

Downloading Stock Prices and Plotting Returns Distributions

▼ Introduction

This application

- downloads historical stock prices from Yahoo Finance,
- calculates the returns,
- plots the distribution of the returns in a histogram,
- and overlays a normal distribution with the same mean and standard deviation as the historical data.

> with(LinearAlgebra) : with(Statistics) : with(plots) :

▼ Ticker, Dates and Frequency

- > ticker := "XOM" :
- > startDay := "25" : startMonth := "07" : startYear := "2010" :
- > endDay := "25" : endMonth := "02" : endYear := "2014" :
- > frequency := "d" :

▼ Download Historical Stock Quotes and Calculate Returns

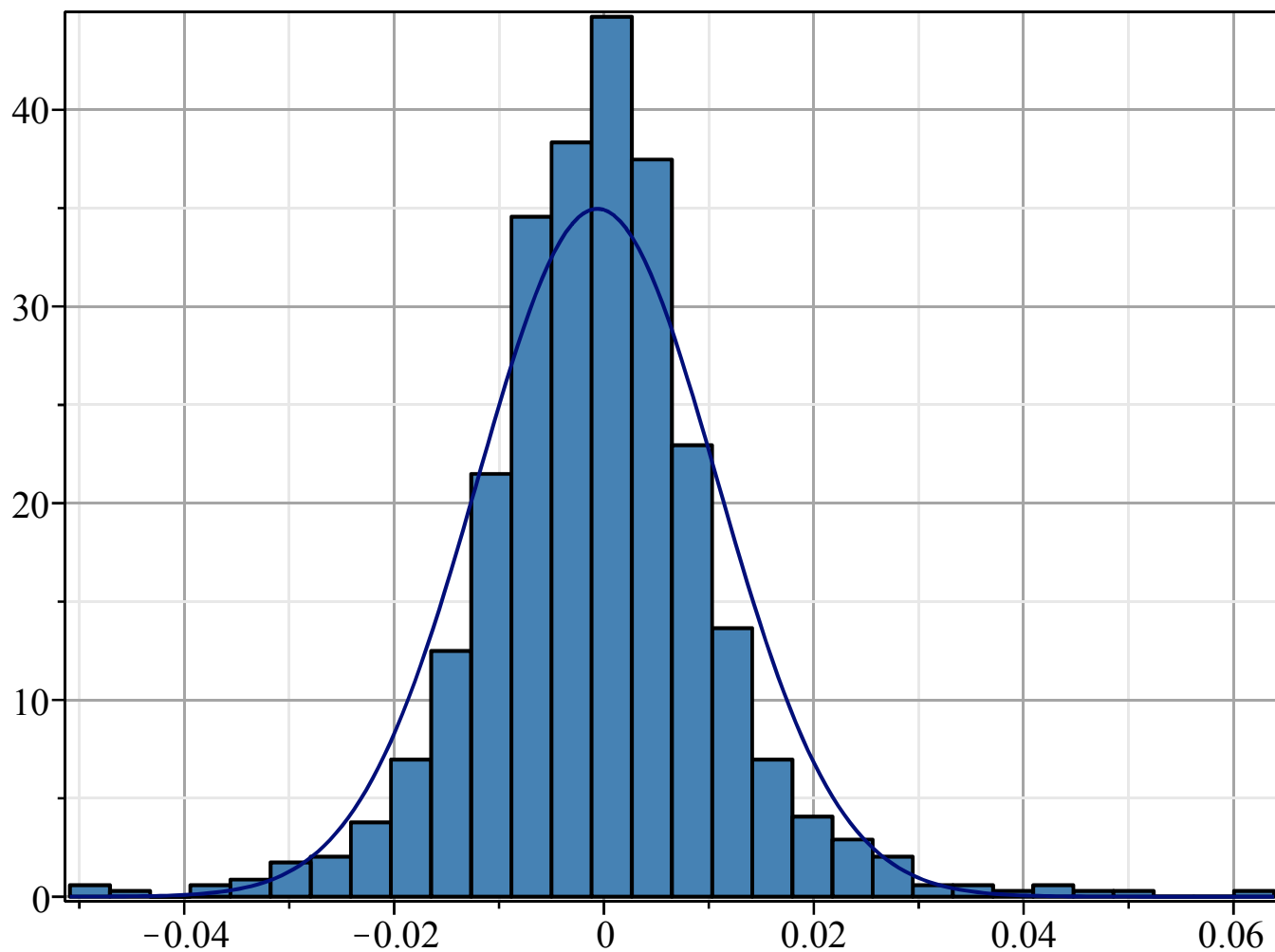
- > url := cat("http://ichart.finance.yahoo.com/table.csv?s=", ticker, "&a=", startMonth, "&b=", startDay, "&c=", startYear, "&d=", endMonth, "&e=", endDay, "&f=", endYear, "&g=", frequency, "&ignore=.csv") :
- > data := ImportMatrix(url) :
- > nRows := RowDimension(data) - 2 :
- > returns := Vector(nRows, i → evalf(ln(data[i + 2, 7] / data[i + 1, 7]))) :
- > p1 := Histogram(returns, frequencyscale = relative, color = "SteelBlue", axes = boxed, gridlines) :

▼ Plot Histogram and Overlay Normal Distribution

- > av := Mean(returns);
 $av := -0.000628599925343333$
- > stdev := StandardDeviation(returns);
 $stdev := 0.0114092504782072$
- > n := Normal(av, stdev) :

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> p2 := DensityPlot( Normal( av, stdev ), range = min( returns ) ..max( returns ) ) :
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> display( p1, p2 )
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