in price trend may occur.

5.5.1 Fibonacci Retracement

Fibonacci Retracement tools are used to identify key horizontal Support and Resistance levels. Fibonacci Retracement levels are calculated by drawing a trend line between a significant extreme price low (represented as a 0% level) and an extreme price high (represented as the 100% level) and plotting horizontal lines at each of the Fibonacci percentage levels (23.6%, 38.2%, 50% and 61.8%) between those extremes.

It is observed that if a market makes a significant move up or down, frequently the price will 'retrace' until a new level of support and resistance is established. Fibonacci Retracements are particularly useful in helping to identify where those next support or resistance levels may be. For example, take a look at the chart of BP below. The price fell dramatically in April 2010, smashing through its previous long term support level in May and finally reversing out of its downward trend at the end of June. With the price at its lowest levels in over 14 years, it was difficult to predict where the market would settle out and establish its new support and resistance levels.

Using the Fibonacci Retracement tool, the extreme April high is set at the 100% level, the extreme low at the end of June is set as the 0% level, with the corresponding Fibonacci retracement levels plotted in between the two extremes.

Interestingly, the price retraced upwards from the end of June low and the 23.6% and 38.2% Fibonacci levels correspond almost exactly with what became the market's new support and resistance levels.



Fibonacci retracement tools are widely used by technical analysts, so it is little wonder that Fibonacci levels become self-fulfilling support and resistance levels.

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5.5.2 Fibonacci Fan Lines

Fibonacci Fan Lines are used to help identify key diagonal Support and Resistance Trend Lines.

Similar to the Fibonacci Retracement, support and resistance lines are calculated by drawing a trend line between a significant extreme price low and an extreme price high. This diagonal trend line is set as the 0% line. The Fibonacci Fan tool then plots 3 diagonal trend lines fanning out from the first extreme point, the diagonal trend lines corresponding to the Fibonacci percentage levels 38.2%, 50% and 61.8%.

It is said that if a market breaks prior levels of resistance, it will increase until a prior level of resistance is reached or a new level of resistance established; and if a market breaks a level of support, it will drop sharply until a prior support level is reached. Fibonacci Fan Lines are particularly useful in helping to identify where those next support or resistance trend lines may be.

In an uptrend, if the price falls below a Fibonacci Fan trend line, then the price will usually continue to drop until it finds support at the next Fibonacci Fan trend line down. And vice-versa, in a downtrend, if the price breaks above a Fibonacci Fan trend line, then the price will continue to rise until it finds resistance at the next Fibonacci trend line up.



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5.5.3 Fibonacci Arcs

Fibonacci Arcs are used to help identify potential areas of Support and Resistance on the chart.

A line is drawn between an extreme price low and an extreme price high. The Fibonacci Arc tool then plots 3 arcs fanning out from the second extreme point, the arcs corresponding to the 38.2%, 50% and 61.8% Fibonacci percentage levels



Areas of Support and Resistance are seen to develop as the price approaches the arcs.

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5.5.4 Fibonacci Time Zones

Fibonacci Time Zones are used to help identify potential areas where reversals or significant changes in price may be expected to occur.

A series of vertical lines are drawn on the chart each corresponding with a Fibonacci ratio as calculated from a base interval – where the base interval is a user defined time interval. The base interval is set by drawing a trend line between price highs or lows. The Time Zone tool then plots a series of vertical lines at increasing intervals, based on the Fibonacci sequence.

Significant price changes are seen to occur near to the vertical lines.



5 TECHNICAL INDICATORS

5.6 Moving Average

Moving average (MA) is one of the most widely used technical indicators and perhaps the most important as it forms the back-bone from which many other technical indicators are calculated. A moving average is a trend-following indicator which shows at any point in time the security's average closing price over a preceding specified period of time.

On the charts, the default time period over which the moving average is calculated is set to 12, however this can be adjusted depending on the trading strategy and objectives. For example, a long term investor might use long period moving averages (eg 50 – 200 periods) to identify the overall trend, a short term day trader would use shorter period moving averages (eg 5 - 20 periods) to trade shorter term trends, whilst a medium term swing or trend trader might opt for moving averages of between 20 to 50 periods.

If the moving average is increasing, it shows that prices are, on average increasing and the trend is bullish

If the moving average is falling, it shows that prices are, on average falling and the trend is bearish.

The moving average is usually displayed as an overlay on the price chart. Using the 12 period default by way of example: whenever price is above the moving average it shows that the price is higher than the average price has been over the preceding 12 periods (this generally occurs when price is in an uptrend and is considered bullish). If price is below the moving average, it shows that the price is lower than the average has been over the preceding 12 periods (this generally occurs when price is in a downward trend and is considered bearish).

When the price crosses above or falls below its moving average, it can indicate a change in trend. Such crossovers are frequently used as trading signals, with price crossing above its moving average considered a bullish signal and price crossing below its moving average considered a bearish sell signal.





It is important to understand that the moving average is calculated based on past prices; therefore signals generated by moving averages do lag and are always a step behind the market. The longer the moving average period used, the greater the lag. Shorter period moving averages (e.g. 12) will move very closely with price, and react more quickly to changes in trend. Longer term moving averages (eg 200) are slower to react as they are based on the average of many more periods of price data.

5 TECHNICAL INDICATORS

With this in mind, technical analysts often combine a short period moving average (eg 10) with a longer period moving average (eg 50) on the same chart, using the shorter period moving average as a 'signal line'. When the shorter period MA crosses the longer period MA, this is considered a bullish 'buy' signal. On the other hand, the shorter MA crossing below the longer term MA, is considered a bearish sell signal.

Exponential Moving Averages are also frequently used instead of simple moving averages, in order to reduce the time lag associated with a simple moving average. An exponential moving average puts more weight on recent data and less weight on past data, making the indicator react slightly more quickly to changes in trend than the simple moving average discussed above.

Moving averages are very useful in helping to identify the trend, but as they are a lagging indicator, are always a little late at signalling exact market bottoms and tops. It is also worth bearing in mind that whilst moving averages work well in upwards or downwards trending markets, they will generate many false signals in a sideways range bound market.

Signals	Description and example strategies
	Bullish signal: Price rises above Moving Average Bearish signal: Price falls below Moving Average
	Bullish signal: Short period moving average crosses above longer period moving average Bearish signal: short period moving average crosses below longer period moving average
	Bullish signal: Moving Average increasing Bearish signal: Moving Average falling
	Bullish signal: Moving Average increasing Bearish signal: Moving Average falling

5 TECHNICAL INDICATORS

5.7 Momentum

The momentum shows the rate of change (or strength) of a price movement over a selected period, expressed as a ratio. It is calculated by measuring the difference between the current price of the market and its price the selected number of periods previous.





When momentum is above zero and rising the price has upward momentum - increasing at an increasing rate. If momentum is above zero and declining, the prices are still increasing, but at a decreasing rate.

When momentum is below zero and falling, the price has downwards momentum - falling at an increasing rate. If momentum is below zero and increasing, then prices are still falling, but at a decreasing rate.

A simple way to use the indicator is to buy when the momentum crosses above zero (ie the price is gaining momentum) and sell when the indicator falls below zero (ie sell when the price is losing momentum).

The momentum indicator has its highest positive and lowest negative values when the trend is strongest, with lower readings at the beginning or end of a trend. Momentum changes direction ahead of price and as such, divergences between price and momentum can be used to anticipate price reversals. As the price peaks the momentum increases sharply and then falls off, initially diverging from price, for example the momentum will drop whilst the price continues to produce higher highs, or vice-versa. When a divergence between price and momentum occur, the momentum often provides an indication of the expected path of future prices. In a trending market, you can play this by buying when momentum bottoms and turns up; and selling when momentum peaks and turns down. Note: If the momentum is at a very high or low value relative to its historic average, then there will have been a rapid price increase or decline. The price will likely continue a little further in its existing trend forming higher highs / lower lows even though the moment has reversed - so wait for the price to reverse to confirm the signal.

In a sideways ranging market, look back at the past high and lows of the momentum indicator to determine overbought and oversold levels. Momentum crossing below the oversold level and then turning up can be interpreted as a buy signal. Momentum crossing above the overbought level and then turning down can be interpreted as a sell signal.

Signals	Description and example strategies
 	Bullish signal: momentum crossing above zero and rising Bearish signal: momentum crossing below zero and falling
 	Bullish signal: momentum crossing below oversold level and turning up Bearish signal: momentum rising above overbought level and turning down

5 TECHNICAL INDICATORS

5.8 Moving Average Convergence Divergence (MACD)

The MACD is a trend-following momentum indicator. It is calculated as the difference between two exponential moving averages (a longer term moving average and shorter term moving average) and is plotted on a chart with a 'signal line' which is a moving average of the MACD.

The periods used to calculate the MACD are defaulted to 26,12,9. (ie a slow moving average period of 26, fast moving average period of 12 and the signal line period of 9). The parameters can be adjusted depending on personal preferences and trading strategy.

The MACD is best used to trade in a trending market (signals can be very unreliable in a sideways range bound market).

There are several ways in which the MACD is interpreted.

Firstly, note that the MACD generally rises and falls with price movement (with a lag as calculations are based on moving averages). MACD rising in value is generally considered bullish, whereas MACD falling in is considered bearish.




When the MACD rises dramatically over a short period of time and reaches extreme values, it can imply that the market is overbought and to expect a price reversal. And vice-versa, should the MACD fall dramatically over a short period of time and reach a negative extreme, it can imply the market is oversold.

The indicator itself fluctuates above and below zero, the 'centre line'. When MACD is equal to zero, the long and short period exponential moving averages upon which the MACD is calculated, are equal. When MACD is above zero the shorter term average is higher than the longer term average (implying positive momentum and bullish trading sentiment). When MACD is negative, the fast exponential moving average is lower than the longer term exponential moving average, implying negative momentum and bearish trading sentiment. The MACD crossing above and below zero can indicate a change in trend.

5 TECHNICAL INDICATORS

Rather than waiting for the MACD to cross zero, an earlier indication of a change in trend is provided when the MACD crosses its signal line. When MACD is below zero and crosses above the signal line, it is considered a bullish buy signal. When MACD is above zero and crosses below the signal line, it is considered a bearish sell sign.

Another method used is to look for divergences. This is where the price makes new lows (or appears to be bottoming out) but the indicator fails to make new lows, or vice versa if the market is making new highs. For example, where price makes a new high but the MACD fails to do similar, this indicates that the trend is starting to run out of momentum and recent price increases are not sustainable, signalling a sell opportunity. On the other hand, where market's price makes new lows but the MACD fails to do similar, this implies increasing momentum and that the down trend may be coming to an end.

Signals	Description and example strategies
	Bullish signal: MACD rising Bearish signal: MACD falling
	Bullish signal: MACD crossing above zero and rising Bearish signal: MACD crossing below zero falling
	Bullish signal: MACD crossing above its signal line Bearish signal: MACD crossing below its signal line

5 TECHNICAL INDICATORS

5.9 Parabolic SAR

The Parabolic SAR is used to confirm the direction of a trend and indicates potential reversals in price movement. The indicator appears as a series of dots, positioned above and below the price chart. The position of the dots relative to the price indicates the direction the price is moving in. If the dots are below the price this is considered to be bullish and that the price will continue in an upward trend, suggesting buying or going long. If the dots are positioned above the price this is considered bearish, suggesting selling or going short.

The point at which the dots switch position from below the price to above the price (and vice versa), indicates a reversal in price movement and that a potential change of trend has occurred – providing a buy signal when the dots moves below price and a sell signal when the dots moves above price.

The Parabolic SAR is very useful for setting trailing stop loss orders. (Indeed, SAR is short for “Stop And Reversal”). The stop loss is moved in line with the Parabolic SAR level, locking in profits.

The “parabolic” in the indicator’s name refers to the parabolic shape the dots take as a trend forms. Immediately following a point of reversal the pattern of dots will appear flat and closely spaced together, as the trend picks up the dots become spaced further apart, the gradient increases and the dots move closer to the price – eventually crossing the price, at which point the reversal is deemed to have occurred. The longer the price remains in trend the more steeply the dots rise or fall.

The parabolic SAR works very well when a stock is trending. If the price is moving sideways then the indicator is unreliable and many false buy and sell signals can be generated. For this reason the indicator is generally used in conjunction with other trending indicators (eg MACD, ADX) to establish and confirm the dominant trend.

To view a Parabolic SAR chart, click on the “settings” button and select “Parabolic SAR” from the drop down Chart Display menu. The period and maximum period used to calculate the Parabolic SAR are set to 0.02 and 0.2 respectively by default. You can change these to suit the trading strategy. Click the “refresh” button to update the chart or the “save” button to make this the default chart set-up.

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5.10 Percentage Price Oscillator

The % Price Oscillator (PPO) shows the difference between two moving averages (one shorter period and one longer period) expressed as a percentage of the longer of the two moving averages.

A PPO reading of eg +5% means the shorter moving average is 5% higher than the longer moving average.

The oscillator is displayed with a signal line – a moving average of the PPO. The PPO requires 3 inputs: the periods for the fast and slow moving averages and the signal line respectively. The default parameter settings on the charts are 10, 35 and 5. With 10 being the period used to calculate the shorter period moving average, 35 for the longer period moving average and 5 being the period used to calculate the signal line. The parameters can be adjusted depending on personal preferences and trading strategy.

The oscillator performs well in a trending market, but can give unreliable signals when the market is trading in a sideways range.

The indicator fluctuates around zero, with increasing values indicating the price is rising and decreasing values indicating the price is falling. PPO rising above zero indicates the market is in an upward trend – the short term moving average has risen above the longer term moving average and is interpreted as a buy signal. Conversely, PPO falling below zero indicates the market is in a downward trend - the shorter term moving average has fallen below the longer term moving average, interpreted as a sell signal.

Another method used is to look for divergences between price movement and the indicator. For example, where price makes a new high but the PPO fails to do similar, this indicates momentum may be decreasing and recent price increases are not sustainable, signalling a sell opportunity. On the other hand, where a market's price makes new lows but the PPO fails to do similar, this implies momentum is increasing and that the down trend may be coming to an end.

5 TECHNICAL INDICATORS

5.11 Relative Strength Index

RSI is a momentum oscillator that ranges in value between 0 and 100 and is used to identify if a market is overbought or oversold.

RSI works best when the market's price is trading within a sideways range. As RSI approaches 70, it is an indication that the market may be getting overvalued (overbought), and price is likely to pull back. As RSI falls to 30, it is an indication that the market may be getting undervalued (oversold), and a reversal may occur. Technical Analysts would generally consider RSI falling below and then rising back above 30 to be a bullish buy signal. Whereas when RSI rises above and then falls back below 70, this is considered a bearish sell signal.





In a trending market, the signals can be adjusted. For example in a bull market the RSI tends to fluctuate between 40 and 90, with the 50-60 zone acting as a support level and a buy signal being generated when RSI falls below 40 and rises back above 40. In a bear market, the RSI tends to fluctuate between 10 and 60, the 40-50 zone acting as a resistance level, with a sell signal being generated when RSI rises above 60 and falls back below 60.

You can also use RSI to confirm the trend. During an uptrend the RSI would typically be above 50, during a down trend the RSI would be below 50.

Another method of using the RSI is to trade divergences - this is where the market's price trend doesn't agree with the trend of the indicator and provides an indication that the current trend may be near ending. The method works on the assumption that when a divergence occurs between a indicator and price, the price generally changes direction to confirm the trend shown by the indicator.

The RSI is a momentum indicator, so when price is in an uptrend and making new highs but the RSI fails to make new highs, this implies the price is running out of momentum and a price reversal is due. In such a situation, the RSI falling below 50 would provide confirmation of the reversal and act as a sell signal.

Where price is in a downtrend (making new lows) but the RSI forms a higher low, this implies that upside momentum is increasing and a price reversal is due. In such a situation, the RSI rising above 50 would provide confirmation of the reversal and act as a buy signal.

Signals	Description and example strategies
 	Bullish signal: RSI crossing above 50 Bearish signal: RSI falling below 50
 	Bullish signal: RSI crossing below 30 and turning up Bearish signal: RSI crossing above 70 and turning down





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5.12 Standard Deviation

Standard Deviation is a statistical measure of volatility. It measures the difference between the market's closing price and its average price over a defined preceding period of time. The more the price 'deviates' from its average (ie the larger the difference between the closing and average prices) the more volatile the price is said to be and the higher the Standard Deviation.

Standard Deviation can be used to help time entries (for example, it is worth noting that the reversal of trends such as bottoms or tops of the market, are usually accompanied with high volatility levels). It can also be used to identify the trend. Prices tend to fall more rapidly than they rise. As such, prices tend to be less volatile during an upwards trend or when the market is trading in a sideways range. During a downtrend the price tends to fall more rapidly so volatility is higher.

You can adjust the trading strategy and use of other technical indicator parameters to reflect the volatility of the market. High Standard Deviation values occur when price is changing dramatically. In such a highly volatile market set technical indicator parameters to shorter periods to increase sensitivity to avoid missing a trade. Low Standard Deviation values occur when prices are more stable so longer term periods might be used to delay generation of signals in order to avoid prematurely opening or closing trades.

Signals	Description and example strategies
 	Bullish signal: volatility decreasing over long time frame Price reversal: volatility high
 	Bearish signal: volatility increasing over a short time frame Side-ways trading range: volatility low

5 TECHNICAL INDICATORS

5.13 Stochastic

Stochastic is a momentum oscillator. Since momentum tends to change direction before price, the stochastic oscillator is considered a 'leading indicator'.

The stochastic is plotted as two lines: %K (called the fast line) and the %D (called the slow line). %D is a moving average of %K, and so %K is more sensitive than %D. The default periods used to calculate the stochastic are 14,3, 3 where 14 is the period used to calculate the %K line, the second parameter is a smoothing factor and the last parameter is the number of periods used calculate %D. The sensitivity of the indicator to market movements can be varied by adjusting the time periods used in the calculations. Use shorter periods to make the indicator more sensitive and increase trading signals; or increase the period parameters to reduce sensitivity and produce fewer (but more reliable) trading signals.

The oscillator values fluctuate in a range between 0 and 100, and as such the indicator can be readily used to identify overbought and oversold levels. Readings above 80 occur when the market is trading near the top of its recent price range. Readings below 20 occur when the market is trading near the bottom of its recent price range.

There are a variety of ways to interpret the indicator, depending on the overriding market conditions or trend.

In a non-trending sideways-moving range bound market, technical analysts would consider a market overbought if the stochastic reading is above 80; and oversold if the stochastic is below 20. The indicator can remain above 80 and below 20 for some time, so it is generally suggested to wait for the stochastic to reverse before making a trade. A buy signal is generated if the stochastic moves up out of the oversold zone, crossing back above 20. A sell signal is generated when the stochastic moves down out of the overbought zone, falling back below 80.

On the other hand, in a trending market that is consistently making higher highs (or lower lows), stochastic readings above 80 (or below 20) are to be expected. A move above 80 followed by a reversal is not necessarily a sell signal if the bigger trend is bullish. By the same token, a move below 20 followed by a reversal is not necessarily a buy signal if the overall trend is bearish. When using stochastics, it is therefore important to determine the overall trend and trade in the direction of that trend. Ignore bearish overbought readings in an uptrending market. Ignore bullish oversold readings in a downtrending market.





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Another method of using the stochastic is to trade when the stochastic %K line crosses the stochastic %D line. %K crossing above the %D is interpreted as a buy signal; whereas %K crossing below the %D is interpreted as a sell signal. Crossovers which occur above 80 (in the overbought zone) or below the 20 (in the oversold zone) tend to be more reliable signals than those occurring between the 20 to 80 levels. Crossovers can provide choppy signals, so should be considered with alternative indicators for confirmation.

A third method of using the indicator is to trade price / stochastic divergences - this is where the trend of the market's price doesn't agree with the trend of the stochastic and provides an indication that the current trend may be near ending. This method works on the assumption that when a divergence occurs between an indicator and price, the price generally changes direction to confirm the trend shown by the indicator.

Remember, the stochastic is a momentum indicator. Where price is in an uptrend and making new highs but the stochastic fails to make new highs, this implies the price is running out of momentum and a price reversal is due. In such a situation, the stochastic falling below 50 would provide confirmation of the reversal and act as a sell signal.

Where price is in a downtrend (making new lows) but the stochastic forms a higher low, this implies that upside momentum is increasing and a price reversal is due. In such a situation, the stochastic rising above 50 would provide confirmation of the reversal and act as a buy signal.

Signals	Description and example strategies
 	Bullish signal: Stochastic rising above 20 Bearish signal: Stochastic falling below 80
 	Bullish signal: Stochastic crossing below 20 and turning up Bearish signal: Stochastic crossing above 80 and turning down

5 TECHNICAL INDICATORS

5.14 Support & Resistance

Support and resistance levels are price points at which we consistently see a market's price reverse and change direction.

Resistance levels are formed when you can draw a horizontal line between two or more price peaks. Support levels are formed when you can draw a horizontal line between two or more price lows.









The resistance level is the highest price that a market trades at, over a period of time. The more frequently a resistance level is tested (i.e. hits a previous resistance level price pivot point but does not rise above it), the stronger the resistance at that level. Technical analysts believe that the stronger the resistance at a given level, the less likely it is to break above that level in the future. It is said that if a market breaks prior levels of resistance, it will increase until a new level of resistance is reached or established as we see in late 2007 on the chart below.

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The support level is the lowest price that a market trades at over a period of time. The more frequently a support level is tested (i.e. price hits the support level and reverses), the stronger the support at that level. Technical analysts believe that the stronger the support at a given level, the less likely it is to break below that level in the future. It is said that if a market breaks a level of support, it will drop sharply until a prior support level is reached.

A resistance level can become a support level if the price of the market rises above the support level. Similarly a support level can become a resistance level if the price of the market falls below the support level; as we saw happen in late 2002 on the above chart.

If a market is moving between support and resistance levels, then a basic investment strategy commonly used by traders, is to buy the market at support and sell at resistance, then short at resistance and cover the short at support.

Signals	Description and example strategies
 	Bullish signal: Price crossing above resistance level Bearish signal: Price falling below support level
 	Bullish signal: Price hitting support level and rising Bearish signal: Price hitting resistance level and falling
 	Bullish signal: Price hits support level and rises Bearish signal: Price hits resistance level and falling

5 TECHNICAL INDICATORS

5.15 trend lines

Trend lines are sloping support and resistance lines. They are commonly used to judge entry and exit points in trading. A trend line is formed when you can draw a diagonal line between two or more price reversal points.

A resistance trend line connects 2 or more price highs.



A support trend line connects 2 or more price lows.



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Trend lines are traded in a similar way to Support and Resistance levels. You can combine support and resistance trend lines on the one chart:









If the market price oscillates between the support and resistance lines, the market is described as trading in a 'channel'. A commonly used strategy is to buy when price hits and bounces off the support line; and sell when the price bounces off the resistance; then short when it hits and bounces off resistance and cover the short when it hits and bounces off support.

Another strategy used with trend lines is to trade 'break-outs'. If the market breaks through its support or resistance lines this can signify a change in trend. For example, if the market is in a downward trend and breaks through a resistance trend line, this is considered a bullish move as in such instances the market can increase until a new line of resistance is reached or established. On the other hand, if the market is in an overall upward trend but then price falls below its support trend line, this is considered a bearish move. As we see in the chart above, price rose in a steady upward trend from 2004 until June 2006 when it broke below the support trend line. From that point onwards we can see that the trend changes, price falls into a downward trend; market sentiment has changed from bullish to bearish.

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As with the support and resistance levels, a support trendline can become a resistance trend line if the price of the market falls below the support line. Similarly a resistance trend line can become a support trend line if the price of the market rises above the resistance; as we saw happen in September 2009 and June 2006 on the above charts.

Trading support and resistance trend lines and levels is not an exact science. Prices might not quite hit support and resistance levels before reversing and break-outs can be very short lived, providing false signals. For these reasons many traders will use support and resistance 'zones' allowing for a margin of error either side of the support / resistance levels.

Signals	Description and example strategies
 	Bullish signal: Price crossing above resistance line Bearish signal: Price falling below support line
 	Bullish signal: Price hitting support line and rising Bearish signal: Price hitting resistance line and falling
 	Bullish signal: Price hits support line and rises Bearish signal: Price hits resistance line and falling

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5.16 True Strength Index

The True Strength Index (TSI) is a momentum-based indicator and is a variation of the Relative Strength Index. It is used to help determine trend and identify overbought and oversold conditions. The indicator has very limited time lag compared to eg a moving average, and so is particularly useful for spotting early changes of trend.

The TSI will rise when the short term trend is up and fall when the short term trend is down. An increasing TSI indicates increasing momentum in the direction of the price movement.




When the indicator is rising above zero, the price is always rising. When the indicator is falling below zero, the price is always falling.

Technical analysts have their own preferences as to what are considered overbought and oversold levels. Typically values of -25 and +25 are used to indicate levels whether the market is overbought or oversold, but +/-30 and +/-50 are also common.

The TSI chart typically includes a signal line which is a moving average of the TSI itself. When TSI crosses above or below the signal line, this can indicate a change of trend and price reversal and provides an earlier buy / sell signal than waiting for TSI itself to move above / below zero.

TSI crossing below the signal line combined with a TSI of below -25 indicating oversold conditions, can be interpreted as a buy signal; whilst TSI crossing above the signal line combined with TSI above 25 implying conditions are overbought, can be interpreted as a sell signal.

Another means of interpreting the TSI is to look for divergences between price movement and the indicator. For example, where price makes new lows but TSI fails to make new lows, this would indicate momentum is increasing and could signal a buy opportunity. On the other hand, where a market's price makes new highs but the TSI fails to reach new highs, this could indicate weakening momentum and a possible shorting opportunity.

Signals	Description and example strategies
	Bullish signal: TSI rising above zero Bearish signal: TSI falling below zero
	Bullish signal: TSI crossing below -25 and turning up Bearish signal: TSI crossing above 25 and turning down
	Bullish signal: TSI crosses above its moving average Bearish signal: TSI crosses below its moving average




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5.17 Williams %R

The Williams Percent Range is a momentum indicator (similar to the Stochastic Oscillator), which identifies overbought and oversold market conditions. It is plotted on an inverted scale ranging from 0 to -100. Readings from 0 to -20 are considered to be overbought, and readings from -80 to -100 are considered oversold.

The indicator should not be used in isolation – interpretation is dependent on the dominant underlying trend, which can be identified using eg a moving average. Signals tend to be more reliable in a trending market, the indicator does not work so well in a sideways market. In a bull market, a reading below -80 would signal a buy opportunity. In a bear market, a reading above -20 would signal a sell opportunity.

To view a Williams % R chart, click on the “settings” button and select “Williams % R” from the drop down Chart Display menu. The period used to calculate the Williams % R is set to 14 by default. You can change this to suit the trading strategy. Reduce the period to make the indicator more sensitive or increase the period for smoother results. Bear in mind, the more sensitive you make the indicator, the more false signals you will get. When you have set the period, click the “refresh” button to update the chart or the “save” button to make this the default chart set-up.

Signals	Description and example strategies
 	Bullish signal: Williams % R rising Bearish signal: Williams % R falling
 	Bullish signal: Williams % R crossing below -80 and turning up Bearish signal: Williams % R crossing above -20 and turning down