Analyzing your strategy

FINANCIAL TRADING IN R

Ilya Kipnis
Professional Quantitative Analyst and R programmer

Our strategy

- Buy when:
  - 50-day moving average > 200-day moving average
  - and dvo < 20
- Sell when:
  - 50-day moving average < 200-day moving average
  - or dvo > 80

Run your strategy

Apply your strategy

```
applyStrategy(strategy = strategy.st,
              portfolios = portfolio.st)
```

Update the portfolio

```
updatePortf(portfolio.st)
daterange <- time(getPortfolio(portfolio.st)$summary)[-1]
```

Update the account

```
updateAcct(account.st, daterange)
updateEndEq(account.st)
```

```
tStats  <- tradeStats(Portfolios = portfolio.st)
tStats
```

```
    Portfolio    Symbol    Num.Txns    Num.Trades    Net.Trading.PL
LQD  firstStrat    LQD        382           156           25681.09
     Avg.Trade.PL    Med.Trade.PL    Largest.Winner   Largest.Loser
LQD    164.6223       363.0143          2981.424        -7012.523
   Gross.Profits    Gross.Losses   Std.Dev.Trade.PL  Percent.Positiv
LQD    77251.33       -51570.24          1174.442           66.66667
    Percent.Negative   Profit.Factor   Avg.Win.Trade   Med.Win.Trade
LQD     32.69231            1.497983        742.8012         624.5683
    Avg.Losing.Trade  Med.Losing.Trade   Avg.Daily.PL   Med.Daily.PL
LQD      -1011.181         -660.7456           164.6223       363.0143
     Std.Dev.Daily.PL  Ann.Sharpe   Max.Drawdown   Profit.To.Max.Dra
LQD          1174.442        2.225141     -10625.62           2.41690
    Avg.WinLoss.Ratio    Med.WinLoss.Ratio     Max.Equity   Min.Equi
LQD          0.7345877             0.9452477      27567.98    -1550.33
    End.Equity
LQD    25681.09
```

Characteristics of trading systems

- Systems based on moving average/trend signals
  - High average win/loss ratio (greater than 1)
  - Low percent positive (less than 50%)
- Systems based on oscillation/reversion signals:
  - High percent positive (greater than 50%)
  - Low average win/loss ratio (less than 1)

Let's practice!

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Visualizing your strategy

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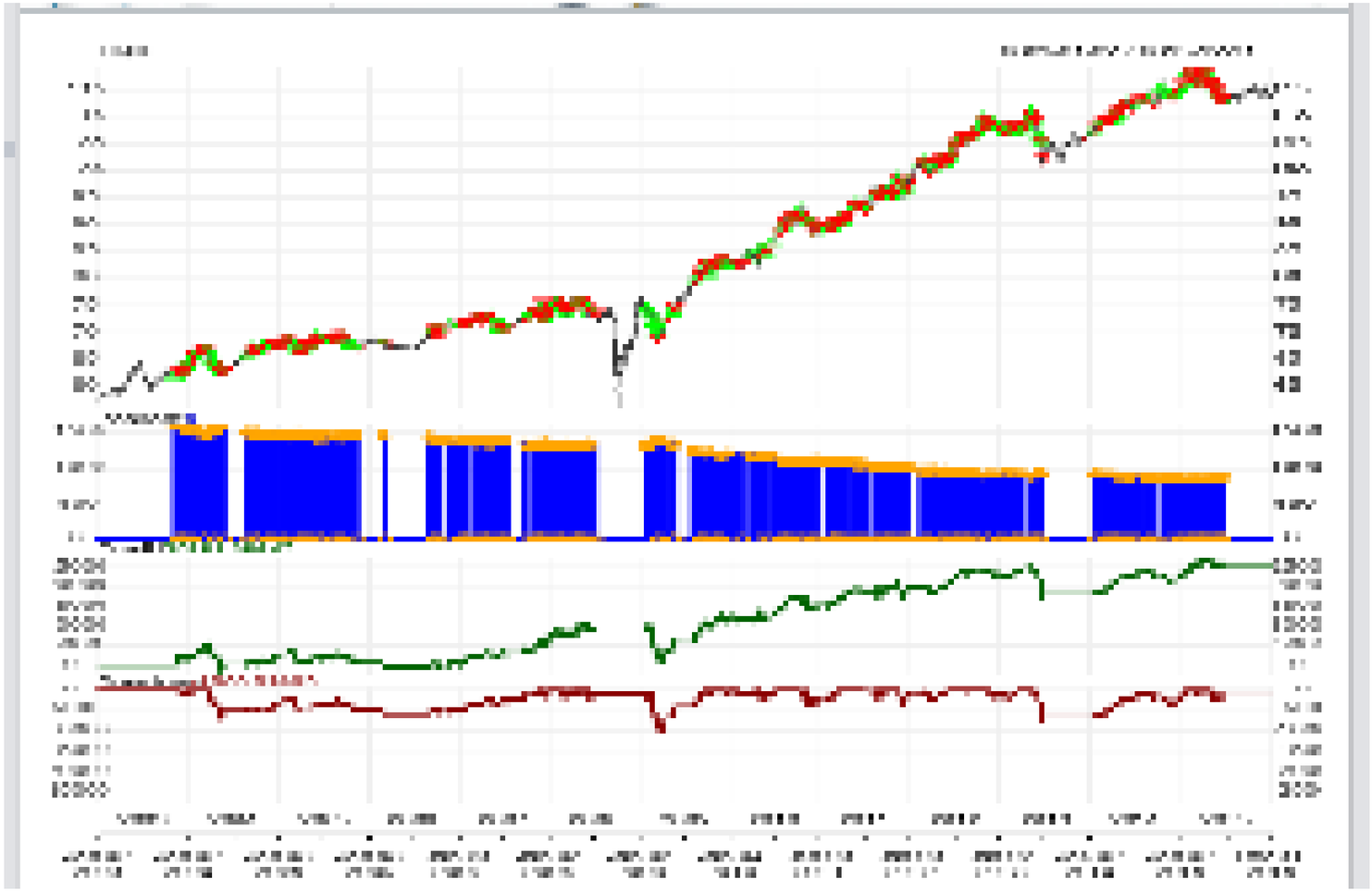
The chart.Posn function

`chart.Posn()` gives a good first glance at strategy performance

```
chart.Posn(portfolio = portfolio.st, Symbol = "LQD")
```

What it looks like



Adding indicators to charts

Recalculate indicators outside of strategy to add to chart

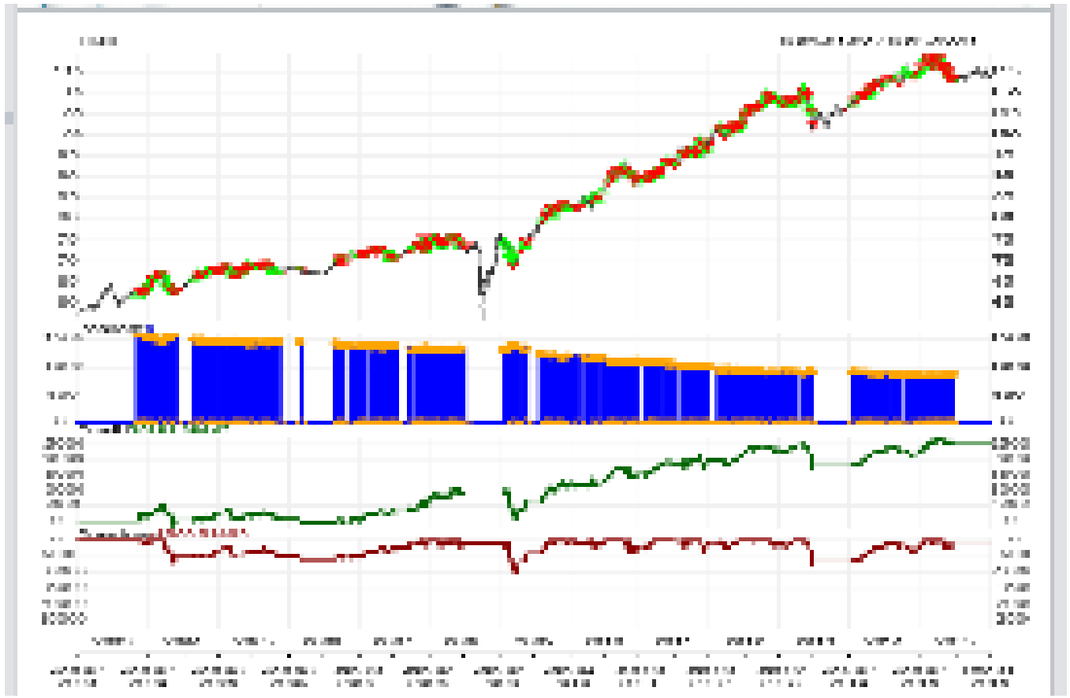
```
sma50 <- SMA(x = Cl(LQD), n = 50)
sma200 <- SMA(x = Cl(LQD), n = 200)
dvo <- DVO(HLC = HLC(LQD), nAvg = 2, percentLookback = 126)
```

Add indicators with `add_TA()` command. Use `on = 1` to add to price plot

```
chart.Posn(Portfolio = portfolio.st, symbol = "LQD")
add_TA(sma50, on = 1, col = "blue")
add_TA(sma200, on = 1, col = "red")add_TA(dvo)
```

Zoomed in

- Use `zoom_Chart("date1/date2")` to get a closer look
- `zoom_Chart("2007-08/2007-12")` results in:



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Additional analytics

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Generate profit & loss (P&L) series

- The blotter environment contains history of transactions
- Syntax for P&L:

```
portPL <-
    .blotter$portfolio.firstStrat$summary$Net.Trading.PL
head(portPL)
```

```
           Net.Trading.PL
1999-01-01              0
2003-01-02              0
2003-01-03              0
2003-01-06              0
2003-01-07              0
```

Sharpe ratio

- Can be obtained using P&L from your strategy
- Is the ratio of reward to risk from your strategy

```
SharpeRatio.annualized(portPL, geometric = FALSE)
```

```
                                Net.Trading.PL
Annualized Sharpe Ratio (Rf=0%)    0.04879364
```

Getting returns

- Ratio between profit or loss on a given trade, divided by initial equity
- Obtaining portfolio returns:

```
instrets <-
      PortfReturns(account.st)
```

```
head(instrets, n = 3)
```

```
            LQD.DailyEndEq
2003-01-02               0
2003-01-03               0
2003-01-06               0
```

```
tail(instrets, n = 3)
```

```
            LQD.DailyEndEq
2015-12-29               0
2015-12-30               0
2003-12-31               0
```

Getting Sharpe ratio for returns

```
SharpeRatio.annualized(instrets, geometric = FALSE)
```

```
                                  LQD.DailyEndEq
Annualized Sharpe Ratio (Rf=0%)         0.488011
```

Let's practice!

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