FINANCIAL TRADING IN R

Analyzing your strategy

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
  - 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)
```

Trade statistics

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

> tStats
    Portfolio    Symbol    Num.Txns    Num.Trades    Net.Trading.PL    Avg.Trade.PL
LQD firstStrat    LQD       382          156          25681.09          164.6223

    Med.Trade.PL    Largest.Winner   Largest.Loser   Gross.Profits    Gross.Losses
LQD  363.0143         2981.424        -7012.523        77251.33        -51570.24

   Std.Dev.Trade.PL  Percent.Positive   Percent.Negative   Profit.Factor    Avg.Win.Trade
LQD  1174.442          66.66667           32.69231          1.497983         742.8012

     Med.Win.Trade   Avg.Losing.Trade   Med.Losing.Trade   Avg.Daily.PL    Med.Daily.PL
LQD   624.5683         -1011.181          -660.7456         164.6223        363.0143

     Std.Dev.Daily.PL   Ann.Sharpe    Max.Drawdown    Profit.To.Max.Draw     Avg.WinLoss.Ratio
LQD     1174.442         2.225141     -10625.62           2.416903             0.7345877

    Med.WinLoss.Ratio    Max.Equity    Min.Equity     End.Equity
LQD       0.9452477       27567.98     -1550.332      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!

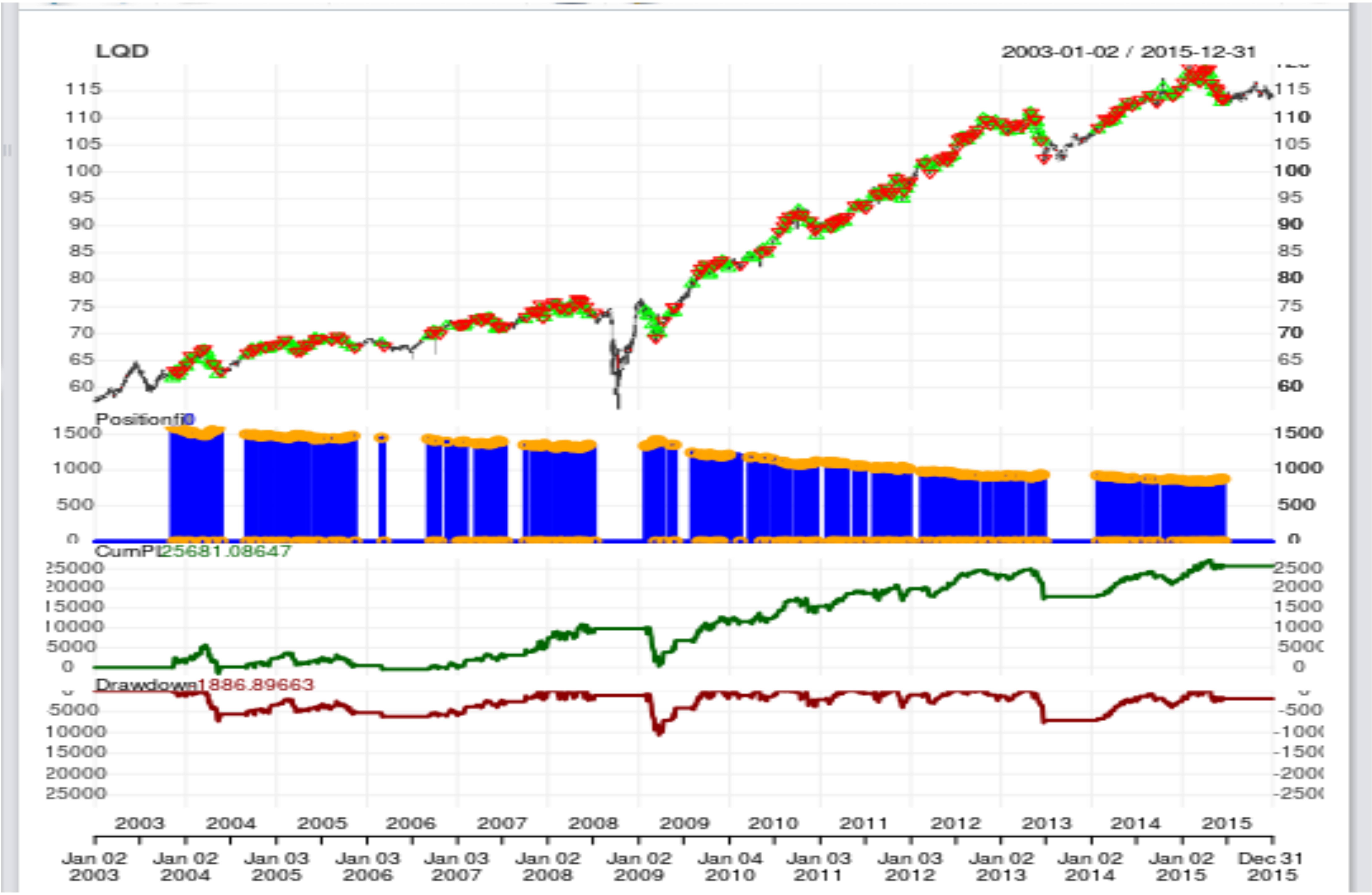
Visualizing your strategy

The chart.Posn function

- The chart.Posn function is a good first glance at the performance of your strategy.

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

What it looks like



Adding indicators to chart

- 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:

Let's practice!

Additional analytics

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
    2003-01-08             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!