Technical Trading Techniques

Presented by Paddy Osborn

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Moving Averages and Moving Average Convergence/Divergence (MACD)

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Moving Averages

- ❑ Prices move in waves, through a series of peaks & troughs
- ❑ Moving averages smooth out market noise to help identify underlying trend direction
- ❑ They work well in directional markets, but lose money in sideways markets

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Moving Averages

- ❑ Most chart analysis is subjective
- ❑ Moving averages are objective
- ❑ They are easily calculated and tested
- ❑ They are the basis for many mechanical trend-following systems
- ❑ ... but moving averages are followers, not leaders... they never anticipate, they only react...

Moving Averages

- ❑ There are 3 types of commonly used moving averages
  - • Standard
  - • Weighted
  - • Exponential
- ❑ Calculated using the closing price
- ❑ May be shifted forwards or backwards (centred is statistically correct)

Moving Averages

22-Sep-2008 - 23-Feb-2009 FX/Spot/TM/EURUSD 22/22 Hi: 1.4862 Lo: 1.2329 1.2766

Standard 21 Weighted 21 Exponential 21

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Standard Moving Averages

For a 5-day moving average,

$$\text{Standard MA} = \frac{P_1 + P_2 + P_3 + P_4 + P_5}{5}$$

Weighted Moving Averages

For a 5-day moving average,

$$\text{Weighted MA} = \frac{P_1 + (P_2 x_2) + (P_3 x_3) + (P_4 x_4) + (P_5 x_5)}{1 + 2 + 3 + 4 + 5}$$

Exponential Moving Averages

For a 5-day moving average,

$$\text{Exponential MA} = \text{YEMA} + (\text{TC} - \text{YEMA}) \; x \; \frac{2}{(n+1)}$$

TC = Today's Closing Price
YEMA = Yesterday's Exponential MA
$\frac{2}{(n+1)}$ = Exponential Constant

Properties of Moving Averages

13-Oct-2008->16-Dec-2009 FTSE100/Barclays Plc Daily Candle 390.00 46.98

In a downtrend, the moving average is above the price

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Properties of Moving Averages

13-Oct-2008->16-Dec-2009 FTSE100/Barclays Plc Daily Candle 390.00 46.98

In a uptrend, the moving average is below the price

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Properties of Moving Averages

❑ … so trading signals are given when the price crosses the moving average

- Price crosses above MA => Buy signal
- Price crosses below MA => Sell signal

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Trading Signal

Buy Signal

Sell Signal
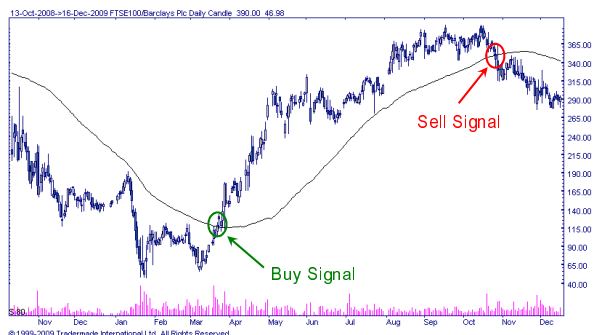
Confirming Moving Average Signals

❑ Avoid false signals with confirmation…
- Price & MA have same direction
- Use candlestick analysis
- Use trend line breakouts, etc.

❑ Use filters…
- Wait for the daily close
- Wait for the MA to be broken by a certain amount (hi-low bands & %age envelopes)
- Long bar - extreme close – volume - gap

Dilemmas

❑ Shorter (faster) moving averages
- Earlier signals, but more false signals
- Susceptible to being whipsawed in sideways markets

❑ Longer (slower) moving averages
- Later signals
- Higher proportion of profitable signals

Two Moving Average System

❑ Using two moving averages can help
❑ Look for the 2 moving averages to cross each other:
  ▪ Buy when fast MA crosses above slow MA
  ▪ Sell when fast MA crosses below slow MA
❑ Fewer bad signals in sideways markets

Two Moving Average System

Moving Averages - Dilemmas

❑ As already mentioned, by their very nature, moving averages are <u>lagging</u> indicators
❑ Slow moving averages give late signals
❑ ... but fast moving averages give too many bad signals
❑ How do we solve this lagging problem?

MACD

- ❑ The solution is MACD...
- ❑ Moving Average Convergence Divergence (MACD) is displayed as an oscillator
- ❑ It displays the market momentum by calculating the difference between two (exponential) moving averages

MACD

MACD

- ❑ Buy & sell signals are generated by the crossing of the 2 MACD lines
- ❑ Trend lines can be drawn on MACD
  - ❑ A broken MACD trend line may warn of a potential price trend line breakout

MACD

MACD

- ❑ Best buy signals are given when the crossing occurs below the zero line (the lower the better)
- ❑ Best sell signals are given when the crossing occurs above the zero line (the higher the better)
- ❑ Also look for divergence between MACD and price highs or lows

Don't Forget Primary Confirmation! …

Oscillators
(Momentum Indicators)

Oscillators

- ❑ Mathematical formulae displayed on a separate axis beneath the price chart indicating the strength of market prices
- ❑ Most often used as <u>counter-trend</u> indicators
  - • Appeal to traders' contrarian inclinations
- ❑ Most oscillators are based on the concept of momentum
  - • Momentum, RSI, Stochastics, MACD

Oscillators

- ❑ Indicate the strength or momentum of the market...
  - • On a scale from 0% to 100%, or
  - • Oscillating around a "zero" line

Oscillators

0% to 100%

Zero Line
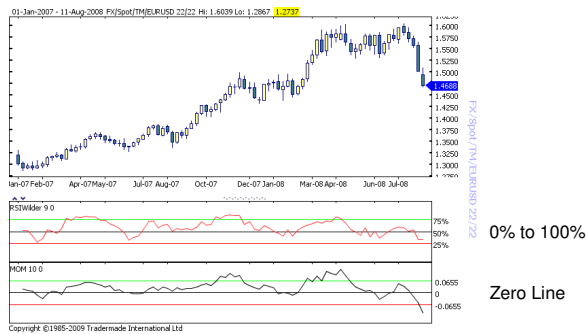
Momentum Oscillators

❑ Market momentum <u>leads</u> price
❑ Indicate potential reversals
  ❑ Appeal to traders' contrarian inclinations
❑ What to look for:
  1. Overbought and Oversold conditions
  2. Trading signals
  3. Divergence (advanced warning of possible reversal)
  4. Support/resistance and patterns on the oscillator
❑ Note that they are Secondary Indicators, so confirmation from Primary Indicators is required

Momentum & Rate of Change

Momentum = Price today – Price x days ago

Rate of Change = Price today / Price x days ago

Momentum and Rate of Change

1. Overbought/Oversold

❑ The price has moved too far, too fast in one direction and is due a…

    ❑ Consolidation (normally)

    ❑ Correction (sometimes)

    ❑ Reversal (in extreme cases)

2. Trading Signals

Trading Signals are given as the Momentum line crosses the zero line:

❑ Buy when Momentum crosses above the zero line

❑ Sell when Momentum crosses below the zero line

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2. Trading Signals

Momentum Oscillator on USD Index
USD-Index Daily Bar 90.77 81.28

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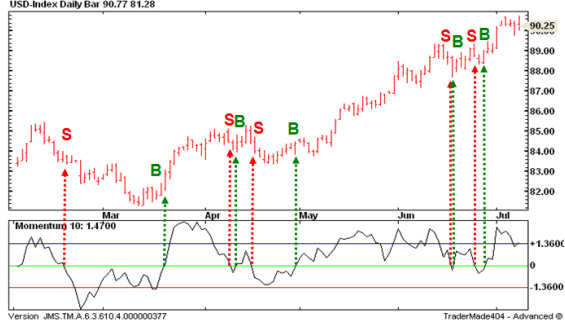
3. Divergence

❑ Best use of momentum indicators
❑ Gives <u>advanced</u> warning signs of potential trend reversals
❑ The price makes a new high (or low) but the Momentum does not

3. Divergence

Momentum Oscillator on USD Index
USD-Index Daily Bar 90.77 81.28

Warning

Bullish Divergence

Momentum 10: 1.4700

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3. Divergence

Momentum Oscillator on USD Index
USD-Index Daily Bar 90.77 81.28

Confirmation

Trend breakout with Momentum buy signal

Buy

Momentum 10: 1.4700

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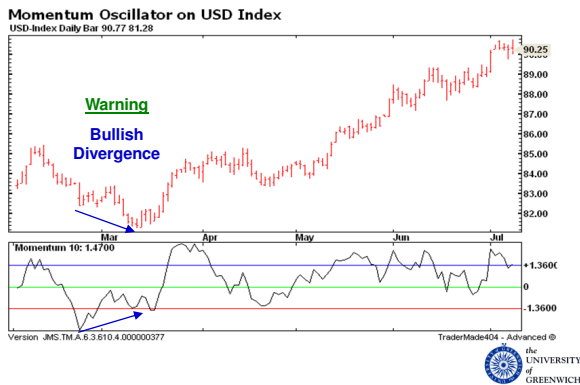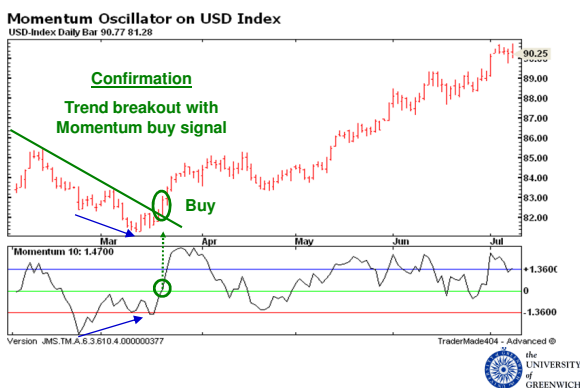
Relative Strength Index (RSI)

- ❑ Momentum & ROC are too simple
- ❑ RSI is most popular
- ❑ Plotted on a scale from 0 to 100%
- ❑ RSI is smoother than Momentum / ROC, hence less erratic fluctuations

RSI Formula

$$RSI = \frac{(\text{Points gained on 'UP' days}) \times 100}{(\text{Total points gained and lost})}$$

calculated on a close-to-close basis

Relative Strength Index (RSI)

- ❑ Market momentum <u>leads</u> price
- ❑ Indicate potential reversals
    - ❑ Appeal to traders' contrarian inclinations
- ❑ What to look for:
    1. Overbought and Oversold conditions
    2. Trading signals
    3. Divergence (advanced warning of possible reversal)
    4. Support/resistance and patterns on the oscillator

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1. Overbought/Oversold

- ❑ As before, we're looking for...
    - ❑ Consolidation (normally)
    - ❑ Correction (sometimes)
    - ❑ Reversal (in extreme cases)
- ❑ Note: First move into OB / OS => Warning
- ❑ Second move into OB / OS => Trade Signal

2. RSI Trading Signals

- ❑ Buy when RSI rises out of oversold zone
- ❑ Sell when RSI falls out of overbought zone
- ❑ … BUT be aware of the longer term trend
- ❑ ….AND wait for the 2nd entry/exit for the actual trading signal

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RSI Example

RSI Example

RSI Example

RSI Example

RSI Example

RSI Example

Trend
reversal

RSI Example
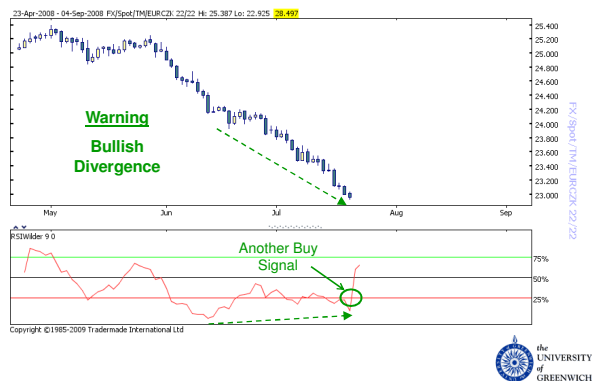
Trend line breakout on
RSI anticipates trend line
breakout on price

Stochastics

Stochastics rely on the fact that in an uptrend, the
current price will be near the highs of the recent range
(and vice versa).

e.g. A 10-day Stochastic tells us (as a percentage) where
today's price is within the range of the last 10 days.

Stochastics & Slow Stochastics

19-Sep-2008 - 23-Feb-2009 FX/Spot/TM/GBPUSD 22/22 Hi: 1.8661 Lo: 1.3500 1.4526

%D   %Dn

SlowStochastic 10 6 6

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Slow Stochastic Formula

Using parameters of 10-6-6 for a daily Slow Stochastic:

$$\%K = \frac{\text{(Latest Price - Lowest Low of Last 10 days)}}{\text{Highest High (10 days) - Lowest Low (10 days)}} \times 100$$

$$\%D = \frac{H6}{L6} \times 100 \qquad \text{where}$$

H6 = 6-day sum of Latest Price - Lowest Low of Last 10 days
L6 = 6-day sum of Highest High (10 days) - Lowest Low (10 days)

Then, for the Slow Stochastic:
%Dn = 6-day Moving Average of %D

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Slow Stochastic – Trading Signals

19-Sep-2008 - 23-Feb-2009 FX/Spot/TM/GBPUSD 22/22 Hi: 1.8661 Lo: 1.3500 1.4526

SlowStochastic 10 6 6

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Slow Stochastic – Divergence

Warning

Bullish Divergence (GBP-USD has hit a lower low, but stochastic lows are getting higher)

Slow Stochastic – Divergence

Confirmation

Do we also have an Inverse H&S Breakout?
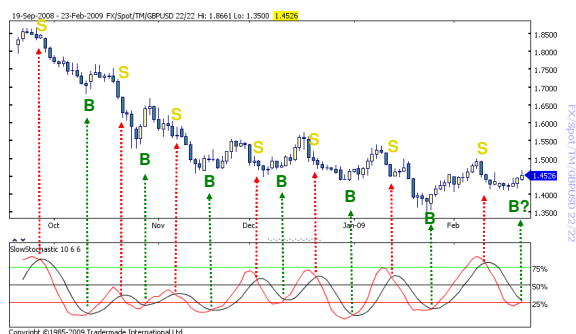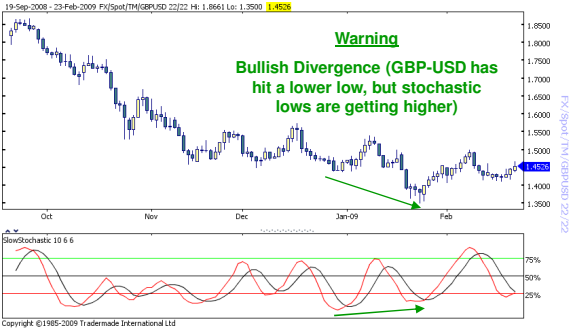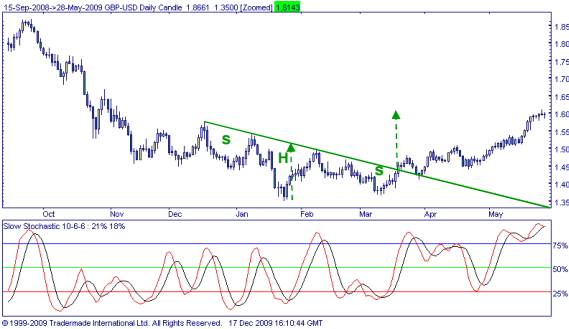
Slow Stochastic

Stochastic Parameters

Daily Stochastics: 10-6 or 14-6

Slow Stochastics: 10-6-6 or 14-6-6

(in fact, multiples of 5-3-3 are most popular.

Tip: Earlier signals are given by reducing the 3rd parameter, for example to 10-6-3.

Japanese Candlestick Charting
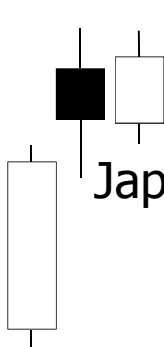
Candlestick Charting

- Help identify market sentiment
- Short term patterns (max. 9 events)
- Need confirmation

Construction

- Colour coded
  - Empty / light real body represents an "up" candle
  - Filled / dark real body represents a "down" candle
- Event period defined by user (i.e. hourly, daily, etc.)
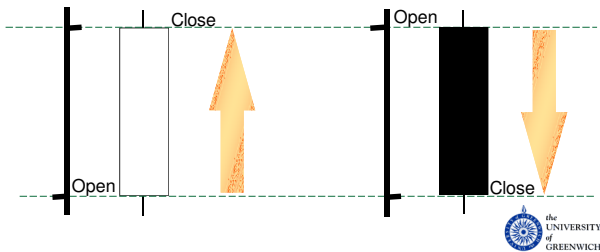
Construction – Real Body

- The area between the open and the close
- Closing price most important
  - Indicates direction of next session opening

Construction – Real Body

- Look out for:
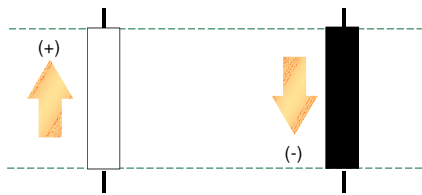 - Real body size (relative to nearby candles)
  - Real body colour

Construction - Shadows

The longer the shadow the more important the level

'TAKURI' - Testing the water

Critical Support

Buying pressure controls this level

Single Candlestick Patterns

The Original Eight

1   2   3   4   5   6   7   8
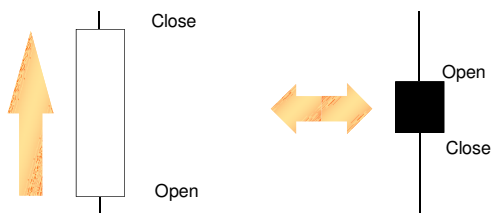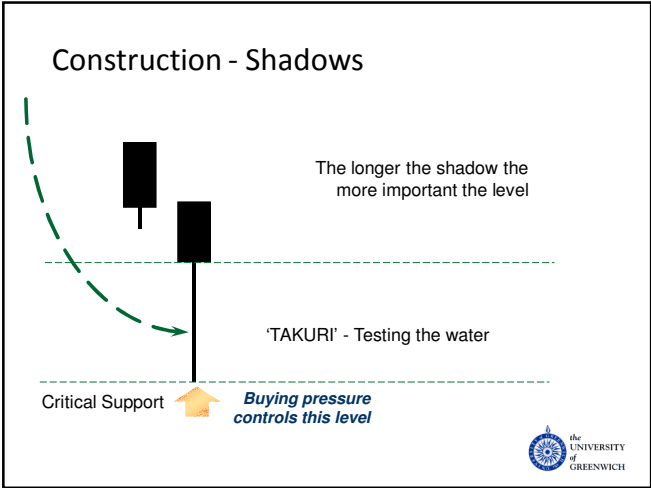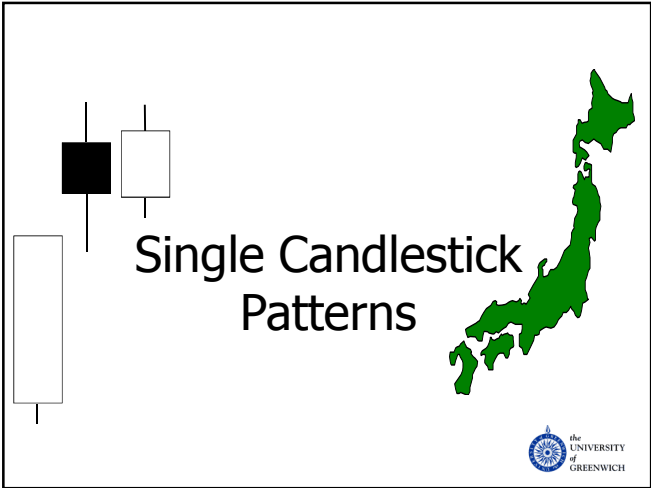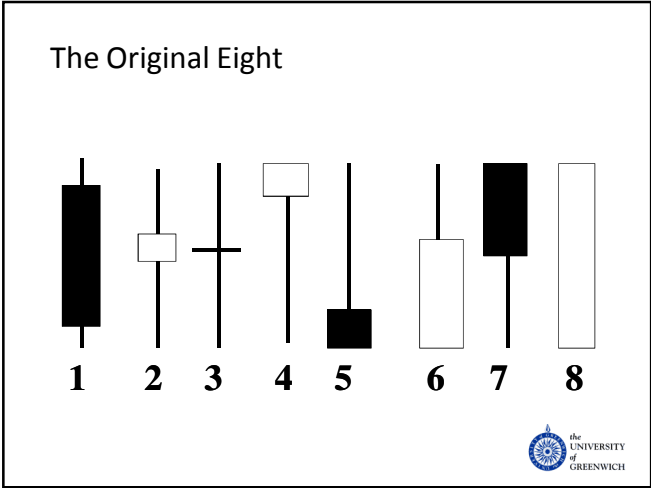
1. Standard Line

(+)

(-)

- Indicate trend continuation
- Strong real body and small shadows

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2. Koma - Spinning Top

(+/-)   (+/-)
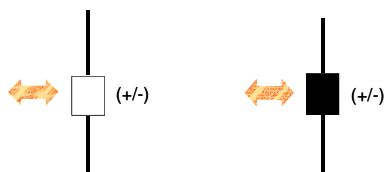
- Neutral patterns – indicate consolidation – no directional conviction
- Small real body & long shadows top & bottom

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3. Doji

Long Legged   Gravestone   Dragonfly
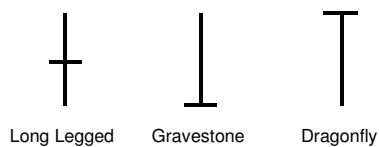
- Significant reversals (Gravestone & Dragonfly)
- Open & close at same level - Bulls & Bears meet
- In Japanese, Doji means "the same as"

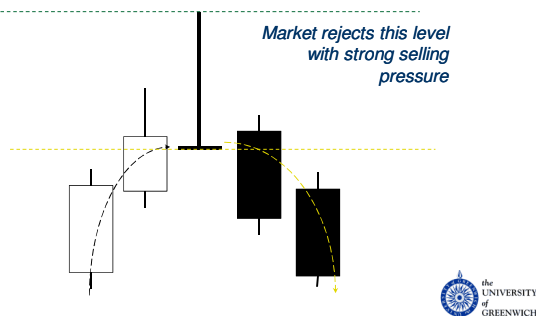*the UNIVERSITY of GREENWICH*

3a. Long Legged Doji

- Potential turning point – shows indecision
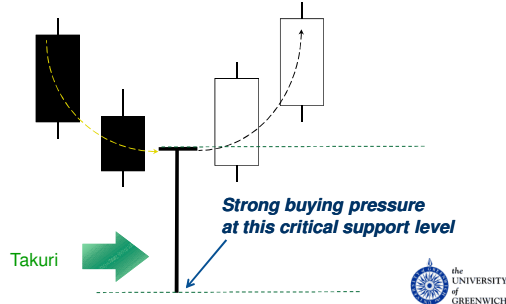- Long upper and lower shadows (almost equal length)
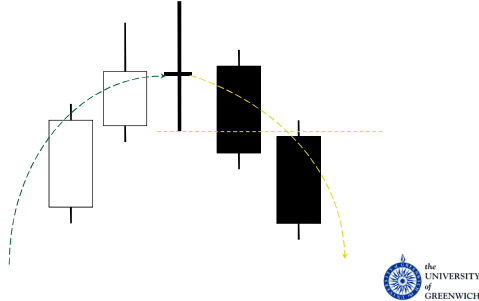
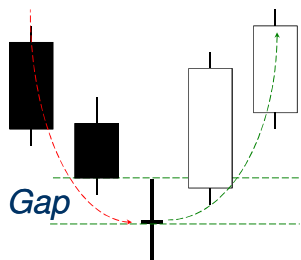## 3b. Gravestone Doji

- Signals the end of a bullish attack

Market rejects this level with strong selling pressure

3c. Dragonfly Doji

- Exact opposite of Gravestone
- Found exclusively at a market bottoms

Strong buying pressure at this critical support level

Takuri

3d. Doji Star

Gap

- Strong reversal pattern found at tops and bottoms
- Gap increases Doji significance

4. Umbrella - 'Karakasa'

- Two types of Umbrella
  - **Hanging Man**
  - **Hammer**
- Small real body with little or no upper shadow
- Lower shadow 2 to 3 times the length of real body
- The name of the pattern depends on where it appears:
  - In an uptrend, it's a Hanging Man
  - In a downtrend, it's a Hammer
- Colour of real-body not so important
- Pay attention to the direction of the closing

4a. Hanging Man
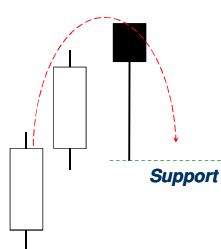
Support

- Prior up-trend required
- Market shows signs of weakness but session closes well above low
- Confirmation:
  - A close below support in the next 2/3 periods, or
  - A break of a trend line or support level

4b. Hammer

- Prior downtrend required
- Strong buying off a low and close near the high
- Long shadow illustrates sentiment shift
- Real body colour less important than for Hanging Man
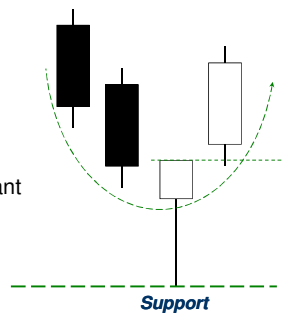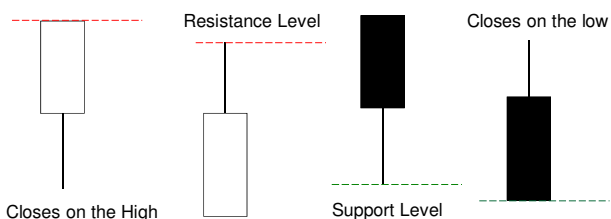
Support

5. Inverted Hammer / Shooting Star

- Opposite of Umbrella lines
- **Shooting Star**
  - Powerful reversal signal in an up-trend (but only on a new high)
- **Inverted Hammer**
  - Indicates potential support in downtrend
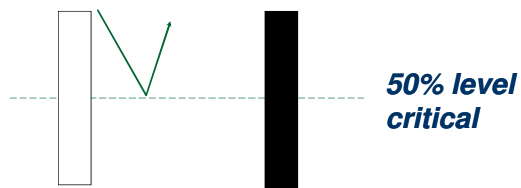 - Confirmation required

Shooting Star

Inverted Hammer

6/7. Belt Hold Lines – 'Bozu'

- Also called Shaven Top or Bottom
- Continuation patterns, but can show weakness in a trend

Resistance Level

Closes on the low

Closes on the High

Support Level

8. Marabozu

**_50% level
critical_**

- A candle line with no upper or lower shadow
- Very strong continuation pattern
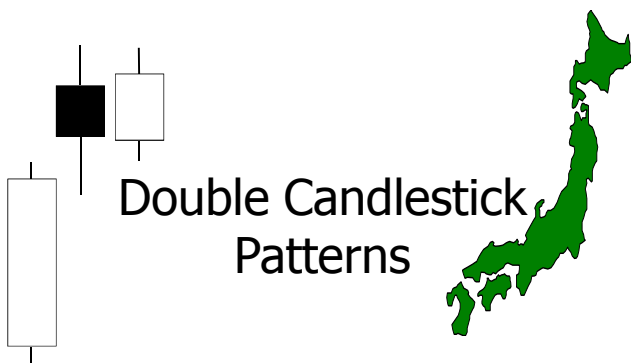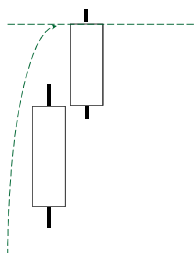- Most common in short term charts

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Confirmation Rules

- Use Slow Stochastics to add further conviction to candlestick patterns
- Parameters:10-6-6 or 10-6-3
- Look for reversal candlestick pattern with Slow Stochastic in an extreme zone
  - Bullish candle with stochastic < 25%
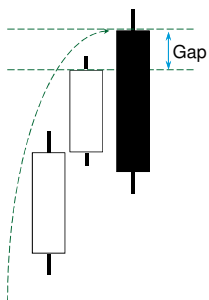 - Bearish candle with stochastic > 75%

Double Candlestick Patterns

Bearish Engulfing Line

- Strongest reversal pattern
- Huge sentiment shift
- Prior trend required

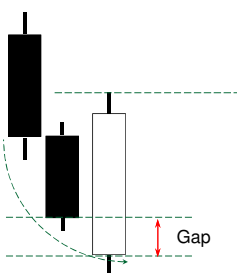## Bearish Engulfing Line

Gap

- Next period gaps up
- Closes below previous open
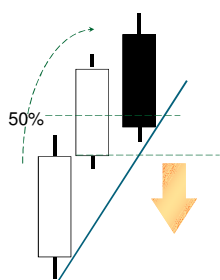- Real bodies opposite colours
- Shadows not considered

Bullish Engulfing Line

- Opposite of the Bearish Engulfing Line
- Very strong reversal pattern
- Prior trend required
- *Trading Strategy - Square trades that are positioned with the prevailing trend and get ready to reverse if second day follows through*

Gap

Dark Cloud Cover

- Similar to Engulfing pattern but fails to engulf all of the previous real body
- Prior up-trend required
- Price opens above last session close and closes more than 50% into the previous real-body
- The greater the penetration into the previous period the stronger the signal.
- *Trading Strategy - Close long positions, go short when trend reversal confirmed.*

50%

Piercing Patterns
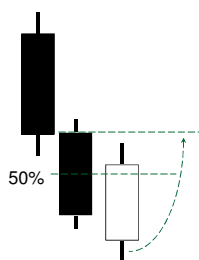
- Similar to Engulfing Pattern but fails to engulf all previous body
- Must close >50% into previous real body
- Greater penetration implies stronger signal
- *Trading Strategy - Close short positions, go long when trend reversal confirmed*

50%

Confirmation Rules

- Don't forget to use Slow Stochastics to confirm candlestick signals
- Then use primary indicators for trade confirmation

Volume and OBV

Volume

- ❑ Volume is displayed beneath the price chart, usually as a histogram
- ❑ Volume is a secondary indicator, but confirms price & time data
- ❑ A measure of market "aggression"
- ❑ Volume should confirm the trend
- ❑ <u>Volume precedes price</u>

On-Balance Volume (OBV)

- ❑ OBV is displayed as an oscillator
- ❑ It has no upper or lower boundaries
- ❑ It is calculated in two steps:
  - • Each day's total volume is deemed positive or negative, depending on the close relative to yesterday
  - • The day's volume is then added to or subtracted from the previous day's OBV

Shortcomings of OBV

❑ OBV assigns the whole day's volume as a positive or negative value

❑ But what if the market closes up by 1 tic... should all the volume be added to the OBV?

❑ Also, if the market trades higher all day but finally closes slightly lower – should all the volume be subtracted?

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Weighted OBV

❑ The best solution is "Weighted OBV"

❑ Weighted OBV multiplies the volume by the actual amount of price gain or loss
  ❑ Gives more weight to big move days
  ❑ Lessens the impact of small move days

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Volume and OBV

Glaxo Smith Kline Daily Candle 18-Feb-08->13-Jun-08

OBV: -47821

+105177
0
-105177

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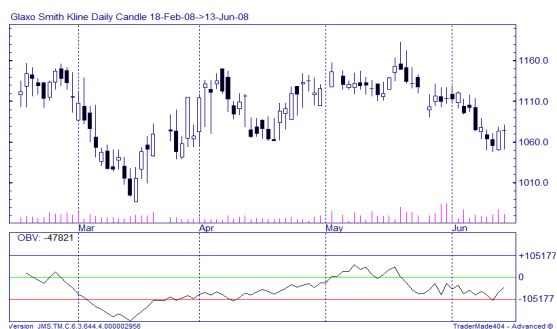
On-Balance Volume (OBV)

❑ OBV is a cumulative oscillator
❑ Unlike RSI, etc., OBV <u>value</u> is not important
❑ Look at OBV <u>direction</u> relative to price
  • Is the "smart" money is accumulating or distributing?

OBV Interpretation

❑ OBV changes <u>precede</u> price changes
  • Note that divergence is rare
❑ "Where was OBV the last time the price was at this level?"
  • Higher OBV now indicates stronger trend
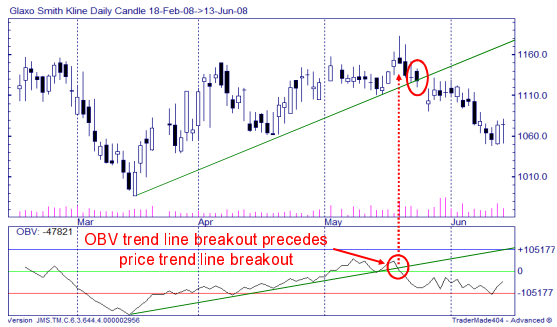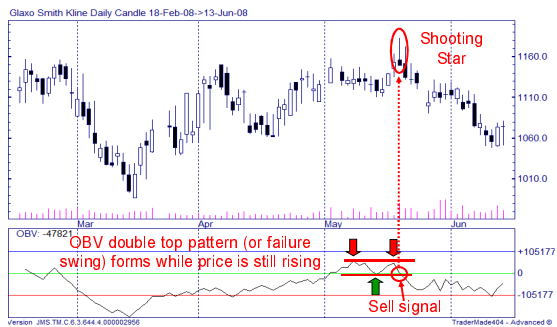 • Lower OBV now indicates a weaker trend

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OBV Interpretation

❑ Trend lines can be applied to OBV
❑ Other simple chart analysis can be applied to OBV
  • Triangles, double tops, head & shoulders

Trend lines on OBV

Glaxo Smith Kline Daily Candle 18-Feb-08->13-Jun-08

OBV: -47821

OBV trend line breakout precedes price trend line breakout

+105177
0
-105177

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Patterns on OBV

Glaxo Smith Kline Daily Candle 18-Feb-08->13-Jun-08

Shooting Star

OBV: -47821

OBV double top pattern (or failure swing) forms while price is still rising

Sell signal

+105177
0
-105177

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OBV Interpretation

❑ Particularly useful in sideways markets
  - OBV will often indicate in advance where the smart money is going
    - Rising OBV in sideways market suggests upside breakout imminent (& vice versa)
❑ Also useful for advanced warning of <u>pattern breakouts</u>
  - OBV increases on the breakout leg of the pattern

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Summary

- ❑ Technical analysts have a wide range of studies to analyse market prices
- ❑ But just knowing the rules is not enough
- ❑ You need to understand how to use the tools to interpret and anticipate market moves...
- ❑ Like a scalpel in the hands of a gifted surgeon... a scalpel in our hands would not only be useless, but may well be dangerous!

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Technical Trading Techniques

Presented by Paddy Osborn

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