Investment R$_{mini}$ Quick User Guide

Bought to you by:
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Contents

1) System Requirements & Built
2) Deployment
3) Using Investment R$_{mini}$

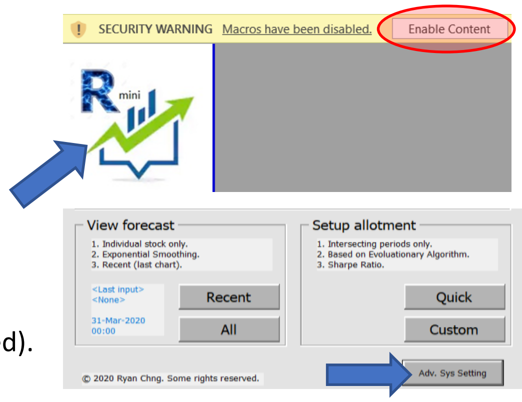
1) System Requirements & Built

i. Application is built under Windows 10 OS
ii. Microsoft Office Professional Plus 2016
iii. Microsoft Excel Version 2004 (Build 12730.20236)
iv. Microsoft Visual Basic for Applications
v. R version 3.6.3
vi. R packages: base R, forecast, ggplot2, ggpubr
vii. Download Investment_Rmini.zip

```
platform       x86_64-w64-mingw32
arch           x86_64
os             mingw32
system         x86_64, mingw32
status
major          3
minor          6.3
year           2020
month          02
day            29
svn rev        77875
language       R
version.string R version 3.6.3 (2020-02-29)
nickname       Holding the Windsock
```

2) Deployment

i. Unzip Investment_Rmini.zip
ii. Click on Investment_Rmini.xlsm to start.
iii. 'Enable Content' if required.
iv. User form should pop up, else click on logo
v. Link to R installation:
   a. Click Adv. Sys Setting.
   b. Set the Rscript.exe path (e.g. provided).



Description	Default value
Sample Website	https://sg.finance.yahoo.com/quote/D05.SI/history?p=D05.SI&.tsrc=fin-srch
Rscript.exe	C:\Program Files\R\R-3.6.3\bin\Rscript.exe
Risk free rate	0.64%

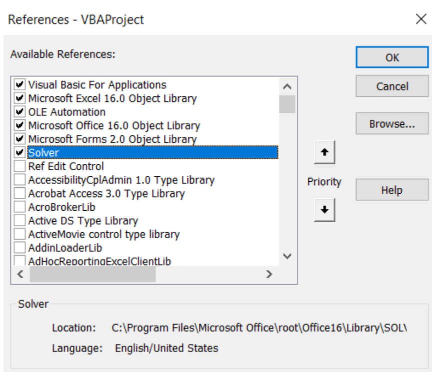
Back

vi. Set current risk free rate. (i.e 10-Treasury)
vii. Enable solver in MS Excel

i.e. File -> Options -> Add-ins -> select Solver Add-in -> Go.. -> tick Solver Add-in -> OK

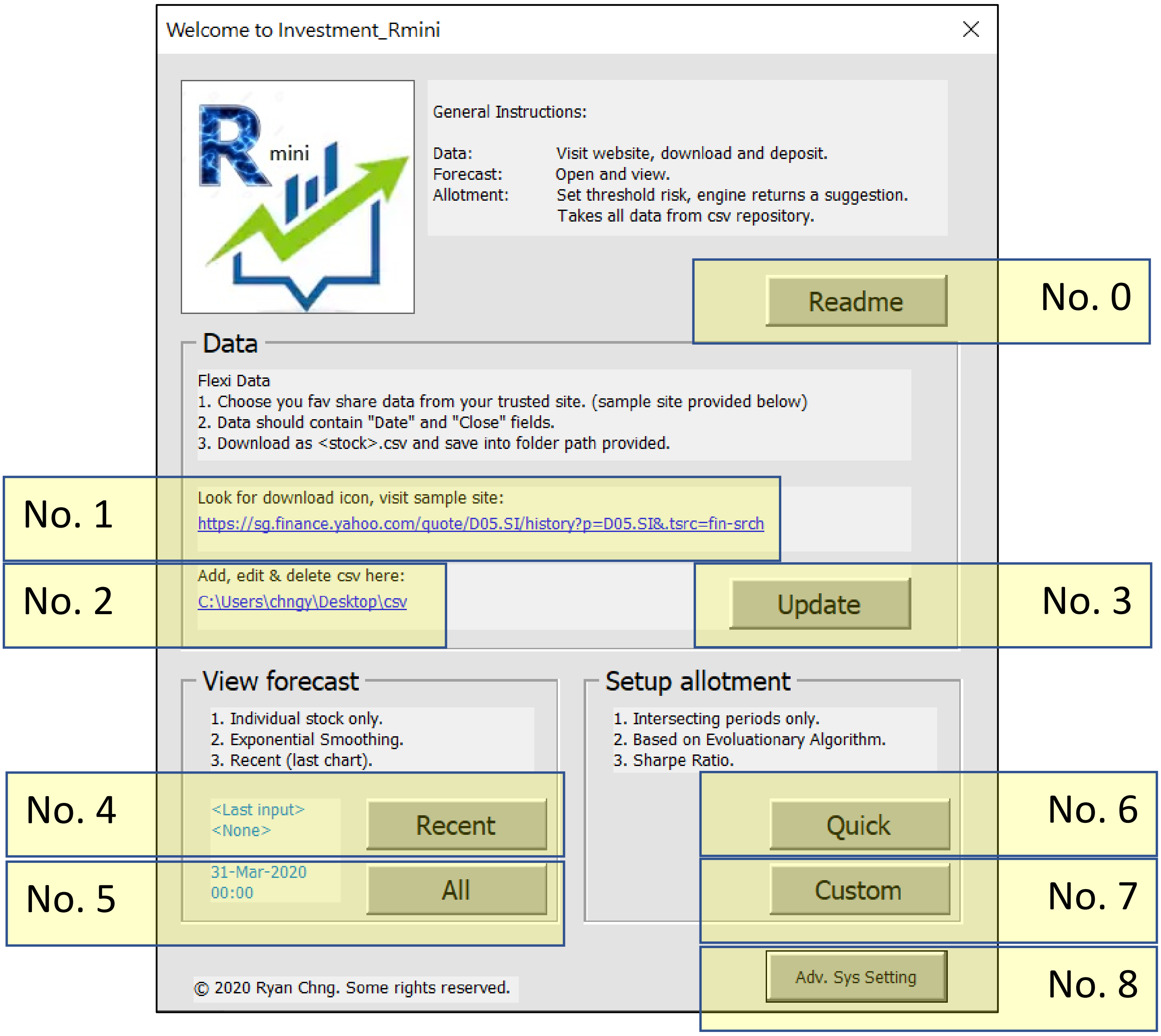
viii. Enable solver reference

i.e. Under MSExcel environment: press Alt+F11, Tools -> References -> tick 'Solver' -> OK



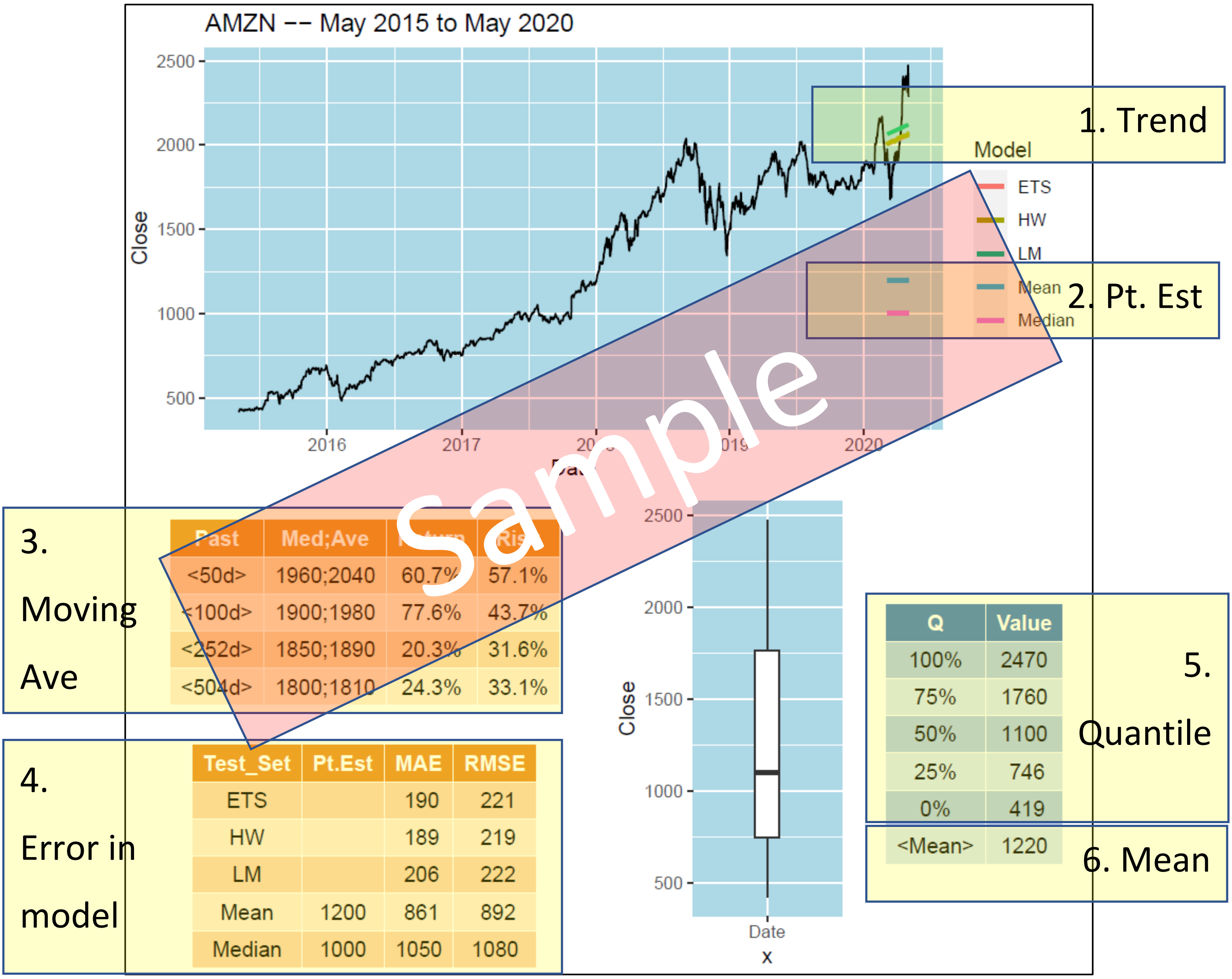
3) Using Investment R_{mini}

UI



- No. 0, **Readme**: Opens up a Readme.txt, contains a simplified text version to setup.
- No. 1, **Link 1**: Link redirects to website. Recommended to take data >= 2 years.
  Favourite website can be changed in advance setting.
- No. 2, **Link 2**: Opens up the folder to the source.
- No. 3, **Update**: Takes the raw files and update.
- No. 4, **Recent**: Opens the most recent created tables & charts of a stock.
- No. 5, **All**: Opens the folder that stores all the tables & charts ever created.
- No. 6, **Quick**: Jumps into solver, ends with optimal portfolio suggestion.
- No. 7, **Custom**: Ask input user for threshold for risk, goes to solver and ends with optimal portfolio suggestion with risk <= user defined.
- No. 8, **Adv.Sys Setting**: Go into advance setting.
  No. 1, Rscript.exe path and risk free % of Sharpe ratio can be set.

View Forecast



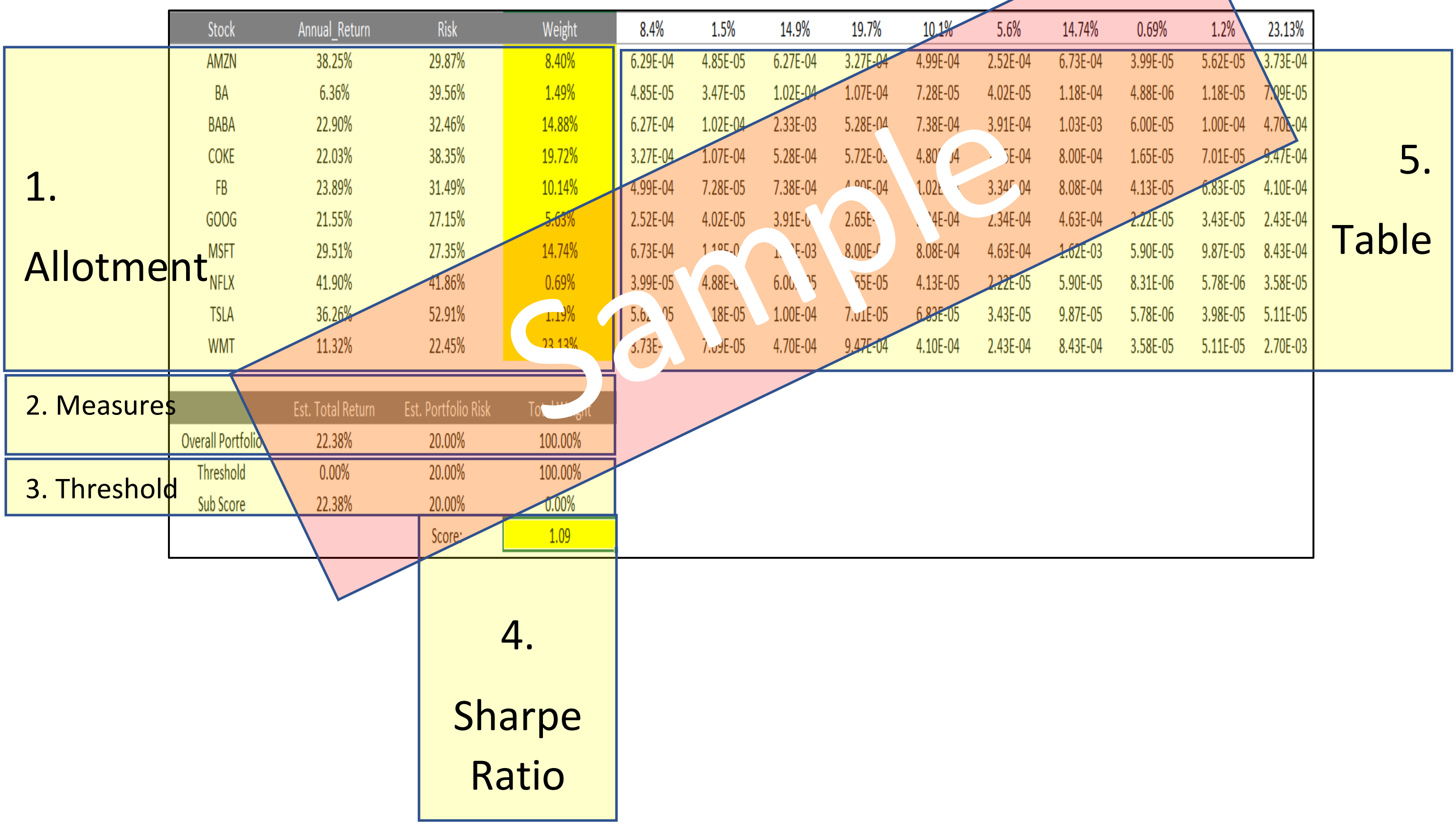
Past	Med;Ave	[illegible]	Ris
<50d>	1960;2040	60.7%	57.1%
<100d>	1900;1980	77.6%	43.7%
<252d>	1850;1890	20.3%	31.6%
<504d>	1800;1810	24.3%	33.1%

Test_Set	Pt.Est	MAE	RMSE
ETS		190	221
HW		189	219
LM		206	222
Mean	1200	861	892
Median	1000	1050	1080

Q	Value
100%	2470
75%	1760
50%	1100
25%	746
0%	419
<Mean>	1220

1. **Trend**: Exponential Smoothing, Holt Winters & Linear Model, user infer trend from here.
2. **Pt. Est**: Point estimates generated from training onto test (last 42 days).
3. **Moving Ave**: Moving averages, 252 trading days used for 1 year.
4. **Error in model**: MAE = Mean Absolute Error, RMSE = Root Mean Square Error
5. **Quantile**: Taken from the full set of data (different from Pt. Est)
6. **Mean**: Taken from full set of data (different from Pt. Est)

Setup Allotment



Stock	Annual_Return	Risk	Weight	8.4%	1.5%	14.9%	19.7%	10.1%	5.6%	14.74%	0.69%	1.2%	23.13%
AMZN	38.25%	29.87%	8.40%	6.29E-04	4.85E-05	6.27E-04	3.27E-04	4.99E-04	2.52E-04	6.73E-04	3.99E-05	5.62E-05	3.73E-04
BA	6.36%	39.56%	1.49%	4.85E-05	3.47E-05	1.02E-04	1.07E-04	7.28E-05	4.02E-05	1.18E-04	4.88E-06	1.18E-05	7.09E-05
BABA	22.90%	32.46%	14.88%	6.27E-04	1.02E-04	2.33E-03	5.28E-04	7.38E-04	3.91E-04	1.03E-03	6.00E-05	1.00E-04	4.70E-04
COKE	22.03%	38.35%	19.72%	3.27E-04	1.07E-04	5.28E-04	[illegible]	[illegible]	[illegible]	8.00E-04	1.65E-05	7.01E-05	9.47E-04
FB	23.89%	31.49%	10.14%	4.99E-04	7.28E-05	7.38E-04	[illegible]	[illegible]	3.34E-04	8.08E-04	4.13E-05	6.83E-05	4.10E-04
GOOG	21.55%	27.15%	5.63%	2.52E-04	4.02E-05	[illegible]	[illegible]	[illegible]	2.34E-04	4.63E-04	2.22E-05	3.43E-05	2.43E-04
MSFT	29.51%	27.35%	14.74%	6.73E-04	[illegible]	[illegible]	[illegible]	8.08E-04	4.63E-04	1.62E-03	5.90E-05	9.87E-05	8.43E-04
NFLX	41.90%	41.86%	0.69%	3.99E-05	[illegible]	[illegible]	[illegible]	4.13E-05	2.22E-05	5.90E-05	8.31E-06	5.78E-06	3.58E-05
TSLA	36.26%	52.91%	1.19%	[illegible]	[illegible]	1.00E-04	7.01E-05	6.83E-05	3.43E-05	9.87E-05	5.78E-06	3.98E-05	5.11E-05
WMT	11.32%	22.45%	23.13%	[illegible]	7.09E-05	4.70E-04	9.47E-04	4.10E-04	2.43E-04	8.43E-04	3.58E-05	5.11E-05	2.70E-03

	Est. Total Return	Est. Portfolio Risk	Total Weight
Overall Portfolio	22.38%	20.00%	100.00%
Threshold	0.00%	20.00%	100.00%
Sub Score	22.38%	20.00%	0.00%
		Score:	1.09

1. **Allotment**: Suggested allotment in yellow.
2. **Measure**: Annual return; annual risk; total weight check on distribution.
3. **Threshold**: User is able to set risk threshold before the table is triggered.
   Rest of the threshold are fixed
4. **Sharpe Ratio**: A measure used to maximise return and lower risk.
5. **Table**: wt1*wt2*covariance of the underlying stocks.

--- End of Guide ---