IKTrading Indicators

October 3, 2014

`agg.chart.ME` *Aggregate Maximum Excursion Charts*

Description

Aggregate Maximum Excursion Charts

Usage

```
agg.chart.ME(Portfolio, Symbols, type = c("MAE", "MFE"),
  scale = c("cash", "percent", "tick"))
```

Arguments

`Portfolio`	the portfolio name (string)
`Symbols`	the symbols for which to plot
`type`	MAE for Maximum Adverse Excursion or MFE for Maximum Favorable Excursion
`scale`	scale of P&L (cash, tick, percent)

Value

plots all the trades among the symbols in one chart. Useful with equal risk order sizing.

durationStatistics *Duration Statistics*

Description

a collection of basic statistics on durations of trades–most freely available data will be on daily frequency

Usage

```
durationStatistics(Portfolio, Symbols,
  includeOpenTrade = FALSE, aggregate = TRUE, ...)
```

Arguments

Portfolio	– the portfolio name
Symbols	– the names of the symbols in the backtest
includeOpenTrade	– whether to include open trades – defaults to FALSE since if a trade opens on the same day as the last day, units will be off
aggregate	– if TRUE, displays aggregate statistics for all instruments included, otherwise, displays the statistics for each instrument separately

Value

the min, Q1, median, mean, Q3, and max durations of all trades, winning trades (W), and losing trades (L)

DVO *David Varadi Oscillator*

Description

Computes a percent ranking of an average of close over the sum of high and low values. The DV2 indicator uses an average period of 2.

Usage

```
DVO(HLC, nAvg = 2, pctLookback = 126, maType = "SMA",
  deTrend = TRUE, nDT = 126)
```

Arguments

HLC	an HLC time series
nAvg	the number of days over which to average ratios
pctLookback	a percent ranking lookback period
maType	a function specifying the moving average type (defaults to SMA)
deTrend	whether or not to subtract an SMA of the indicator from itself
nDT	a lookback period for computing the moving average of the indicator to subtract from the center of the indicator, and then to subtract that quantity from the main computation

Value

the DVO oscillator quantity, centered at 50

References

https://cssanalytics.wordpress.com/2011/01/11/de-trending-indicators/
http://quantingdutchman.wordpress.com/2010/08/06/dv2-indicator-for-amibroker/

ERM *Varadi's Error-Adjusted Momentum*

Description

Computes a zero-centered indicator about zero that is a moving average of the absolute residuals of a short-term forecast of the returns of a price series.

Usage

```
ERM(x, nFcast = 10, nMAE = 10, nAvg = 200,
  maType = "SMA")
```

Arguments

nFcast	lookback parameter for a short term forecast (default 10)
nMAE	lookback parameter for a mean absolute error term (default 10)
nAvg	lookback parameter for the moving average (default 200)
maType	string indicating moving average type (default "SMA")

Value

the Varadi Error-Adjusted Momentum series

References

http://cssanalytics.wordpress.com/2014/07/30/error-adjusted-momentum/

`heikinAshi` *HeikinAshi*

Description

HeikinAshi

Usage

```
heikinAshi(OHLC)
```

Arguments

`OHLC`	an OHLC time series

Value

the Heikin Ashi recomputed OHLC time series

`hourlyPL` *Hourly P&L box plot*

Description

Hourly P&L box plot

Usage

```
hourlyPL(Portfolio, symbol)
```

Arguments

`Portfolio`	the portfolio name
`symbol`	the symbol string

Value

a box plot of the hourly P&Ls

ichimoku *Ichimoku*

Description

The ichimoku indicator, as invented by Goichi Hosoda. It has five components.
The turning line is the average of the highest high and highest low of the past nFast periods.
The base line is computed the same way over the course of nMed periods.
Span A is the average of the above two calculations, projected nMed periods into the future.
Span B is the average of the highest high and lowest low over the past nSlow periods, also projected the same way.
Finally, the lagging span is the close, projected backwards by nMed periods.

Usage

```
ichimoku(HLC, nFast = 9, nMed = 26, nSlow = 52)
```

Arguments

HLC	an HLC time series
nFast	a fast period of days, default 9
nMed	a medium period of days, default 26
nSlow	a slow period of days, default 52

Value

The first four computations (turning line, base line, span A, span B), plotSpan (do NOT use this for backtesting, but for plotting), laggingSpan, and a lagged Span A and lagged Span B for comparisons with the lagging span, as per Ichimoku strategies.

lagATR *Lagged ATR*

Description

lags ATR computation by a lag parameter for use with order-sizing functions

Usage

```
lagATR(HLC, n = 14, maType, lag = 1, ...)
```

Arguments

HLC	an HLC object
n	a lookback period
maType	the type of moving average
lag	how many periods to lag the computation

Value

a lagged ATR calculation

MSR *Varadi's MSR*

Description

Computes David Varadi's MSR – a percent rank of a normalized differnce of median and max

Usage

```
MSR(HLC, nMed = 10, nMax = nMed * 2, pctLookBack = 100)
```

Arguments

HLC	an HLC xts
nMed	a lookback period for taking the median of the HLC series; i.e. the median of the concatenated HLC series, using a parameter of 3*nMed for the 3 series in the concatenation
nMax	a lookback period for the max of the HLC series – should be greater than the median lookback
pctLookBack	a period over which to do a percent ranking

References

http://cssanalytics.wordpress.com/2010/10/27/a-new-trend-indicator-msr/

OHV *Varadi's Offsetting HV*

Description

computes a ratio of an n1-day volatility to an n1-lagged n2-day volatility.

Usage

```
OHV(x, n1 = 3, n2 = 10, sample = TRUE)
```

Arguments

x	a time series
n1	a lookback period for the first rolling standard deviation and lag for the second standard deviation
n2	a lookback period for the second standard deviation
sample	whether or not to use a sample calculation or population calculation for standard deviation

Value

a volatility ratio

References

https://cssanalytics.wordpress.com/2010/11/18/310-offset-hv-as-a-mean-reversion-filter/

osDollarATR *osDollarATR*

Description

computes an order size by way of ATR quantities, as a proportion of tradeSize

Usage

```
osDollarATR(orderside, tradeSize, pctATR,
  maxPctATR = pctATR, data, timestamp, symbol,
  prefer = "Open", portfolio, integerQty = TRUE,
  atrMod = "", rebal = FALSE, ...)
```

Arguments

orderside	long or short
tradeSize	a notional dollar amount for the trade
pctATR	a percentage of the tradeSize to order in units of ATR. That is, if tradeSize is 10000 and pctATR is .02, then the amount ordered will be 200 ATRs of the security. If the last observed ATR is 2, then 100 units of the security will be ordered.
maxPctATR	an upper limit to how many ATRs can be held in a position; a risk limit
integerQty	an integer quantity of shares
atrMod	a string modifier in case of multiples of this indicator being used. Will append to the term 'atr', that is, atrMod of "X" will search for a term called 'atrX' in the column names of the mktdata xts object.
rebal	if TRUE, and current position exceeds ATR boundaries, will automatically sell

---

osMaxDollar *Order Size: Max Dollar*

Description

An order sizing function that limits position size based on dollar value of the position, rather than quantity of shares.

Usage

```
osMaxDollar(data, timestamp, orderqty, ordertype,
  orderside, portfolio, symbol, prefer = "Open",
  tradeSize, maxSize, integerQty = TRUE, ...)
```

Arguments

tradeSize	the dollar value to transact (use negative number to sell short)
maxSize	the dollar limit to the position (use negative number for short side)
integerQty	a boolean whether or not to truncate to the nearest integer of contracts/shares/etc.

Value

a quantity to order

quandClean *Quandl Futures Data Cleaning*

Description

Constructs a continuous futures time series from front and back month contracts from Quandl's database.

Usage

```
quandClean(stemCode, start_date = NULL, end_date = NULL,
  verbose = FALSE, ...)
```

Arguments

stemCode	the characters for the corresponding futures series. Usually in the form of CHRIS/EXCHANGE_SYMBOL, such as CHRIS/CME_CL for light, sweet crude oil, and CHRIS/CME_GC for gold.
start_date	a character string date in the form of yyyy-mm-dd such as 2000-01-01
end_date	a character string date identical to the above
verbose	an argument that displays how many NA and spike days were removed, then prints the removed dates

Value

an OHLCVI time series of daily data

sigAND *sigAND*

Description

signal AND operator for quantstrat signals.

Usage

```
sigAND(label, data = mktdata, columns, cross = FALSE)
```

Arguments

label	name of the output signal
data	the market data
columns	the signal columns to intersect
cross	whether to only provide a true value for crossing values

Value

a new signal column that intersects the provided columns

`SIROC` *SIROC – Smoothed Indexed Rate Of Change*

Description

computes the smoothed indexed rate of change indicator. The SIROC is an oscillator ranging between 0 and 100. It is computed as an n3-period RSI of an n2-period EMA of the normalized residuals of an n1-period EMA of the price.

Usage

```
SIROC(x, n1 = 30, n2 = 15, n3 = 14, ...)
```

Arguments

`n1`	a period upon which to compute an EMA based on price, and the lag for the normalizing price.
`n2`	a period for taking the EMA of the normalized residuals above
`n3`	an RSI period for the above quantity
`maType`	the moving average type used for the RSI. Defaults to EMA

Value

the SIROC indicator, a 1-column oscillator

`stratBoxPlots` *Strategy Signal Expectancy Boxplots*

Description

Generates boxplots of percentage returns for a given signal over time.

Usage

```
stratBoxPlots(strategy.st, symbols, from = NULL,
  to = NULL, short = FALSE, lagSeq = seq(1, 10),
  sigName = NULL, magicalThinking = FALSE,
  filenameMod = NULL, ...)
```

Arguments

strategy.st	the name of the strategy
symbols	a string of symbols for which there is OHLC data
from	a starting date (default NULL for complete data)
to	an ending date (default NULL for complete data)
short	whether the side of the trade is the long or short side
lagSeq	a sequence of days into the future. Defaults to 1 through 10
sigName	the name of the signal for which to create the box plots
fileNameMod	any name modifications for the title of the box plot and file name (EG parameter sets).

Value

prints a box plot to a file

VCI *ValueCharts Indicator*

Description

Computes a range-normalized difference between current price and a running moving average. A value below -8 indicates oversold, while a value above 8 indicates overbought.

Usage

```
VCI(OHLC, nLookback = 40, nRange = 8, pctRank = FALSE)
```

Arguments

OHLC	an OHLC time series
nLookback	a moving average window, default 40
nRange	a lookback window for the range computation. A number above 7 results in the following computation: take the difference between the nRange max high and min low. Add up that value, that value lagged by nRange+1, nRange*2, nRange*3, and nRange*4, and divide by 25. If nRange is 7 or less, the daily range is instead computed as the 5-day SMA of the following quantity: for each day, take the maximum of the difference between the high and low, or the absolute difference between current and previous close. Multiply that final quantity by .16.

Value

an OHLC-like 4-column output computing the values given OHLC prices, or a percent rank of the close variant. The column names will be VO, VH, VL, and VC, respectively.

References

http://www.tradesignalonline.com/en/lexicon/view.aspx?id=Value+Charts+Indicator

Index

agg.chart.ME, 1

durationStatistics, 2
DVO, 2

ERM, 3

heikinAshi, 4
hourlyPL, 4

ichimoku, 5

lagATR, 5

MSR, 6

OHV, 7
osDollarATR, 7
osMaxDollar, 8

quandClean, 9

sigAND, 9
SIROC, 10
stratBoxPlots, 10

VCI, 11