Forex Algorithmic Trading using “R”

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FOREX market

- Not centralized like stock exchanges
- Controlled by big banks
- Working 5*24 hours
- DAILY turnover around 5000 billion (!) USD
- Most of the volume is made in Major pairs (EURUSD..)
- Alone EURUSD is responsible for ~60%

Why “R”

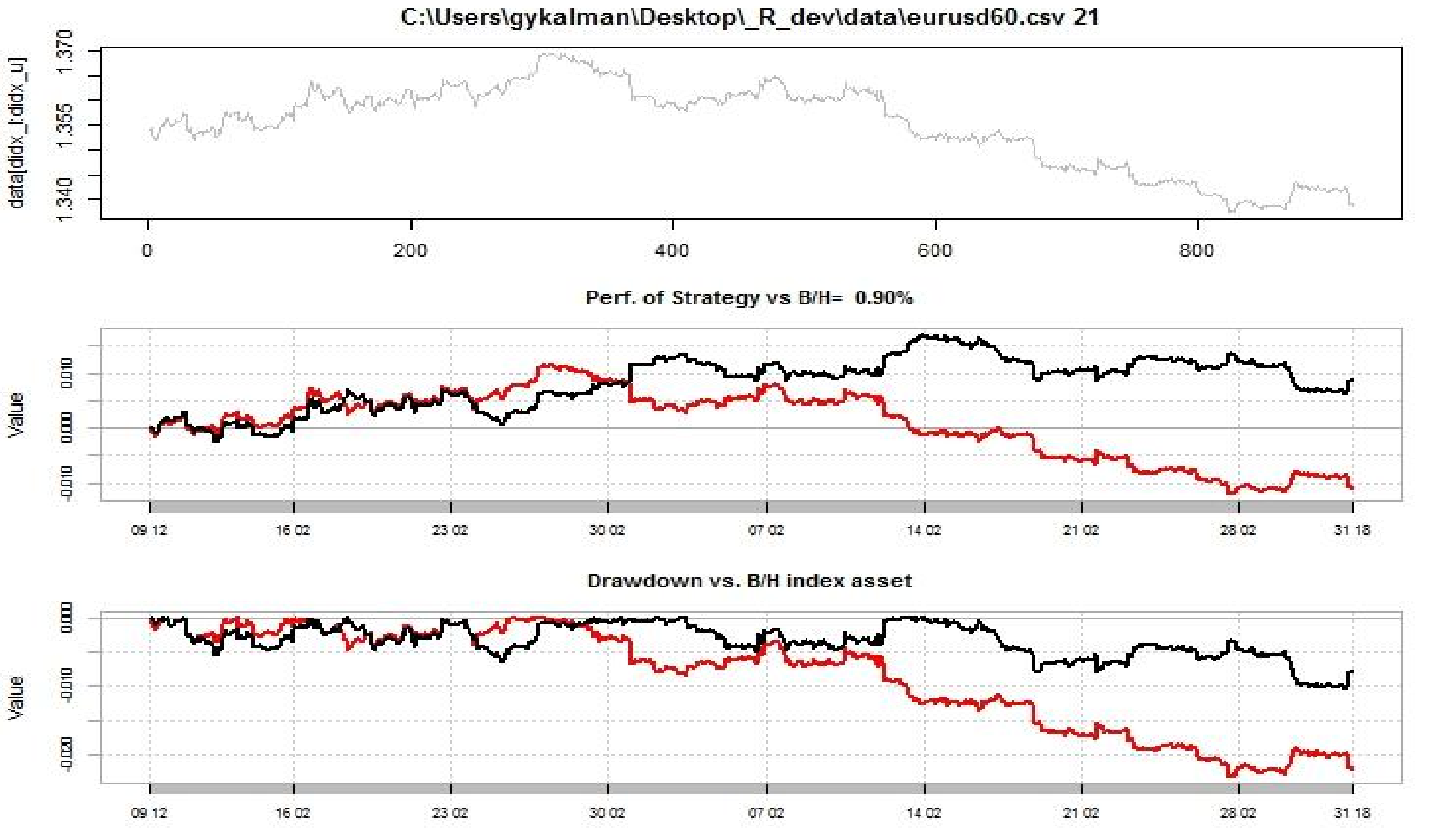
- Easy choice not just because it is free
- Big universe of investment related packages and other resources
- Fast prototyping
- Good speed of execution
- One cons: sometimes buggy

Trading Idea

- Simple trend following model
- When detecting a trend trade in their direction
- When detecting a signal against the trend close the trade and open one in another direction

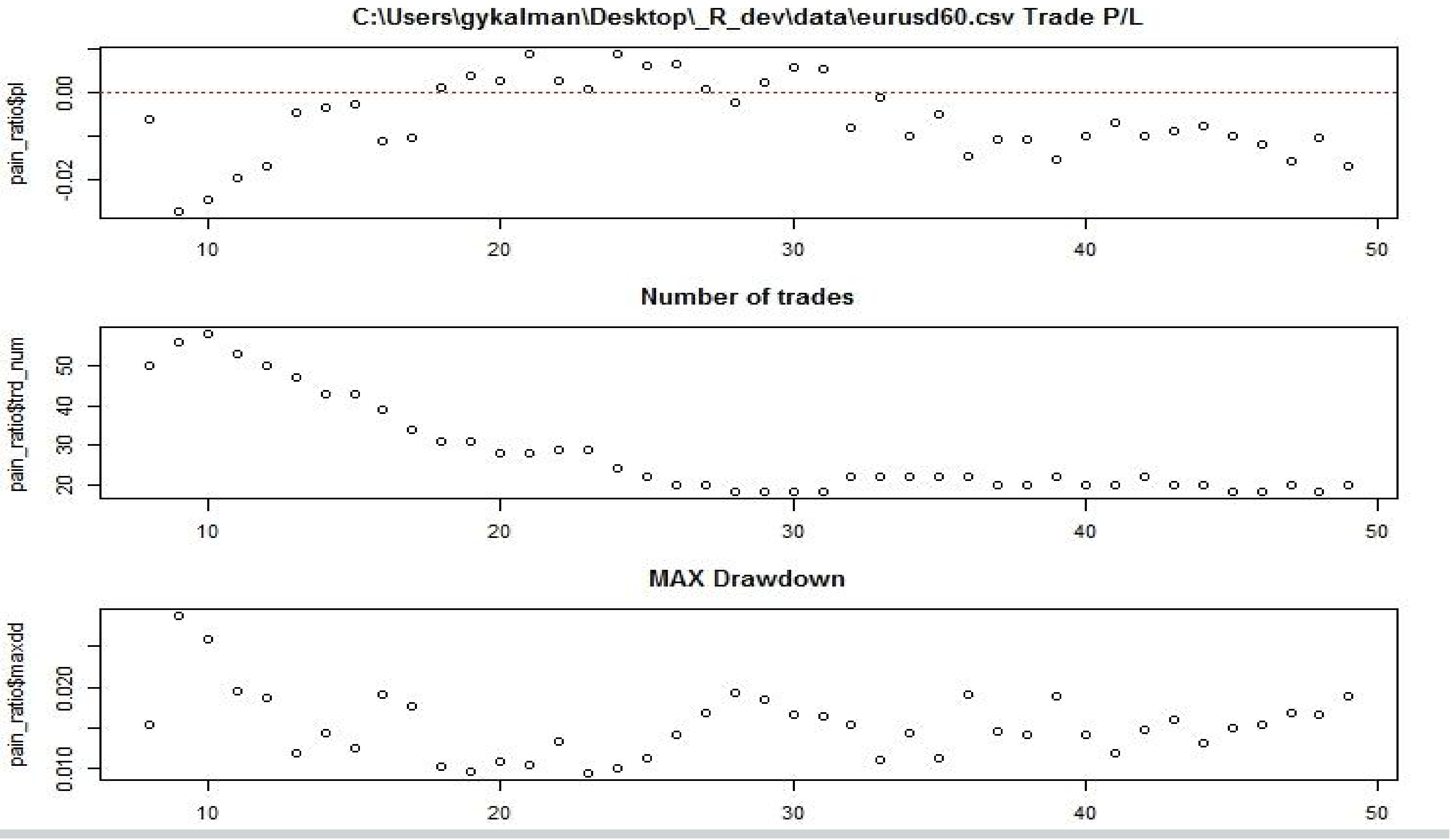
First test of the Strategy

- Simple trading simulation
- Real data (EURUSD 60 minute timeframe)
- PerformanceAnalytics package

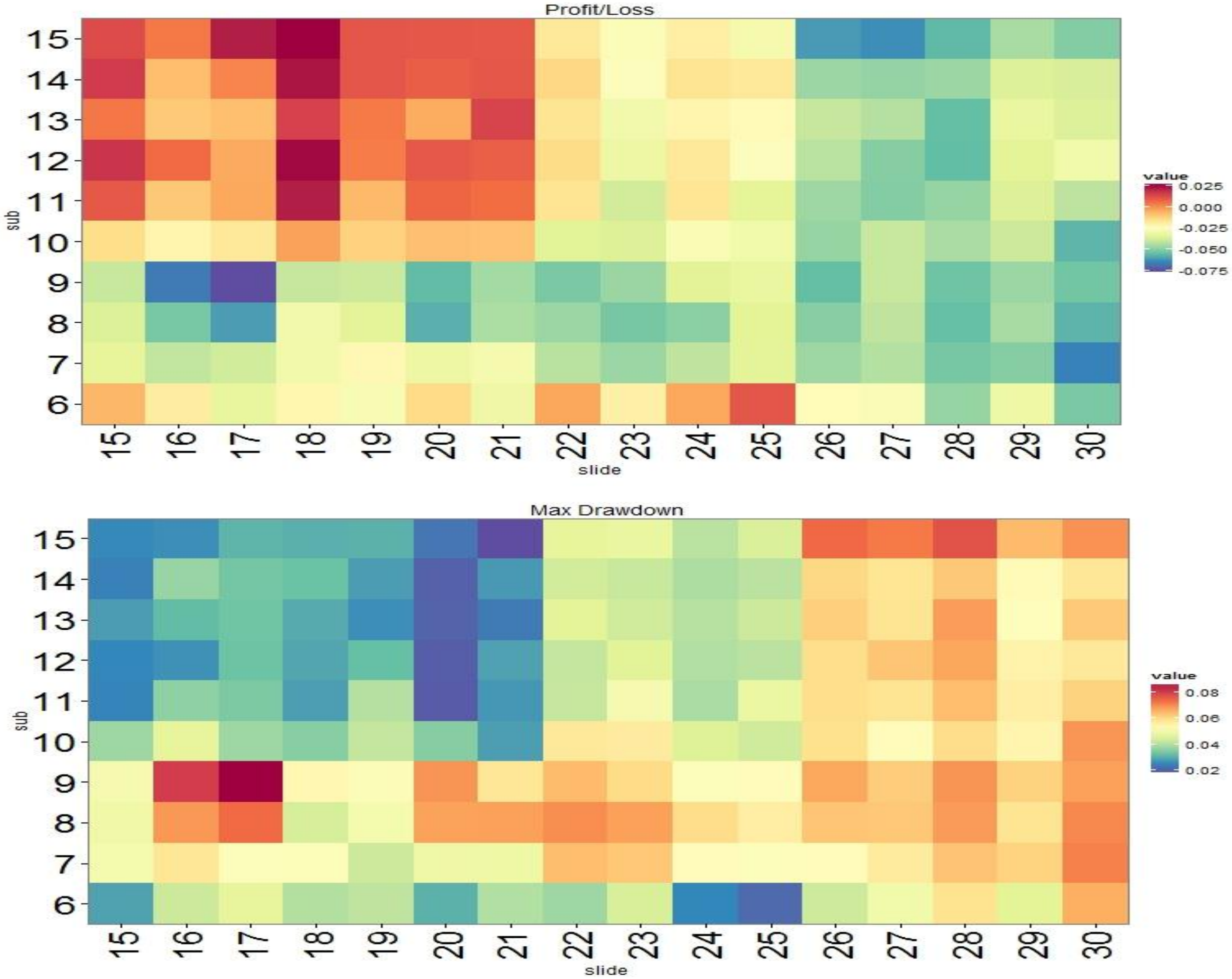

C:\Users\gykalman\Desktop_R_dev\data\eurusd60.csv 21
data[didx_l:didx_u]
1.340
1.355
1.370
0
200
400
600
800
Perf. of Strategy vs B/H= 0.90%
Value
-0.010
0.000
0.010
09 12
16 02
23 02
30 02
07 02
14 02
21 02
28 02
31 18
Drawdown vs. B/H index asset
Value
-0.020
-0.010
0.000
09 12
16 02
23 02
30 02
07 02
14 02
21 02
28 02
31 18

Optimization

- We have two parameters to be optimized
- At first we have an ~2000 long time series
- Just to see: “Brute force” approach
- At this stage not worth to optimize the code


C:\Users\gykalman\Desktop_R_dev\data\eurusd60.csv Trade P/L
pain_ratio$pl
0.00
-0.02
10
20
30
40
50
Number of trades
pain_ratio$trd_num
20
30
40
50
MAX Drawdown
pain_ratio$maxdd
0.010
0.020

C:\Users\gykalman\Desktop_R_dev\data\eurusd60.csv



Backtest in large

- Large datasets (5-10 years)
- Bigger parameter intervals
- Some code optimalization needed
- the first trial run forever….
- The light at the end of the tunnel: the algorithm could run paralel...

Backtest with PBO

- Some readings about overfitting: https://mathtrading.wordpress.com/2013/07/05/overfitting-forecasting-and-trading/
- The package PBO gives some hope to avoid this problem

Optimization and forward testing

- so far backtest is OK
- hopefully not overfitted
- BUT the real life goes forward
- the chosen solution: optimize and forward test with the parameters
- repeat it several times, until you get a statistically significant set of numbers

Real life example

- One mutation of the algorithm discussed here works in real life
- The trading platform is Metatrader4
- There is a useful link between MT4 and R
- The MT4 passes the data to the R
- R evalutes it, and if signal exists passes it back
- The trading logic is programmed in MT4