On Auto-trading

The practitioner’s defence of the use of auto-trading algorithms.

Dr. Phillip Guerra - R Finance 2018 - PhysicianCapitalPartners.com
Lightning talk take home points

Just remember this:

- Market participants should consider auto-trading their strategies.
- A rising rate environment can work in the investor’s favor by changing markets.
- Be vigilant in recognizing your biases in real-time.
Bias affects us all

Head of Quantitative Strategies
Dallas, Texas
Family offices, municipal pensions

Background:
Cardiac anesthesiologist by training
U Tx School of Public Health grad school ← Data Science in disguise!
US Citizen & EU resident (Spain)

Result ➔ Different biases and strengths/weakness when approaching the market.
Street Cred

<table>
<thead>
<tr>
<th>Risk Measures</th>
<th>Benchmark Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPX</strong></td>
<td><strong>FuturesFlow</strong></td>
</tr>
<tr>
<td><strong>Ending VAMI</strong></td>
<td>1,013.97</td>
</tr>
<tr>
<td><strong>Max Drawdown:</strong></td>
<td>10.10%</td>
</tr>
<tr>
<td><strong>Peak-To-Valley:</strong></td>
<td>01/26/18 - 02/08/18</td>
</tr>
<tr>
<td><strong>Recovery:</strong></td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>Sharpe Ratio:</strong></td>
<td>0.27</td>
</tr>
<tr>
<td><strong>Sortino Ratio:</strong></td>
<td>-0.02</td>
</tr>
<tr>
<td><strong>Calmar Ratio:</strong></td>
<td>0.48</td>
</tr>
<tr>
<td><strong>Standard Deviation:</strong></td>
<td>1.09%</td>
</tr>
<tr>
<td><strong>Downside Deviation:</strong></td>
<td>0.85%</td>
</tr>
<tr>
<td><strong>Correlation:</strong></td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Mean Return:</strong></td>
<td>0.02%</td>
</tr>
<tr>
<td><strong>Positive Periods:</strong></td>
<td>61 (57.55%)</td>
</tr>
<tr>
<td><strong>Negative Periods:</strong></td>
<td>45 (42.45%)</td>
</tr>
</tbody>
</table>

**Feb 2018 SPX “Vol-pocolypse”**

**Auto-trading strategy** (2018-05-29)

But I thought I was diversified?

60/40 (VBINX) Sharpe = 0.15
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Rising interest rates + High valuations

Wall of Worry:
- stocks
- bonds
- RE
- PE
- direct investment
- gold

...But with futures, rising rates = more monthly income.

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Goal = “Minimize and Match” (or exceed)

...Drawdowns and S&P 500 performance.

Focus on absolute and risk-adjusted returns

Pay for performance fee structure

Close at $300MM
2 kinds of auto-trading algos

YOUR STRATEGY
(insert your backtested code here … AKA “I’ve never seen a bad backtest.”)

AND

YOUR EXECUTION
(Use Interactive Brokers IBALGO)
Why you should auto-trade

Because it probably improves performance (anecdotal evidence)

How?

***Reduces order transmission variance***

IBALGO probably fills better than human trader

Reduces costs - slippage, human trader time
Auto-trading logic

Download full code - https://github.com/PhilGuerra/autotrade.
R and Python with Reticulate & ib_insync

```r
Sys.setenv(RETICULATE_PYTHON = "/opt/Python-3.6.3")
library(reticulate)
insync <- import("ib_insync")
ib <- insync$IB()
ibSConnect( port = "4001")

### SELL ORDERS ###

if (nrow(sell.df) > 0 ) {
  for (i in 1:nrow(sell.df)) {
    conContract = insync$Contract()
    conContract$symbol = sell.df[i,1]
    conContract$secType = "STK"
    conContract$exchange = "SMART"
    conContract$currency = "USD"
    ibSQualifyContracts(conContract)
    print(conContract)
    order = insync$MarketOrder(action = 'SELL',
      totalQuantity = sell.df[i,4],
      algoStrategy = 'Adaptive',
      algoParams = list(insync$TagValue('adaptivePriority', 'Normal'))) ### R and Python! ###
    print(order)
    trade = ibSPlaceOrder(conContract,order)
  }
}
```

(How to say “TagValue” in R & IBAPI)
Thank you

Who
Charles Sizemore CFA
Our clients
R Finance Committee
R Studio
Interactive Brokers
Quandl
Hull Investments
Michael Kapler
Ewald de Wit
Package authors / maintainers

For
Sizemore Capital CIO
Developing a thought partnership that works
Opportunity to present and share code
R Studio and Reticulate package
IBAPI written in native Python, IBALGO
Futures data
High-caliber research
SIT and rtsviz packages
Ib_insync module for interfacing with IBAPI
IBrokers, FinancialInstrument,Quantmod, zoo, many more!

DISCLOSURES = NONE
PAST PERFORMANCE DOES NOT GUARANTEE FUTURE RETURNS.

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