

Stock Price Monitor (trading aid)

YASHKIR CONSULTING
www.yashkir.com

Contents

1 Introduction	1
2 Methodology	1
3 User Guide	2
3.1 Suggested modes of usage	5
3.2 Example	5

1 Introduction

This application has been developed as a personal trading aid. It allows to download daily prices for a basket (portfolio) of equities, market indeces and exchange rates...

2 Methodology

Historical prices (including present day) are downloaded as time series. Moving averages (for a short period and for a long period) are calculated as traditional indicators for future price trend. The new feature in this application is the linear approximation of price trend for chosen time period. The price chart contains stock price, moving averages and two linear guides: one is the linear trend approximation reduced by a factor of $1 - b_c$ and another one - increased by the factor of $1 + s_c$. The value of the "buy" criterium b_c (2%, 5%, 10%) indicates how much the equity price is below the linear trend in order to consider buying. The value of the "sell" criterium s_c (2%, 5%, 10%, 15%) indicates how much the equity price is over the linear trend in order to consider selling.

3 User Guide

Required environment:

Interpreter: python 3

Python modules: pandas_datareader, time, datetime, tkinter, matplotlib, numpy, os, glob, os, shutil, webbrowser

Data file: "quotes.csv"

Menu configuration file: "menu.conf".

Datafile (Table 1) format is as follows:

Table 1: Format of the file "quotes.csv" (example)

Date,	TD.TO _Toronto Dominion Bank,	BNS.TO _Bank of Nova Scotia
2009-01-02,	22.05,	33.27
2009-01-05,	22.67,	33.04
...
2017-12-22,	72.99,	82.29

The configuration file content by default is (Table 2):

Table 2: Format of the file "menu.conf" (example)

Download new data:	No,Yes
From:	' '
To:	' '
Buy criterium:	5%,10%,2%
Sell criterium:	10%,15%,2%,5%
Moving average short (days):	25,50,10
Moving average long (days):	100,200,50
Change data file name here:	quotes_bk.csv

The last five lines can be modified (to have more choices).

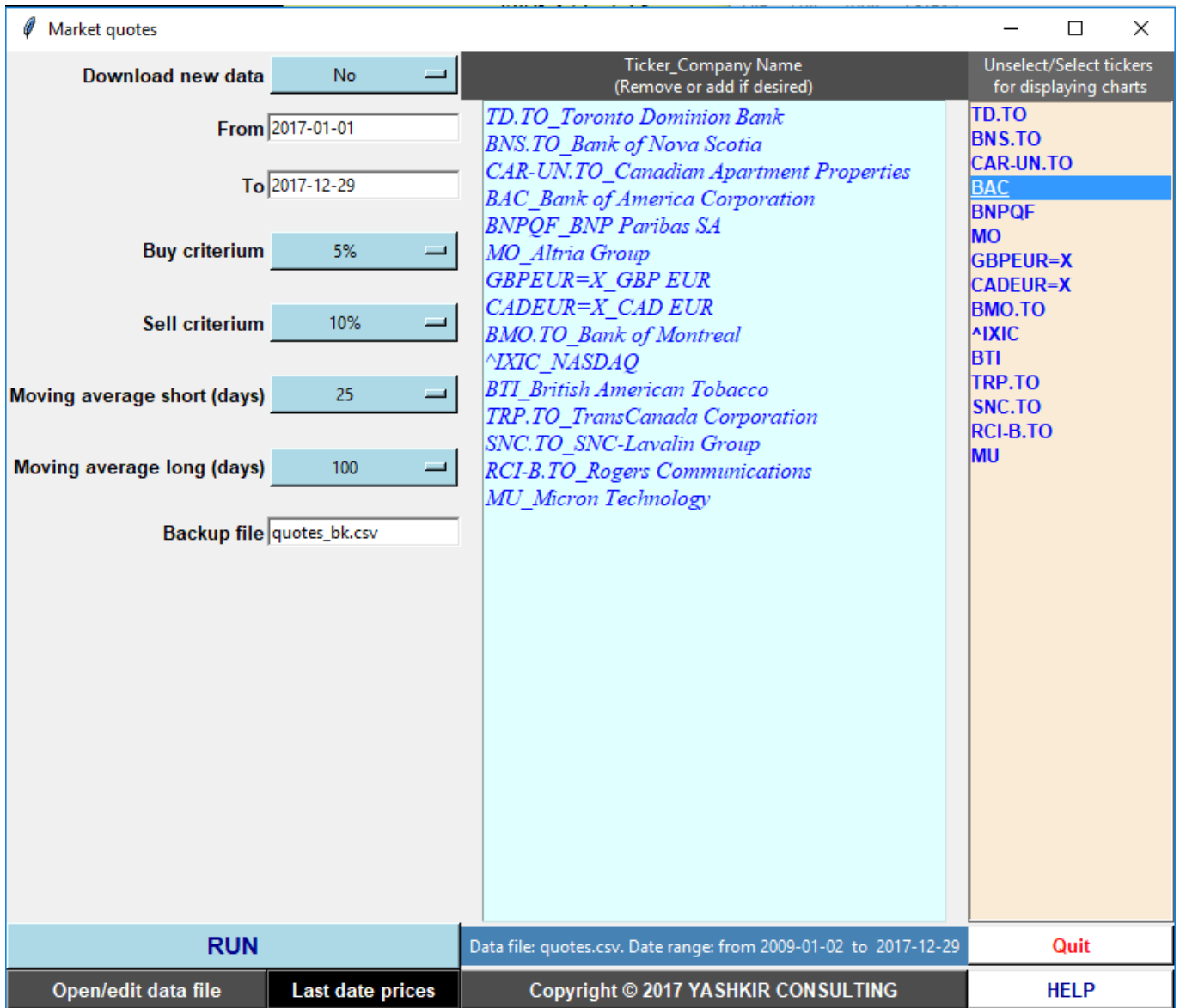


Figure 1: Interface

The user interface (Figure 1) of the application contains three main panels. The left panel (Table 3) is used to choose the mode of operation (to download new data, or not; to choose Buy or Sell criteria; to choose spans of moving averages).

Table 3: Left menu panel

Parameter	Value	Explanation
Download new data	No or Yes	Choose "No" to use data already in file
From	Date	The last date in file at start; user-defined after
To	Date	Present date at start; user-defined after
Buy criterium	2% or 5% or 10%	User's choice
Sell criterium	2% or 5% or 10% or 15%	User's choice
Moving average short	10 or 25 or 50	User's choice
Moving average long	50 or 100 or 200	User's choice
Backup file	quotes_bk.csv	Data file is backed up at the beginning of each session

The central panel (Table 4) displays tickers and names of equities in file (the format is set as TICKER_NAME). User can remove some lines (corresponding equity data will be removed from the data file) or to add more equities (after which one has to run the application with("Download new data" = "Yes"). New equities data will be saved in the data file automatically.

Reminder: the equity definition in the central panel has TICKER and NAME separated by underscore symbol "_".

Table 4: Central and right interface panels

TD.TO_Toronto Dominion Bank	TD.TO
BNS.TO_Bank of Nova Scotia	BNS.TO
CAR.UN.TO_Canadian Apartment Properties	CAR.UN.TO
BAC_Bank of America Corporation	BAC
BNPQF_BNP Paribas SA	BNPQF
MO_Altria Group	MO
GBPEUR=X_GBP EUR	GBPEUR=X
CADEUR=X_CAD EUR	CADEUR=X
BMO.TO_Bank of Montreal	BMO.TO
IXIC_NASDAQ	IXIC
BTI_British American Tobacco	BTI
TRP.TO_TransCanada Corporation	TRP.TO
SNC.TO_SNC-Lavalin Group	SNC.TO
RCI-B.TO_Rogers Communications	RCI-B.TO
MU_Micron Technology	MU

The right panel (Table 4) displays tickers some of which can be selected (mouse click) for generating corresponding output charts.

The control buttons **HELP** **RUN** **QUIT** have obvious function. An extra button **Open/edit data file** can be used to open data file content in a separate text window (in order to enable user to make some changes and save them by pressing button **Commit**).

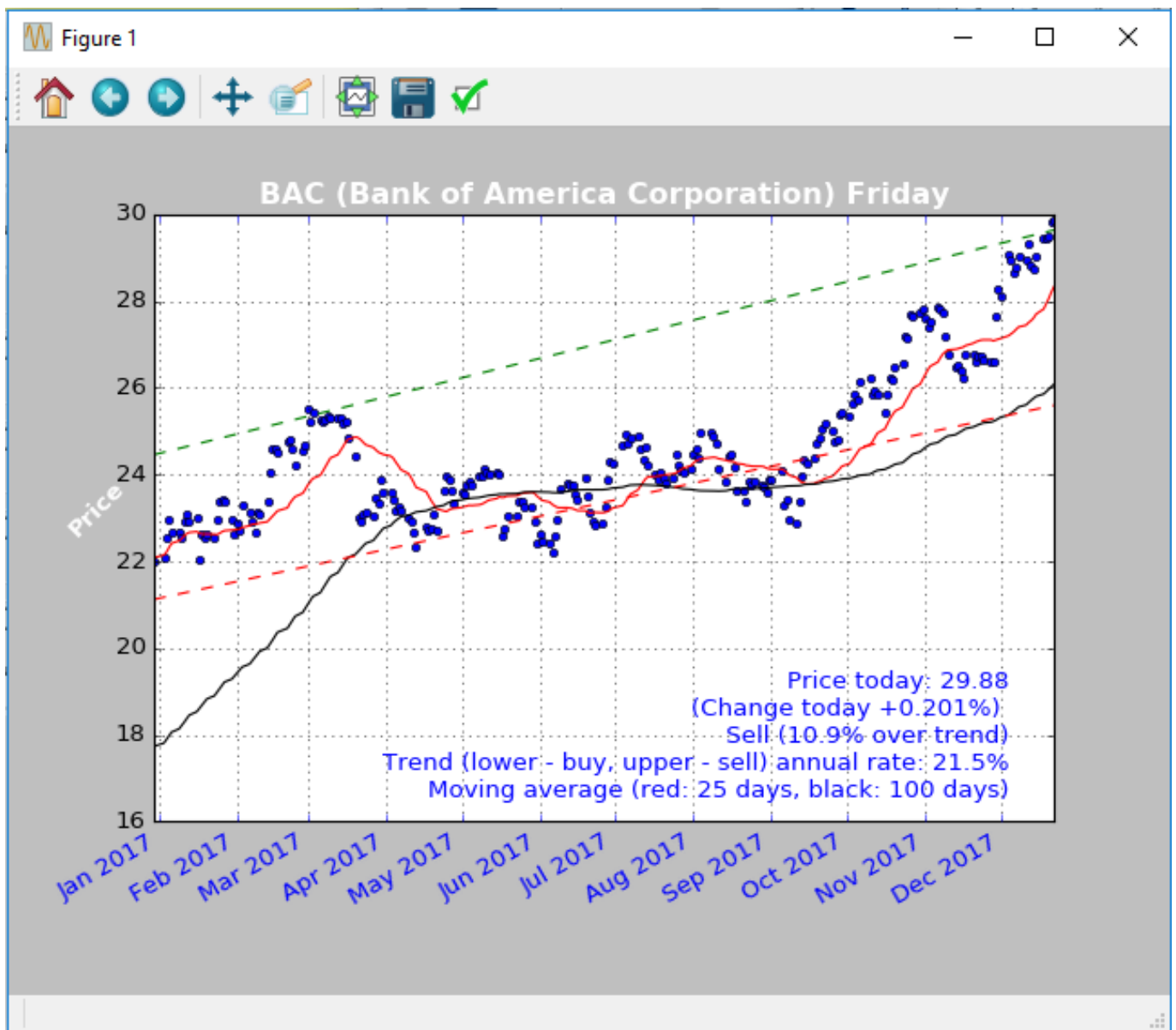


Figure 2: Result

The output chart is displayed as in Figure 2.

3.1 Suggested modes of usage

Download new data and generate charts :

- Start the program
- From drop-down menu "Download new data" choose "Yes"
- On the right panel unselect tickers for which you do not want to generate charts
- Press **RUN**
- Wait until messagebox "Download summary" pops up. It shows which companies prices were downloaded successfully and which were not. To continue press **OK**
- The first chart window will appear. Observe, analyse, think, and then go to the message box and either press **OK** to continue to the next chart, or press **Cancel** to close all opened charts and to return to the main interface.

Generate charts :

- Start the program
- From drop-down menu "Download new data" choose "No"
- On the right panel unselect tickers for which you do not want to generate charts
- Press **RUN**
- The first chart window will appear. Observe, analyse, think, and then go to the message box and either press **OK** to continue to the next chart, or press **Cancel** to close all opened charts and to return to the main interface.

Remove several equities and add new ones:

- Start the program
- From drop-down menu "Download new data" choose "Yes"
- On the right panel unselect tickers for which you do not want to generate charts
- Press **RUN**
- Wait until messagebox "Download summary" pops up. It shows which companies prices were downloaded successfully and which were not. To continue press **OK**
- The first chart window will appear. Observe, analyse, think, and then go to the message box and either press **OK** to continue to the next chart, or press **Cancel** to close all opened charts and to return to the main interface.

3.2 Example

To illustrate usage of generated charts we chose British American Tobacco stock (**BTI**) for two different time periods (Fig.3 and Fig.4). The linear trendline (not plotted) indicates growth with average annual rate of 18.7%. Two linear guides (upper as the "sell" indicator and lower as the "buy" indicator) are calculated by multiplying trend line vertical coordinates (by 1.10 and 0.95 respectively).

We see that the "buy" signal (price reaches lower linear guide) appears earlier than conventional signal of upward crossing 50-day average / 100-day average. The "sell" signal (price reaches the upper linear guide in the beginning of June) is certainly much more realistic than downward crossing of moving averages (by two months).

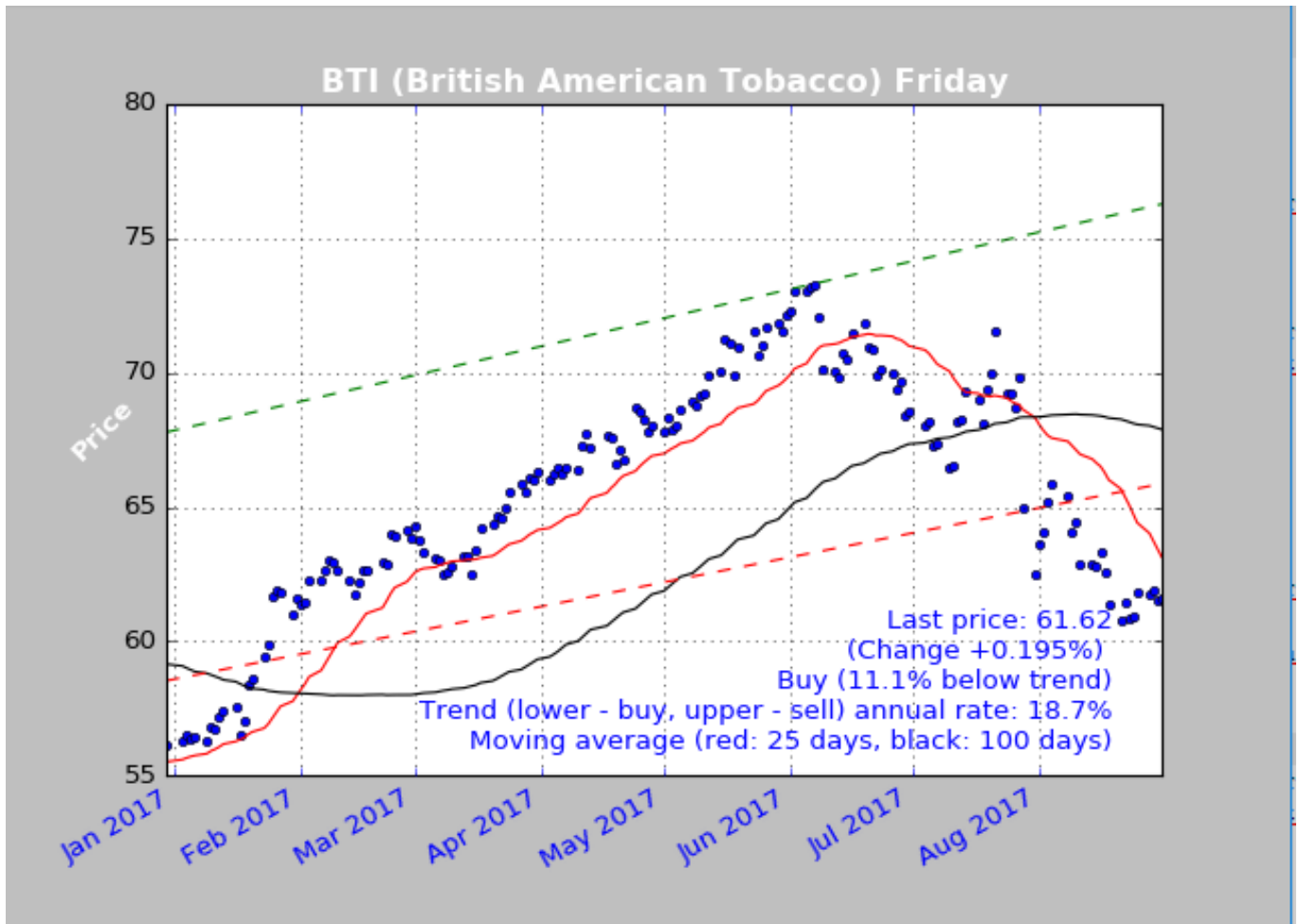


Figure 3: BTI: January - August 2017

This effect is even more pronounced in Fig.4. Here stock price hits the lower linear guide in August, by three months earlier than moving averages crossing (November).

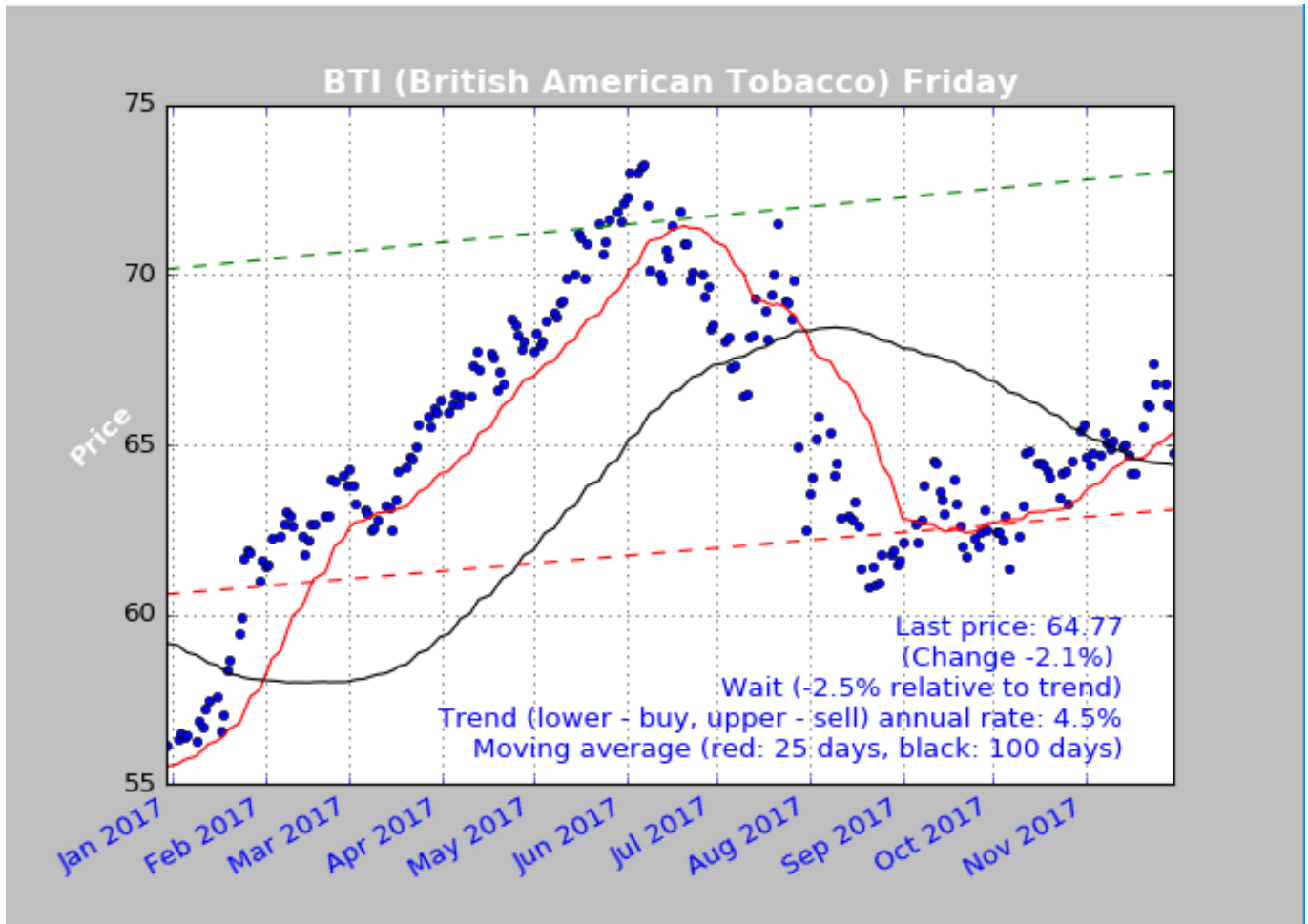


Figure 4: BTI: January - November 2017