

## Module 3.5

### Sorting Data

## Introduction

- Illustrate R code to sort data
- Use sorted data to demonstrate
  - Daily first differences (FD) distribution
  - Daily percentage rate of returns (PR)
  - Selected insights from contrasting FD and PR
  - Influence of one cent trading increments

## Sorting in R Illustrated

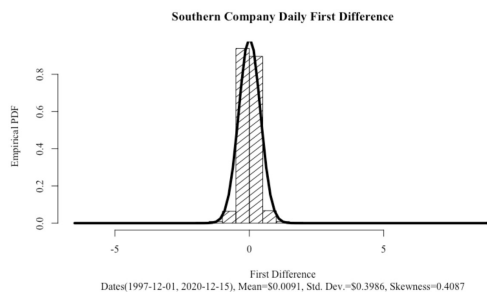
```
> SortData <- fread("SortingData.dat", header = FALSE, sep = " ")
> head(SortData,5) # Check successfully read
  V1
1: 29.82
2: 71.51
3:  3.30
4: 87.44
5: 53.42
> tail(SortData,5)
  V1
1: 25.01
2: 82.09
3: 89.67
4: 57.08
5: 38.27
> NumberOfObservations <- nrow(SortData)
> DataVector <- c(1:NumberOfObservations)
> DataVector <- SortData$V1
> # Base R, single vector sorting
> DataVectorSorted <- sort(DataVector, na.last = NA, method = "quick")
> head(DataVectorSorted,5) # Check successfully sorted
[1] 1.41 2.95 3.21 3.30 3.48
> tail(DataVectorSorted,5)
[1] 94.29 95.82 98.40 99.34 99.83
```

## Analysis of Southern Co. (SO)

- Dollar first differences:  $FD = P(t) - P(t-1)$
- Percentage change:  $PC = FD/P(t-1)$
- Influence of price levels
- Influence of trading increments (1 cent)

## SO First Differences

Figure 3.5.1. Illustration of first differences distribution



## SO Percentage Change

Figure 3.5.2. Illustration of percentage rate of returns

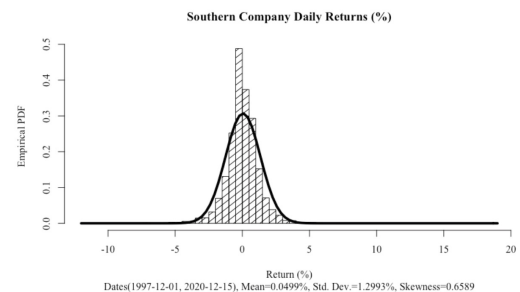
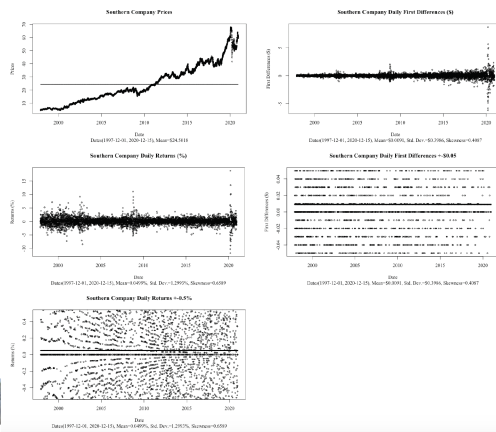


Figure 3.5.3. Selected illustrations contrasting first differences and rates of return



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## Summary

- Illustrated R code to sort data
- Used sorted data to demonstrate
  - Daily first differences (FD) distribution
  - Daily percentage rate of returns (PR)
  - Selected insights from contrasting FD and PR
  - Influence of one cent trading increments diminishes with higher underlying price for PR

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