Covariance Prediction Using Kernel Regression: Supplementary Material

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Abstract

We provide supplementary material for the article "Covariance Prediction Using Kernel Regression". We describe tickers, prices, returns, and volatilities of Dow Jones 30 stocks.

Section 1 gives the list of tickers for Dow Jones 30 stocks. Section 2 contains the time series of prices and returns of the Dow Jones 30 stocks. Section 3 shows the time series of GARCH$(1, 1)$ volatilities and returns of the Dow Jones 30 stocks.

1   Dow Jones 30 Stocks

The stocks of Dow Jones 30 and their tickers are in the following list.

1. "DWDP", DowDuPont Inc.

2. "CAT", Caterpillar Inc.

3. "UTX", United Technologies Corporation

4. "TRV", The Travelers Companies, Inc.

5. "XOM", Exxon Mobil Corporation

6. "CSCO", Cisco Systems, Inc.

7. "WMT", Wal-Mart Stores, Inc.

8. "NKE", NIKE, Inc.

9. "GE", General Electric Company

10. "INTC", Intel Corporation

11. "KO", The Coca-Cola Company

12. "MRK", Merck & Co., Inc.

13. "GS", The Goldman Sachs Group, Inc.

14. "JNJ", Johnson & Johnson

15. "AAPL", Apple Inc.

16. "AXP", American Express Company

17. "MMM", 3M Company

18. "PFE", Pfizer Inc.

19. "VZ", Verizon Communications Inc.

20. "IBM", International Business Machines Corporation

21. "CVX", Chevron Corporation

22. "PG", The Procter & Gamble Company

23. "MCD", McDonald's Corporation

24. "JPM", JPMorgan Chase & Co.

25. "UNH", UnitedHealth Group Incorporated

26. "BA", The Boeing Company

27. "HD", The Home Depot, Inc.

28. "V", Visa Inc.

29. "MSFT", Microsoft Corporation

30. "DIS", The Walt Disney Company

2   Prices and Returns

Figures 1–30 show prices and returns for the Dow Jones 30 companies. Each company has a different sampling period, but the last observation is in all cases 4th December 2017.
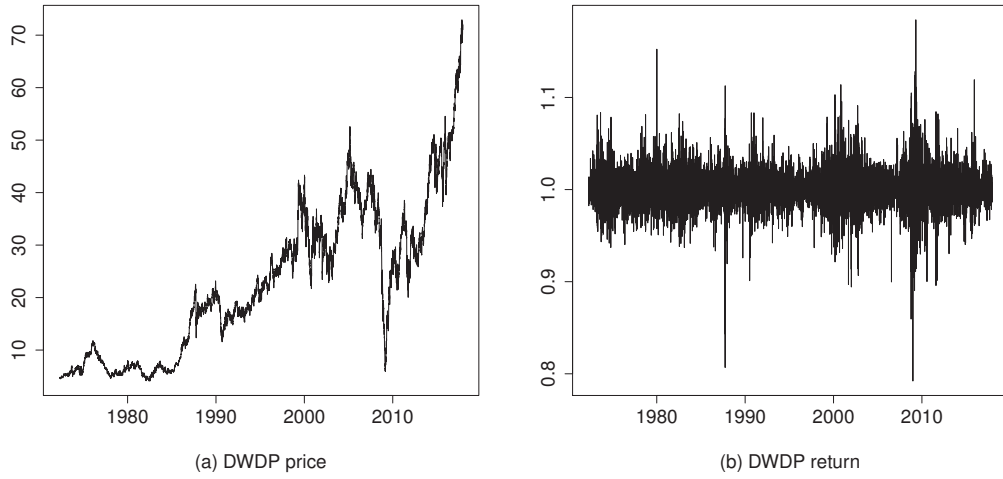
Figure 1: *DowDuPont.*
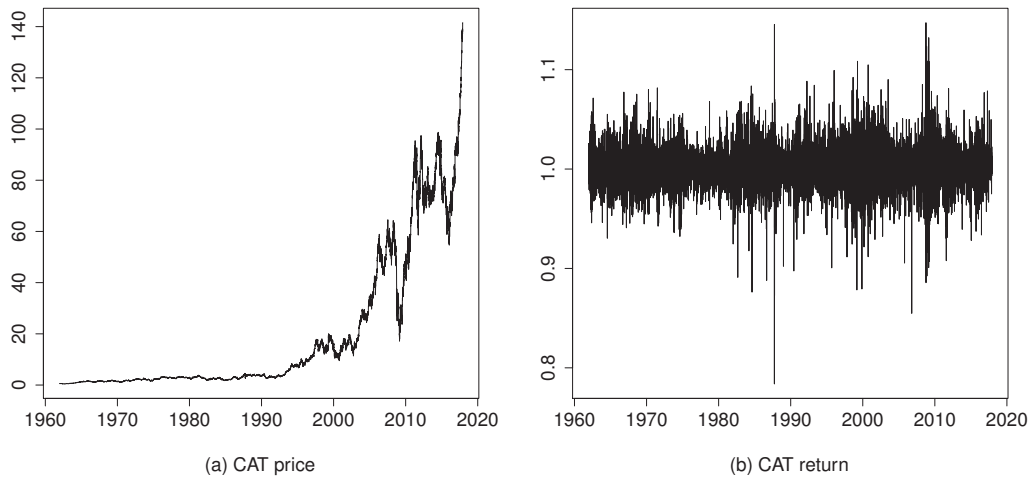
Figure 2: *Caterpillar.*
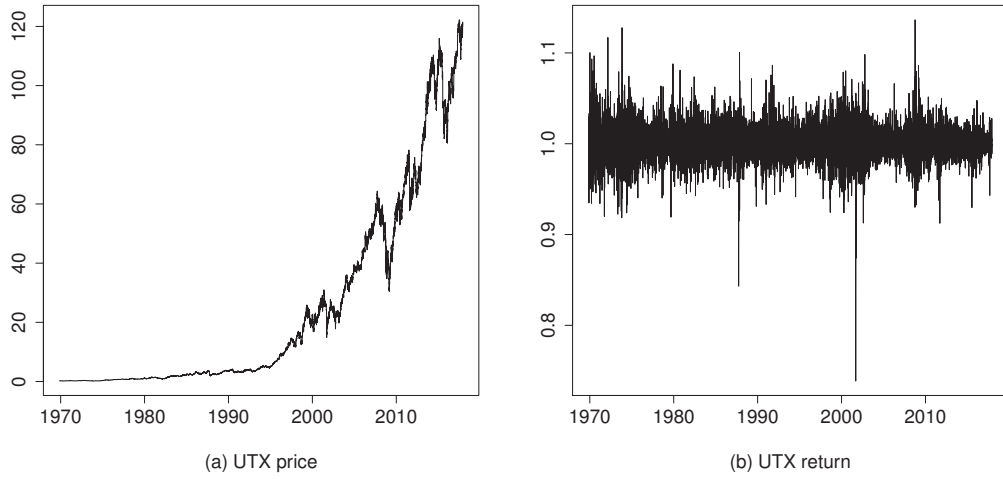
Figure 3: *United Technologies.*
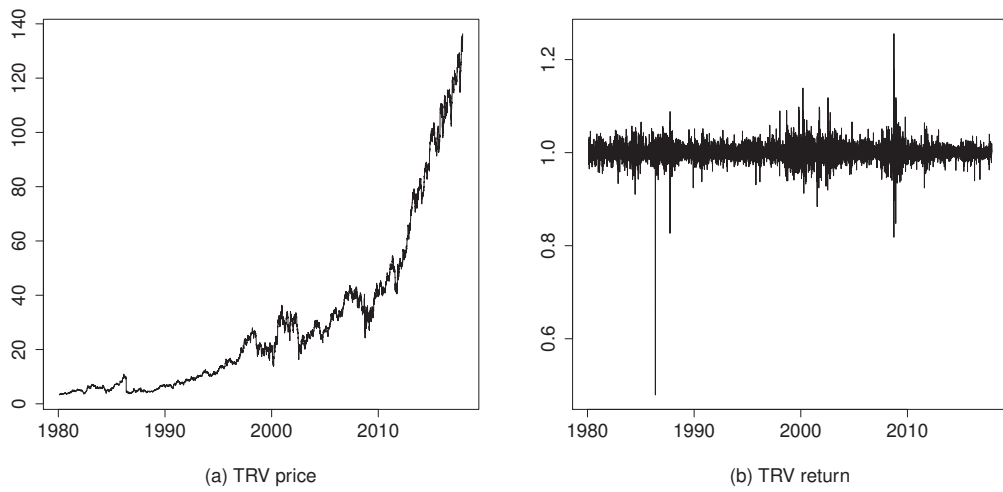
Figure 4: *The Travelers Companies.*

(a) XOM price

(b) XOM return

Figure 5: *Exxon Mobil.*

(a) CSCO price

(b) CSCO return

Figure 6: *Cisco.*

(a) WMT price

(b) WMT return

Figure 7: *Wal-Mart.*

(a) NKE price

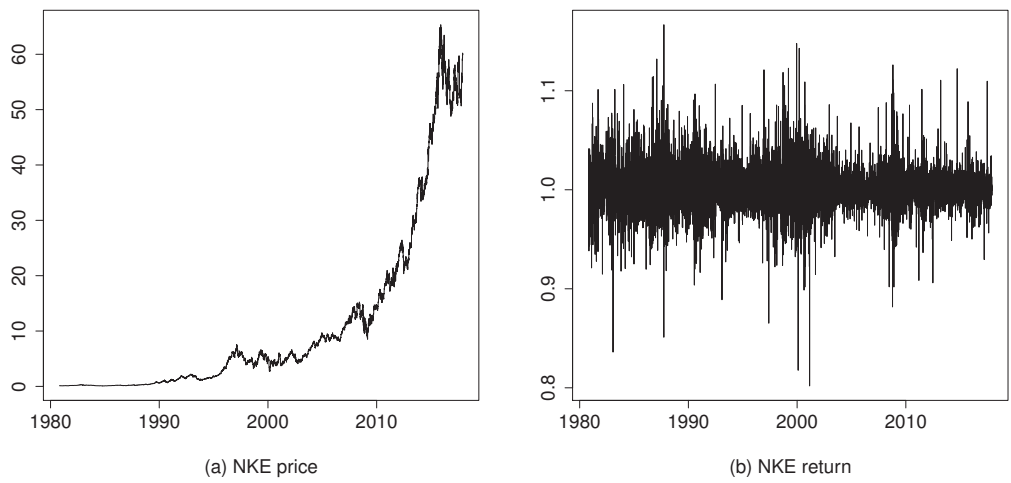(b) NKE return
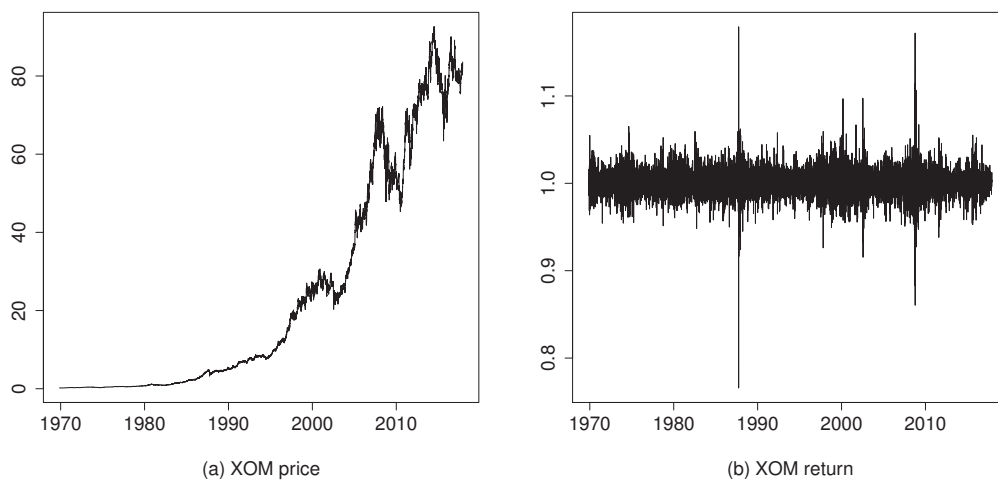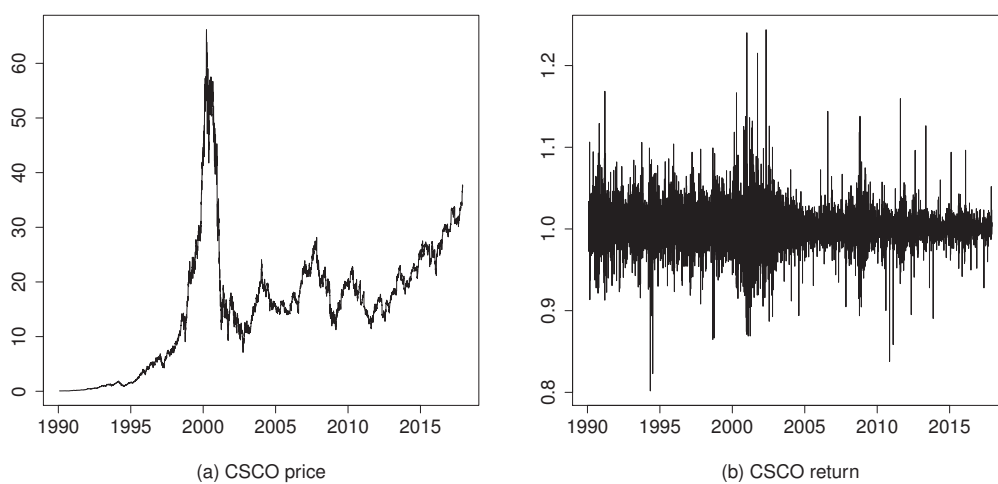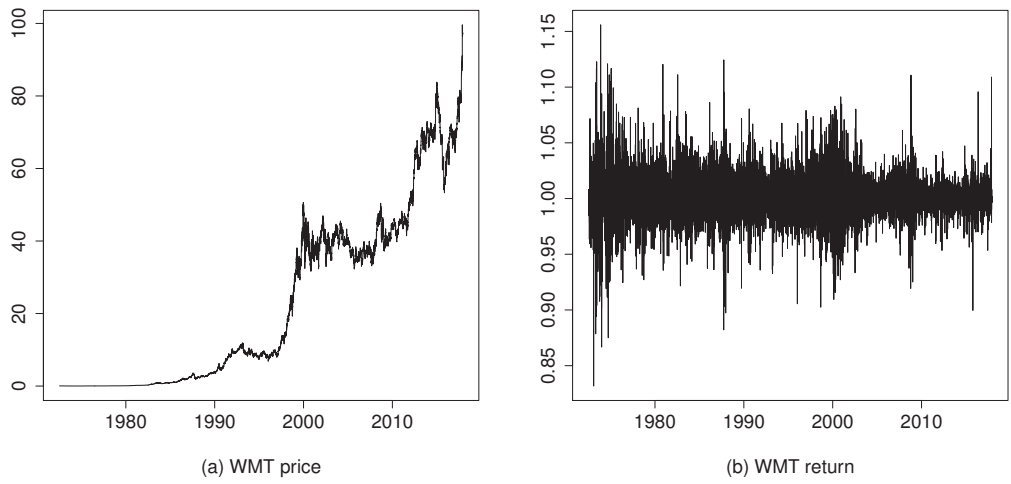
Figure 8: *Nike.*
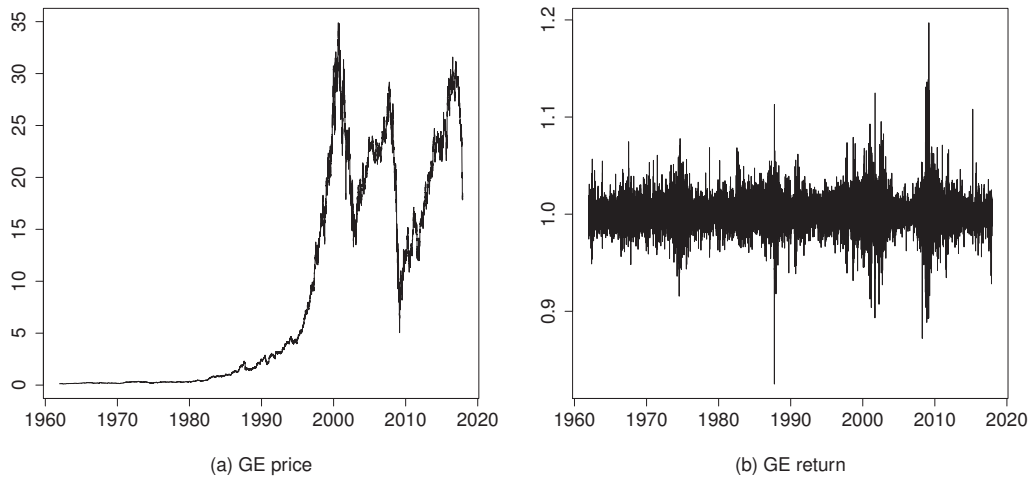
Figure 9:   *General Electric.*

Figure 10:   *Intel.*
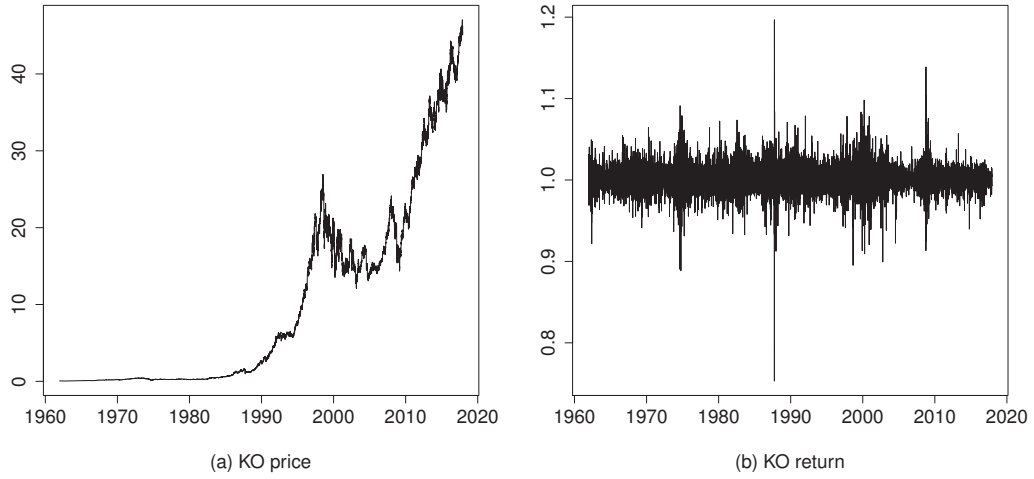
(a) KO price

(b) KO return

Figure 11: *Coca-Cola.*

(a) MRK price

(b) MRK return

Figure 12: *Merck.*

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(a) GS price

(b) GS return
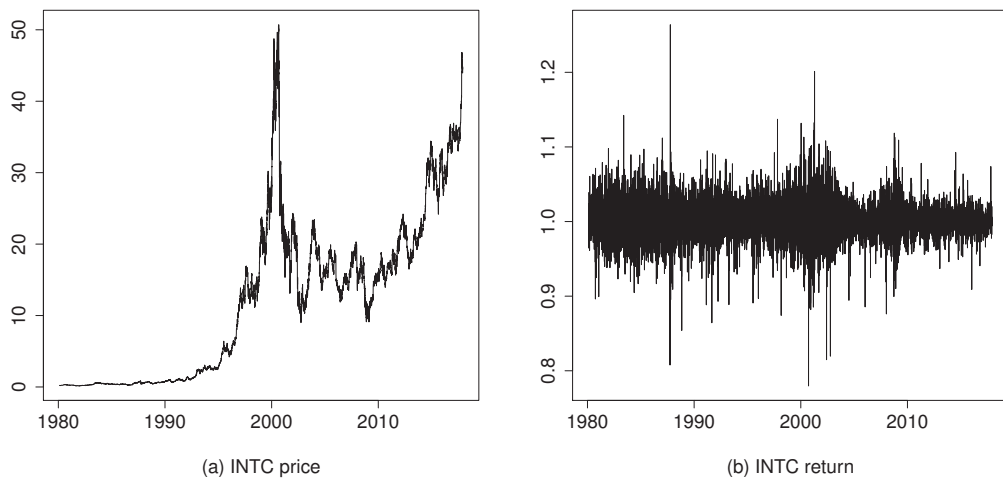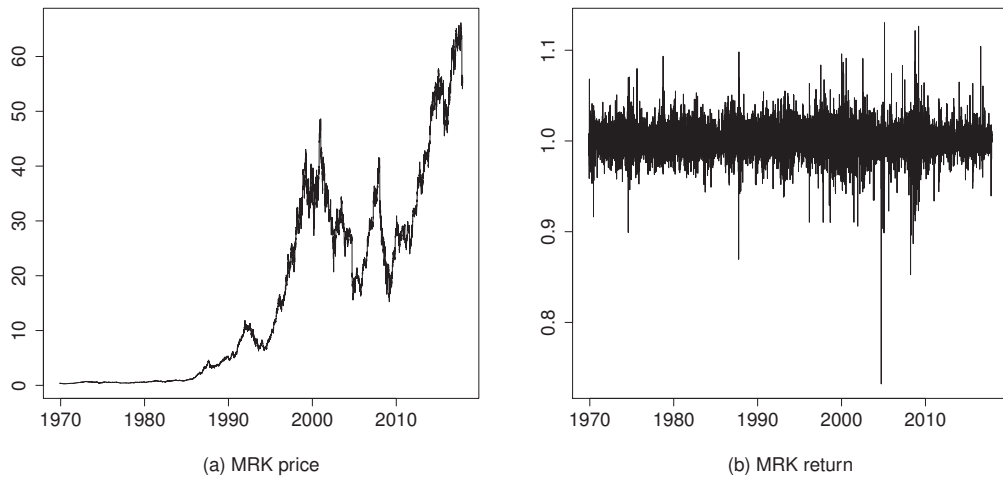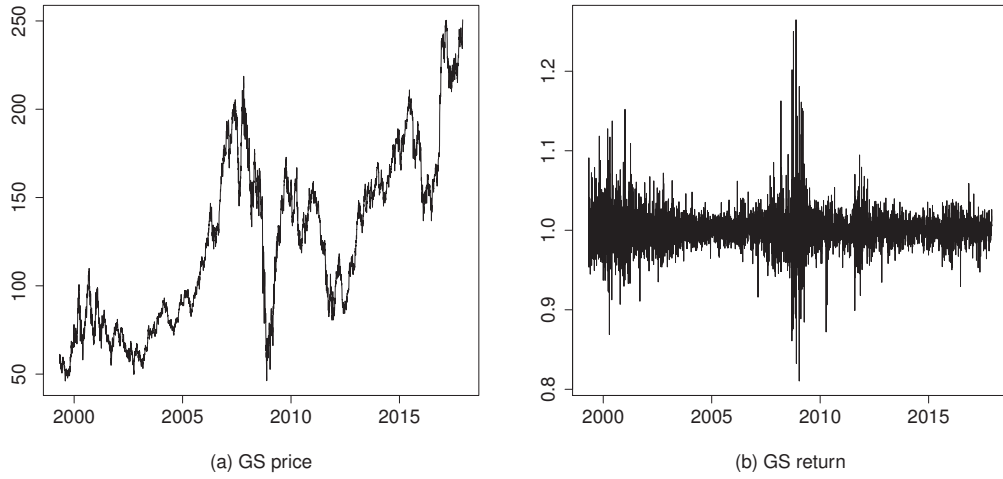
Figure 13: *Goldman Sachs.*

(a) JNJ price

(b) JNJ return
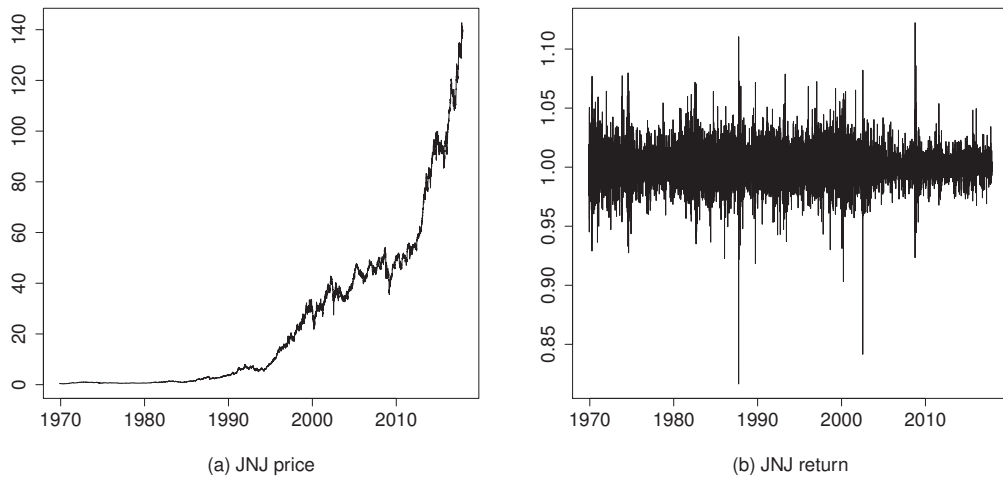
Figure 14: *Johnson & Johnson.*

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(a) AAPL price

(b) AAPL return

Figure 15: *Apple.*

(a) AXP price

(b) AXP return
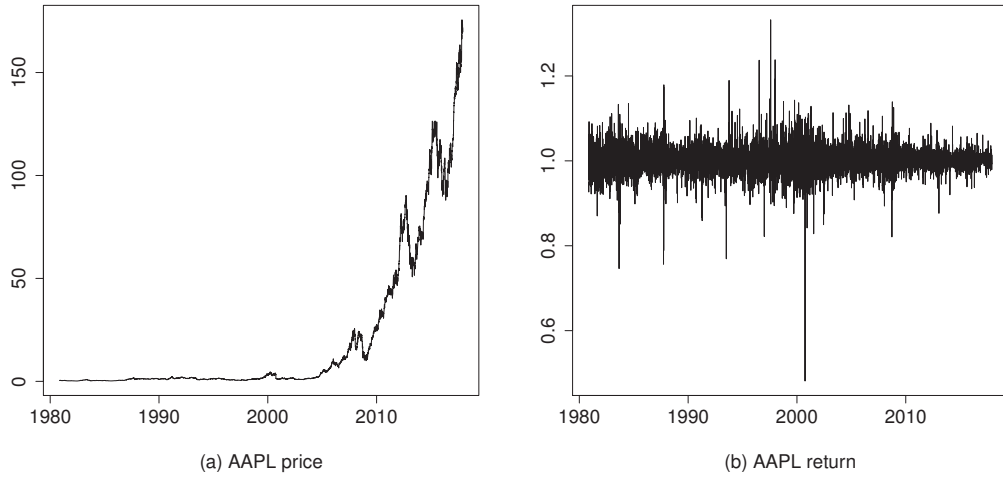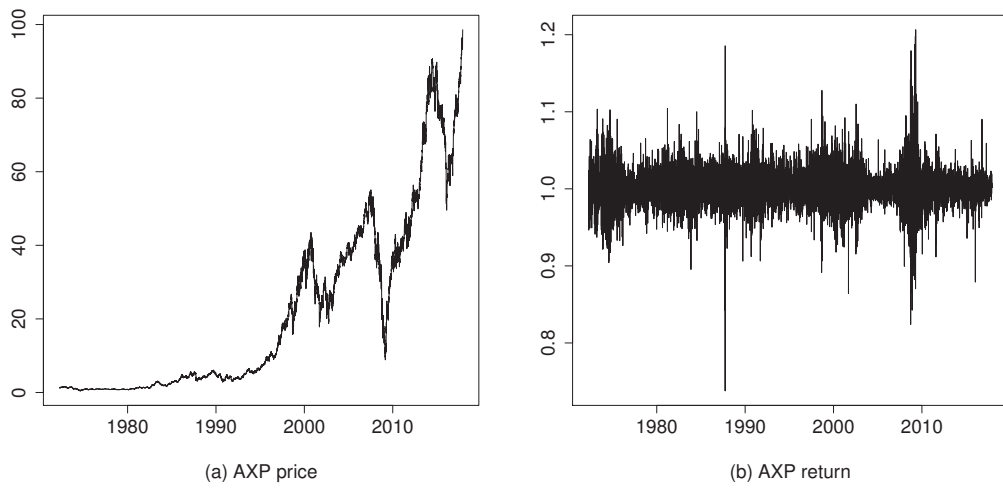
Figure 16: *American Express.*
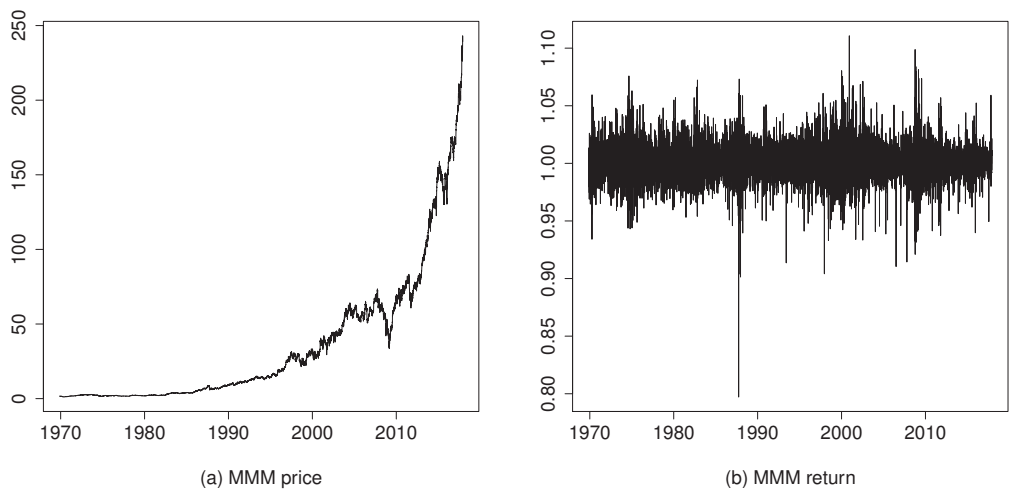
(a) MMM price

(b) MMM return

Figure 17: *3M.*

(a) PFE price

(b) PFE return

Figure 18: *Pfizer.*

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(a) VZ price   (b) VZ return

Figure 19: *Verizon.*

(a) IBM price   (b) IBM return

Figure 20: *IBM.*

(a) CVX price

(b) CVX return

Figure 21: *Chevron.*

(a) PG price
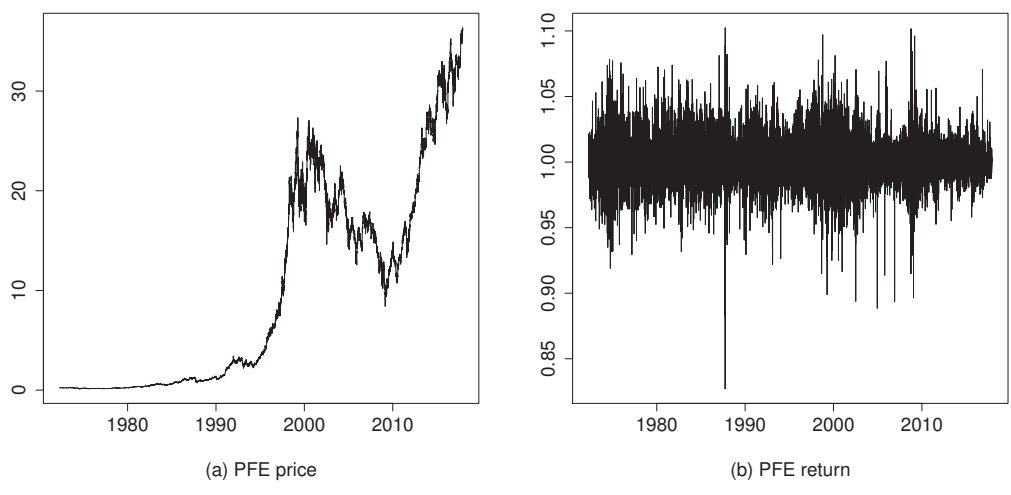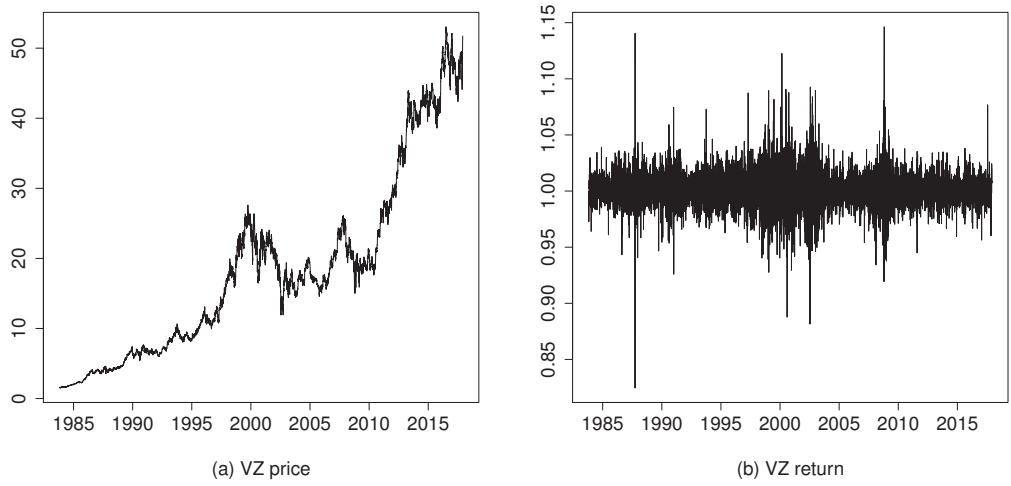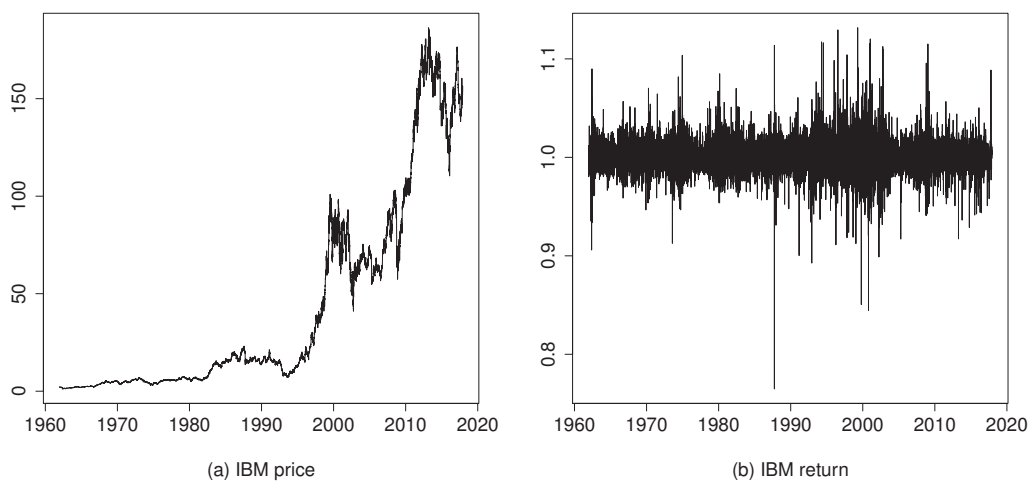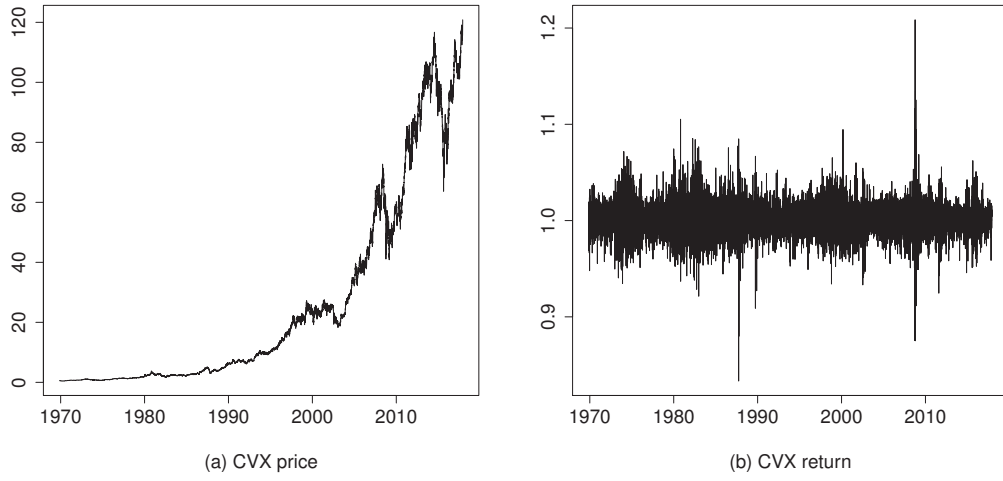
(b) PG return
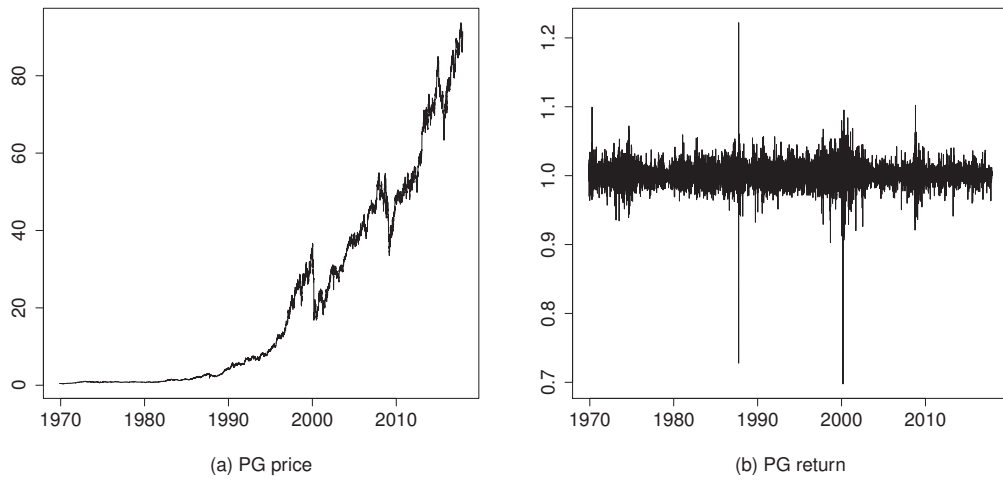
Figure 22: *Procter & Gamble.*

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(a) MCD price

(b) MCD return
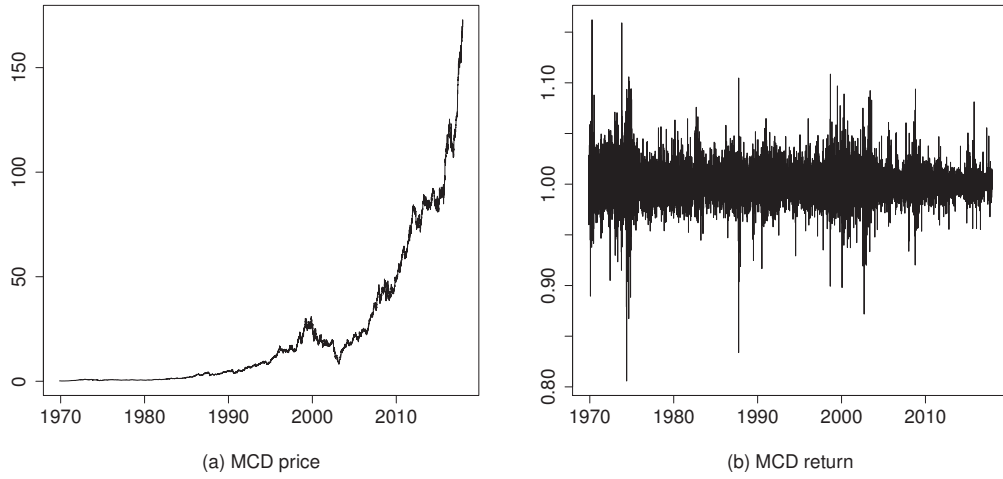
Figure 23: *McDonald's.*

(a) JPM price

(b) JPM return
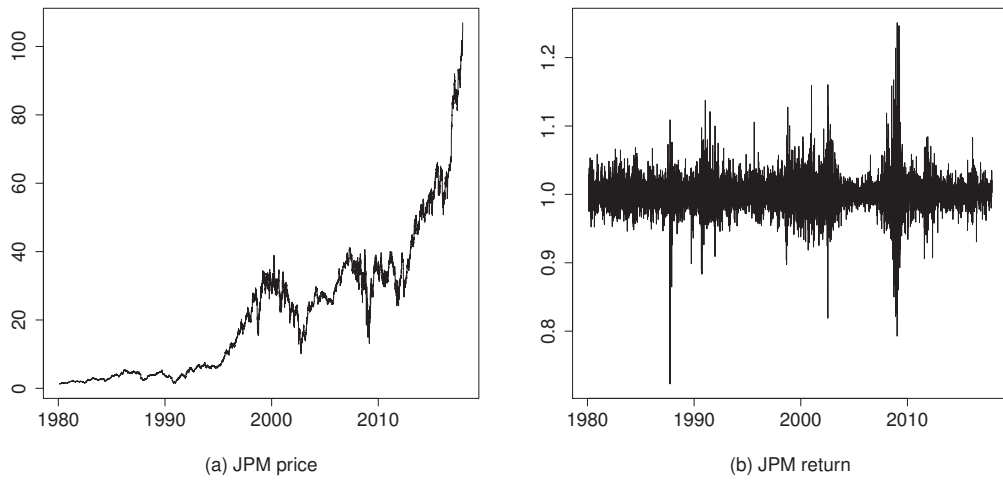
Figure 24: *JPMorgan Chase.*

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(a) UNH price   (b) UNH return
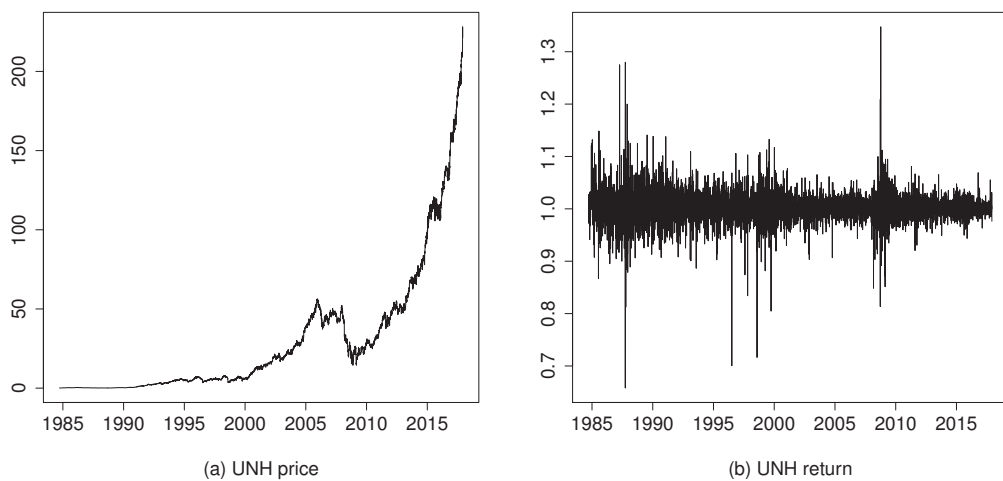
Figure 25: *UnitedHealth Group.*
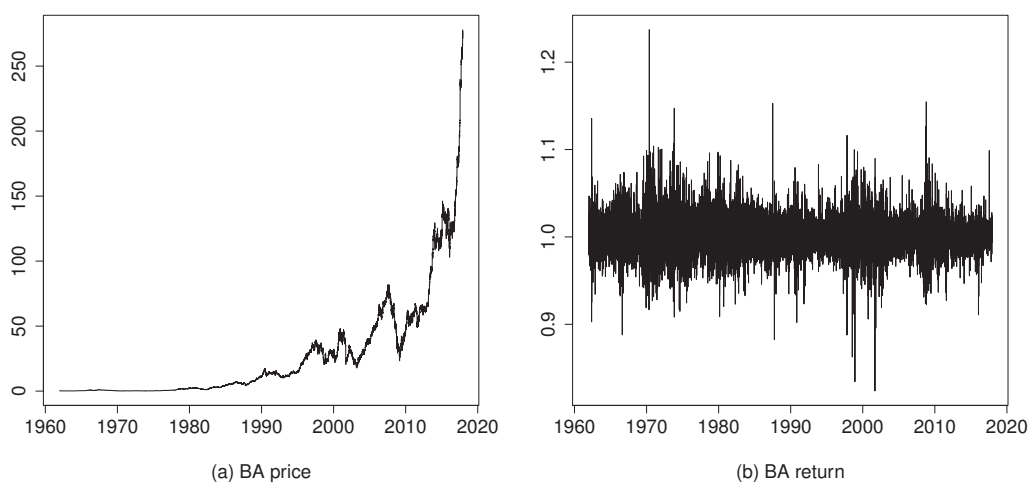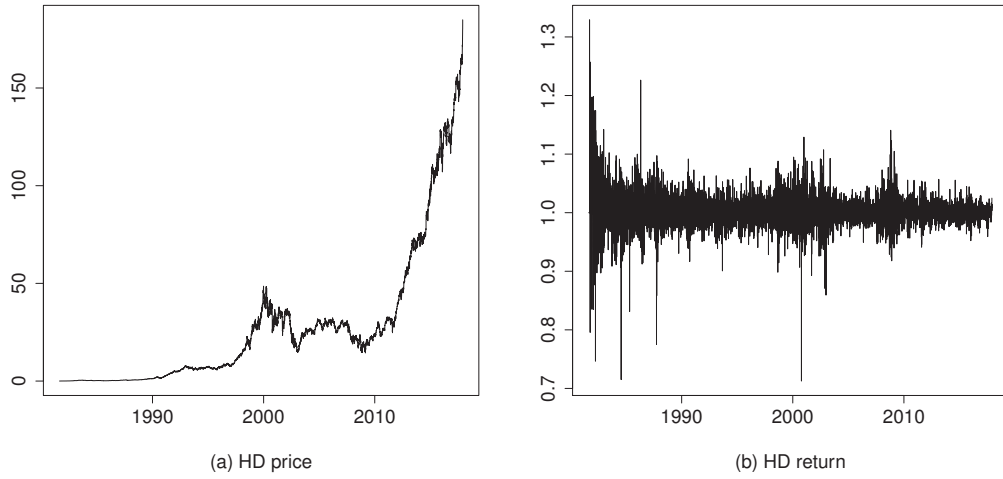
(a) BA price   (b) BA return

Figure 26: *Boeing.*

(a) HD price

(b) HD return

Figure 27:   *Home Depot.*

(a) V price

(b) V return

Figure 28:   *Visa.*

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(a) MSFT price

(b) MSFT return

Figure 29: *Microsoft.*

(a) DIS price

(b) DIS return

Figure 30: *Walt Disney.*
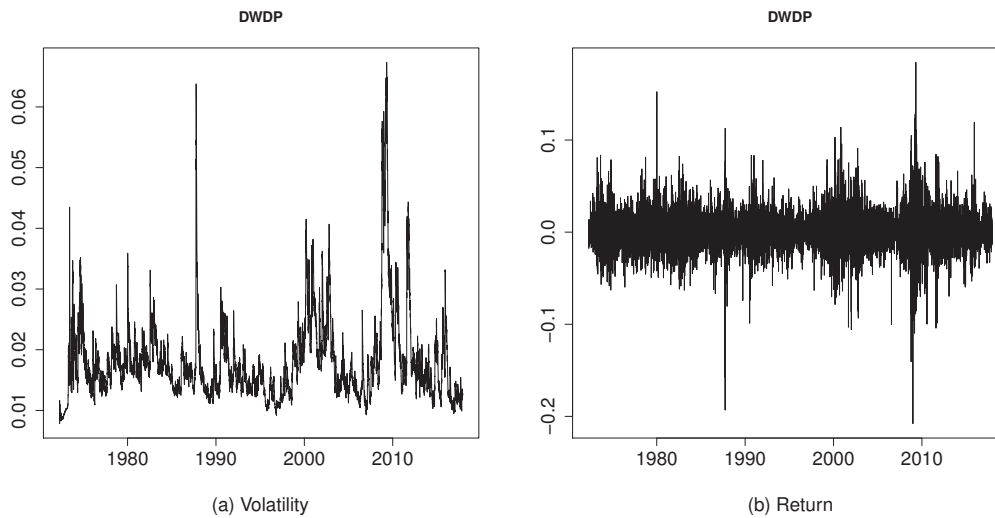
DWDP   DWDP
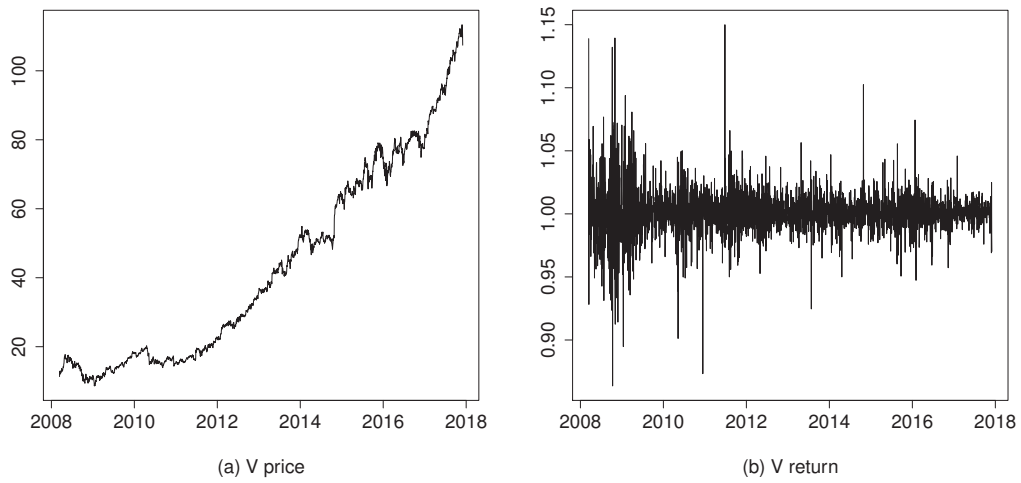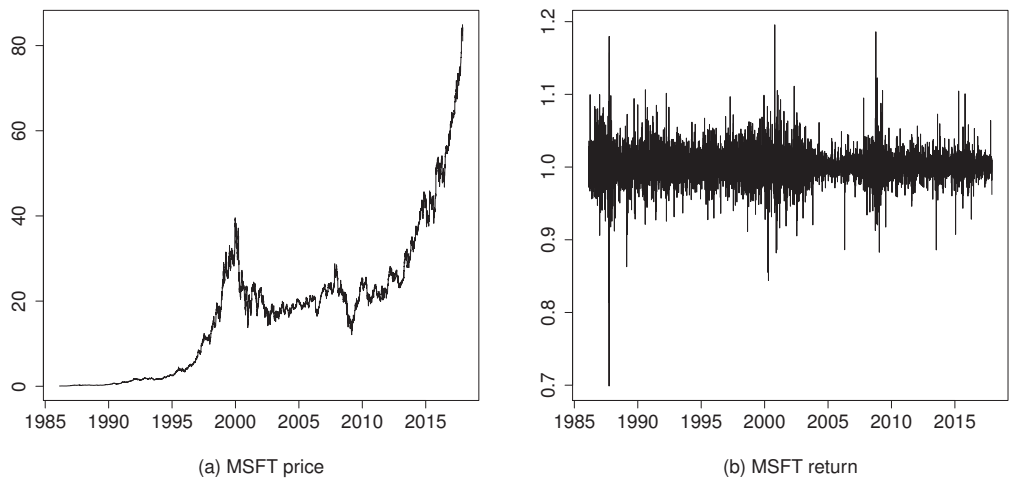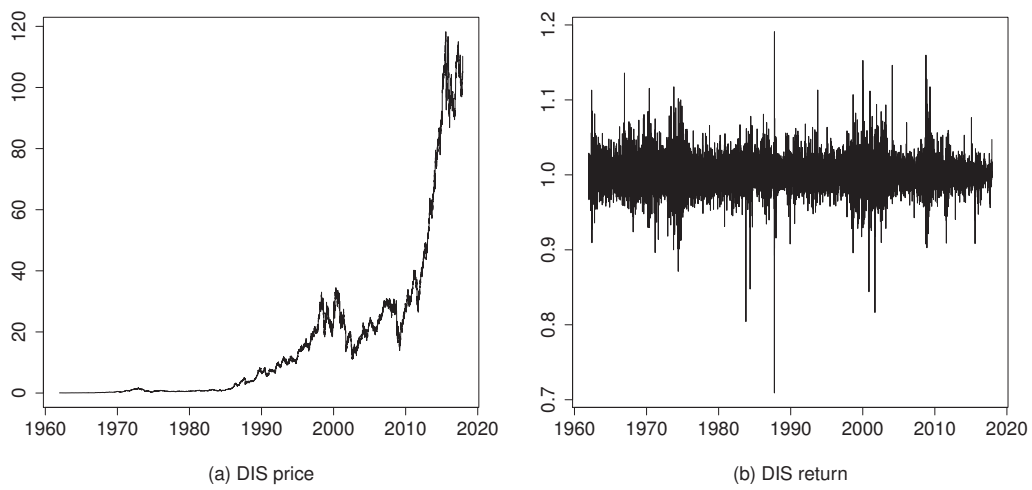
(a) Volatility   (b) Return

Figure 31: *DowDuPont.*

3 Volatilities and Returns

Figures 31–60 show GARCH$(1,1)$ volatilities and returns of the Dow Jones 30 companies. Each company has a different sampling period, but the last observation is in all cases 4th December 2017.

3.1 Companies 1-10

Figure 31
    Figure 32
    Figure 33
    Figure 34
    Figure 35
    Figure 37
    Figure 37
    Figure 38
    Figure 39
    Figure 40

3.2 Companies 11-20

Figure 41
    Figure 42
    Figure 43
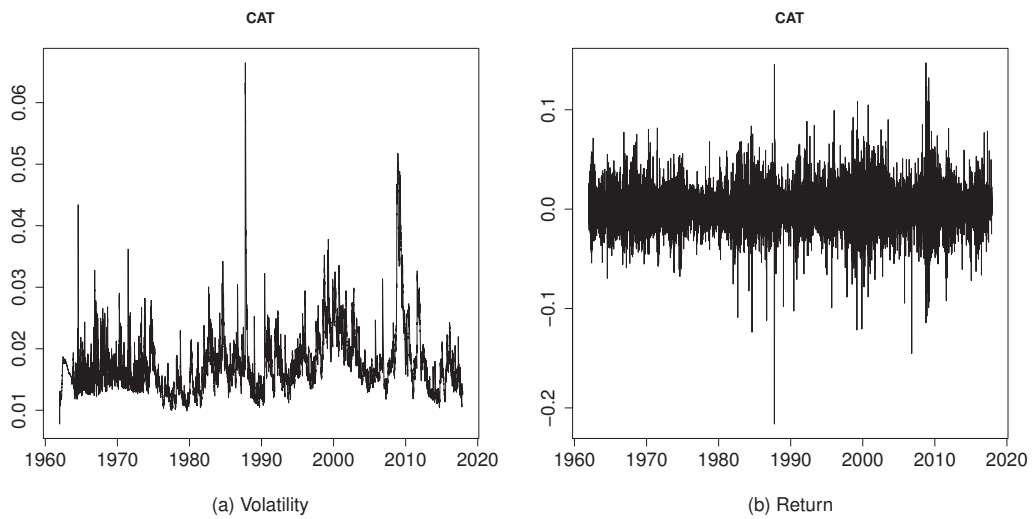
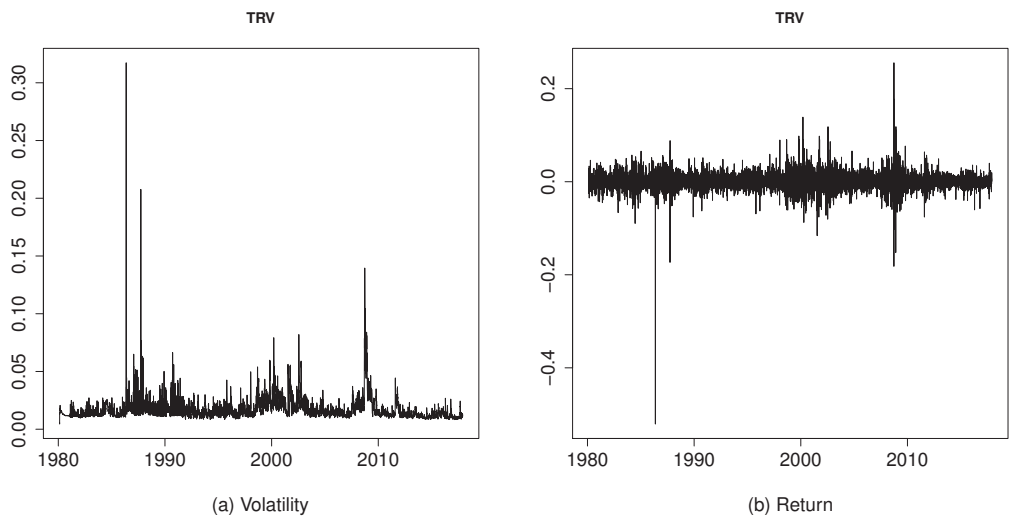Figure 32:   *Caterpillar.*
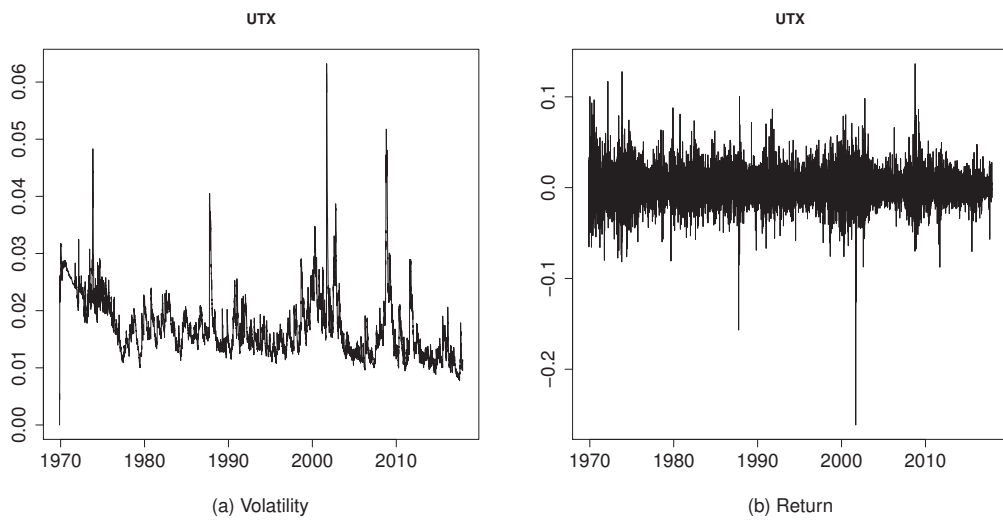
Figure 33:   *United Technologies.*

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TRV

(a) Volatility

(b) Return

Figure 34: *The Travelers Companies.*

XOM

(a) Volatility

(b) Return
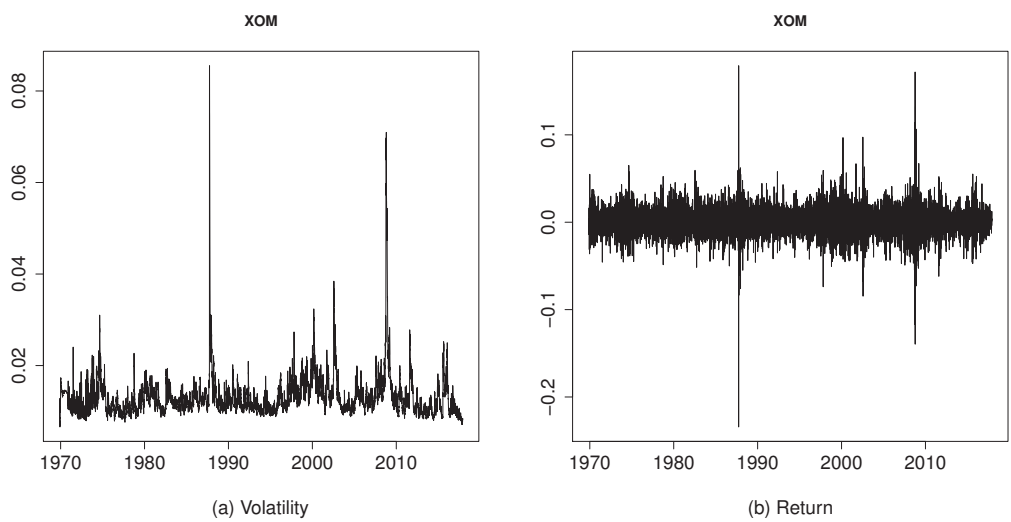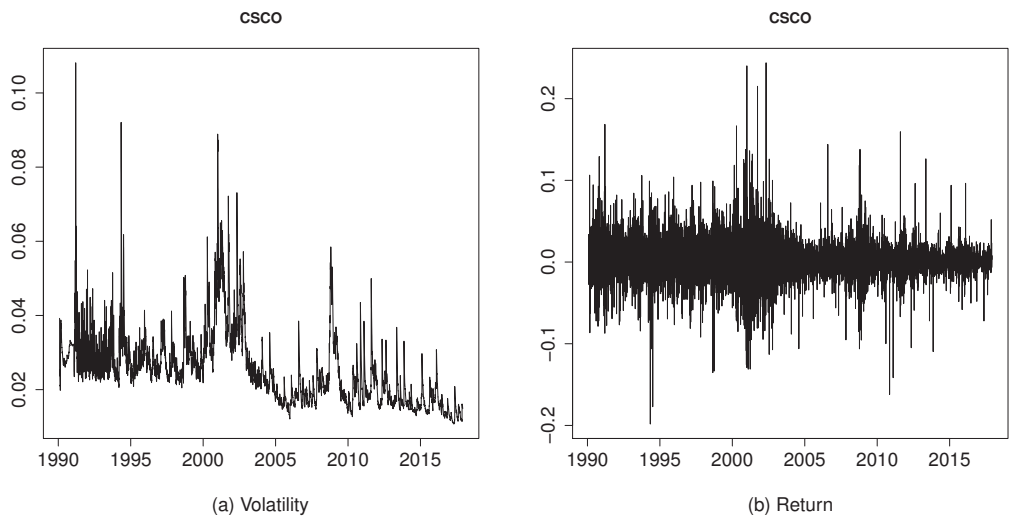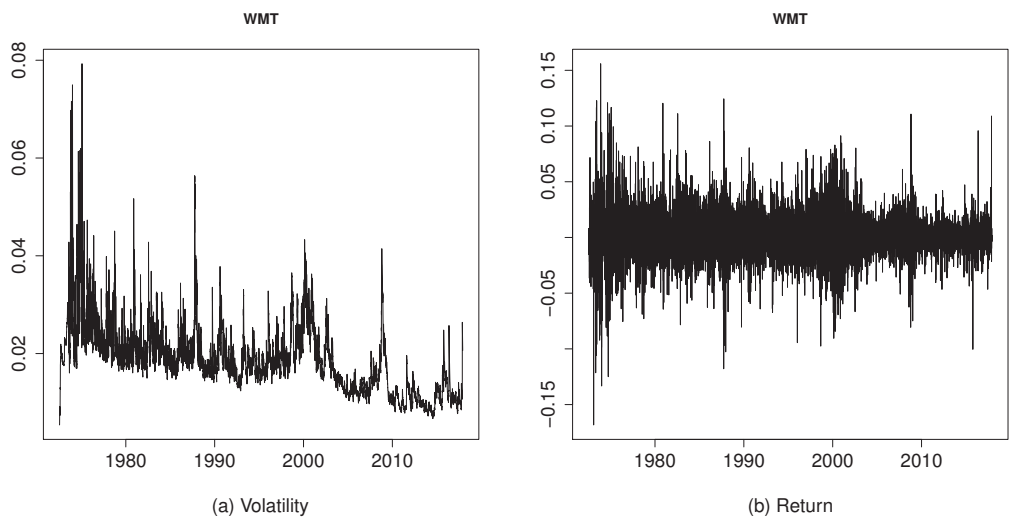
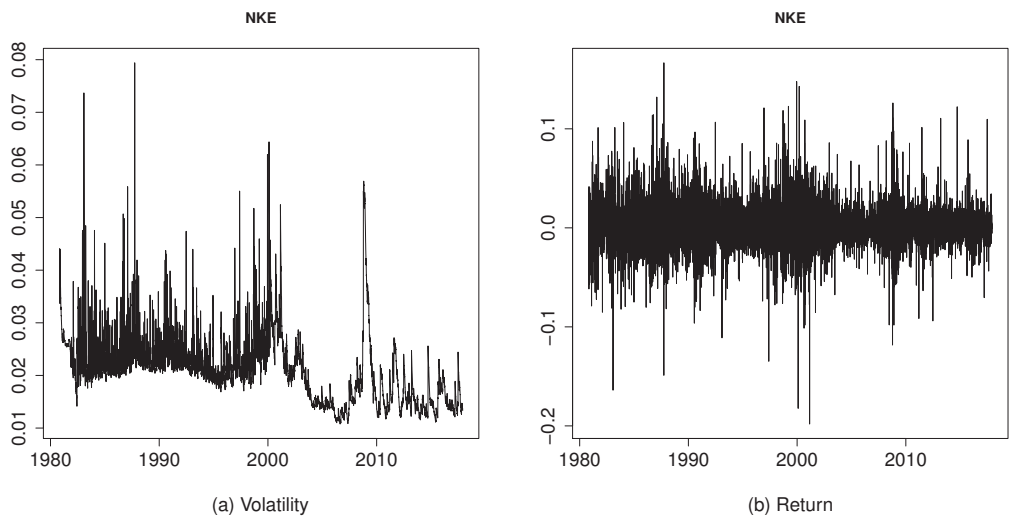Figure 35: *Exxon Mobil.*
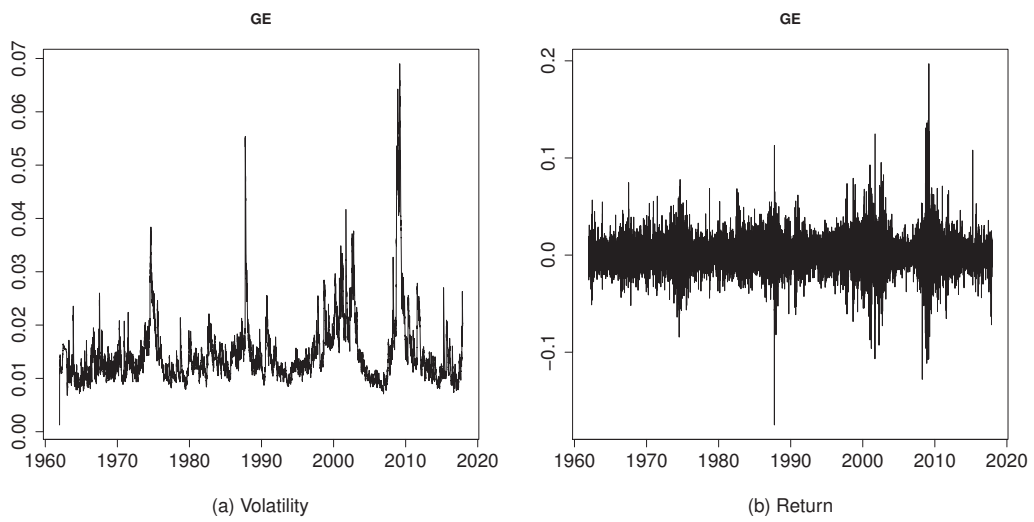
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Figure 36: *Cisco.*

Figure 37: *Wal-Mart.*
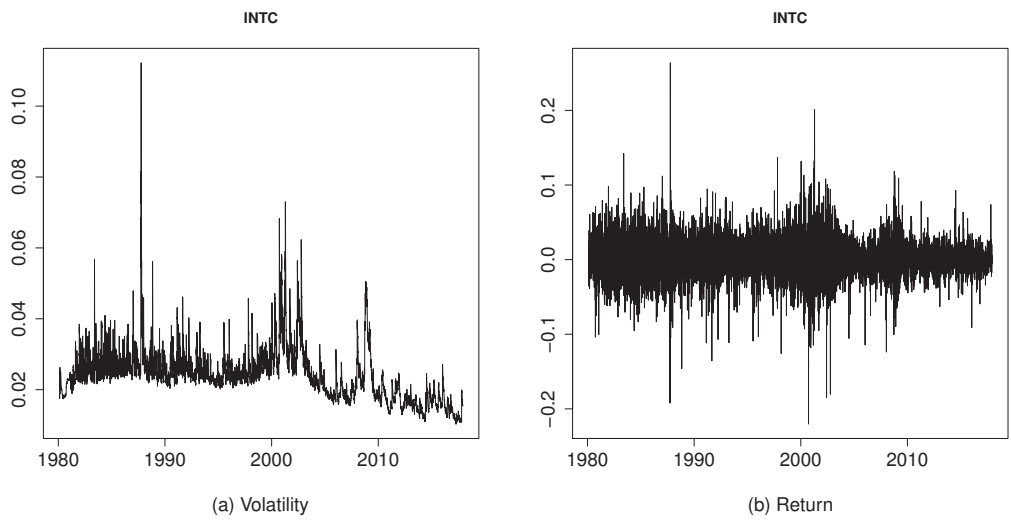
Figure 38: *Nike.*

Figure 39: *General Electric.*

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INTC

(a) Volatility

INTC

(b) Return

Figure 40:   *Intel.*

KO

(a) Volatility

KO

(b) Return

Figure 41:   *Coca-Cola.*

(a) Volatility   (b) Return

Figure 42:   *Merck.*

(a) Volatility   (b) Return

Figure 43:   *Goldman Sachs.*

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(a) Volatility

(b) Return
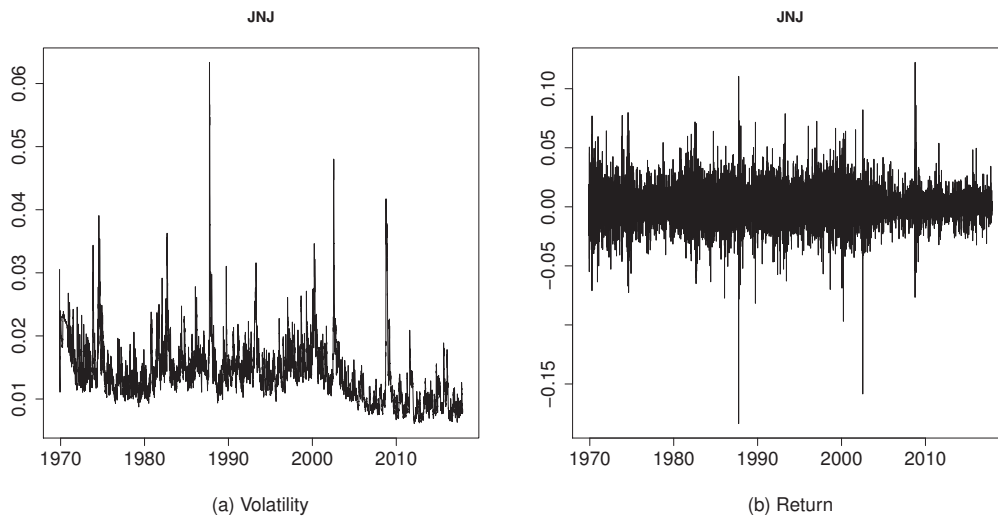
Figure 44: *Johnson & Johnson.*

Figure 44
Figure 45
Figure 46
Figure 47
Figure 48
Figure 49
Figure 50

3.3 Companies 21-30

Figure 51
Figure 52
Figure 53
Figure 54
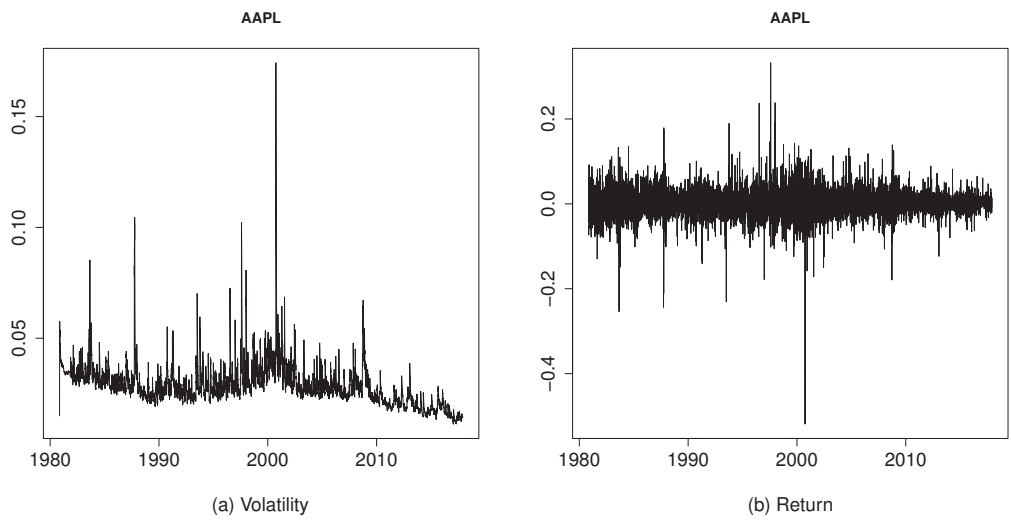Figure 55
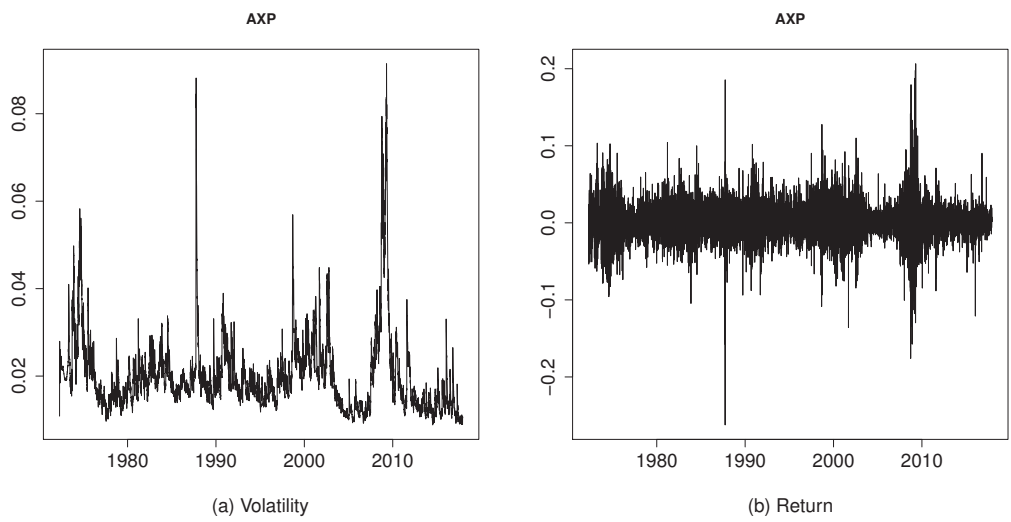Figure 56
Figure 57
Figure 58
Figure 59
Figure 60

AAPL

(a) Volatility

AAPL

(b) Return

Figure 45: *Apple.*

AXP

(a) Volatility

AXP

(b) Return

Figure 46: *American Express.*
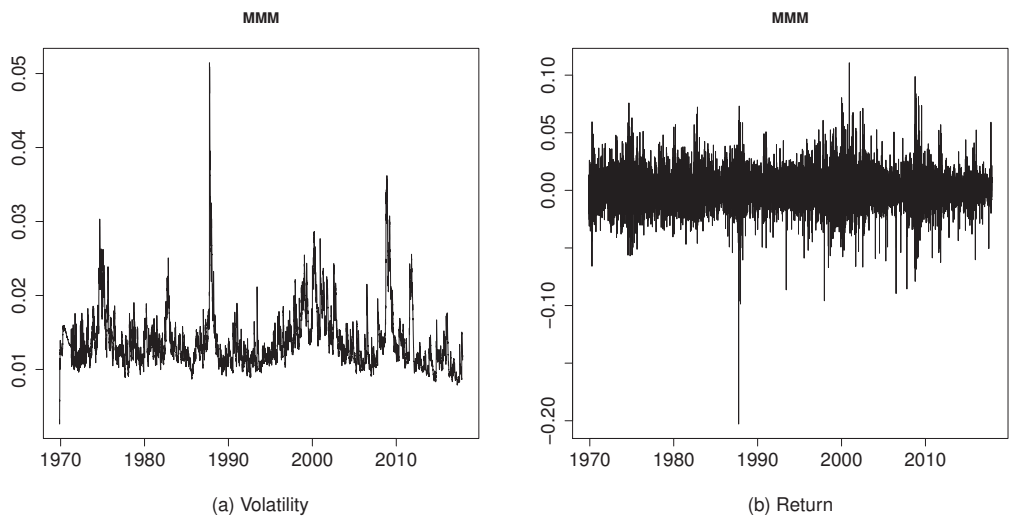
(a) Volatility (b) Return

Figure 47: *3M.*

(a) Volatility (b) Return

Figure 48: *Pfizer.*

(a) Volatility (b) Return

Figure 49: *Verizon.*

(a) Volatility (b) Return

Figure 50: *IBM.*

CVX	CVX
(a) Volatility	(b) Return
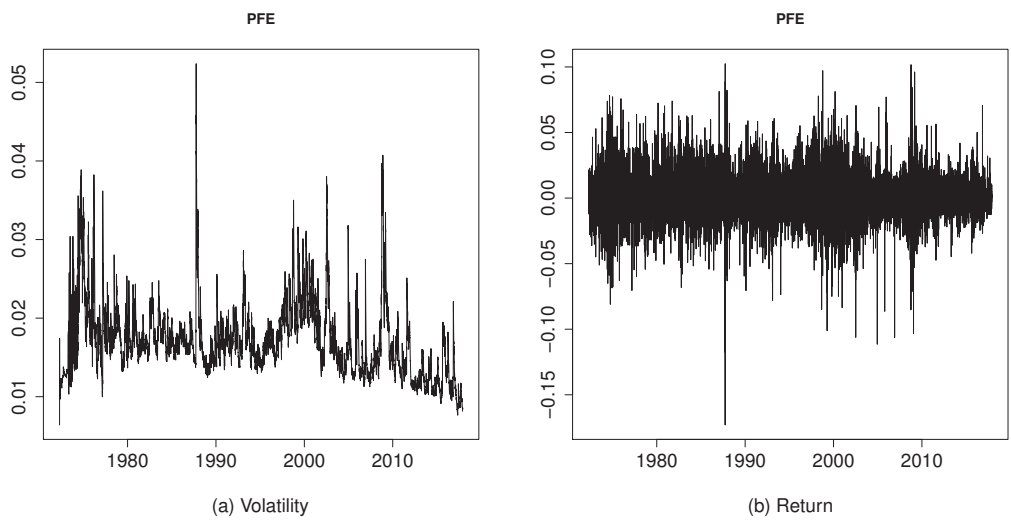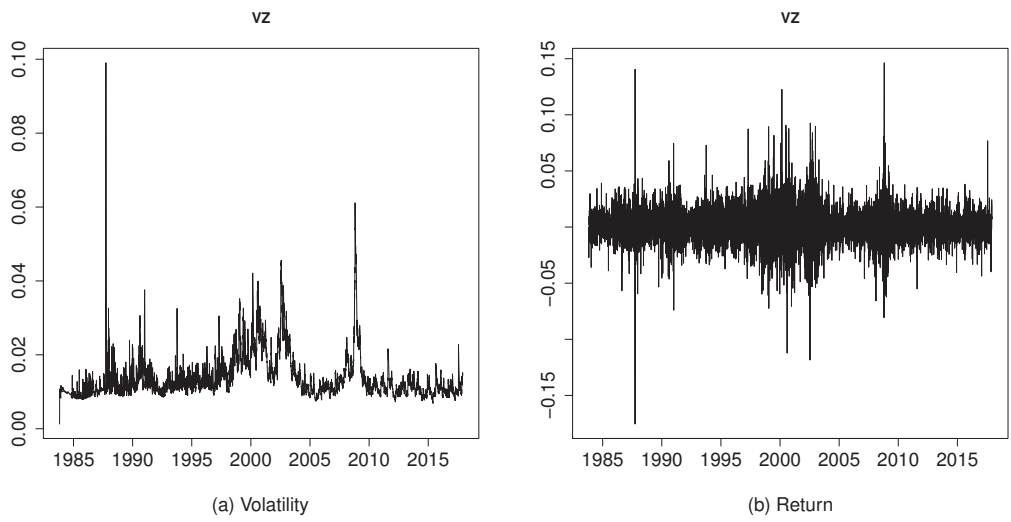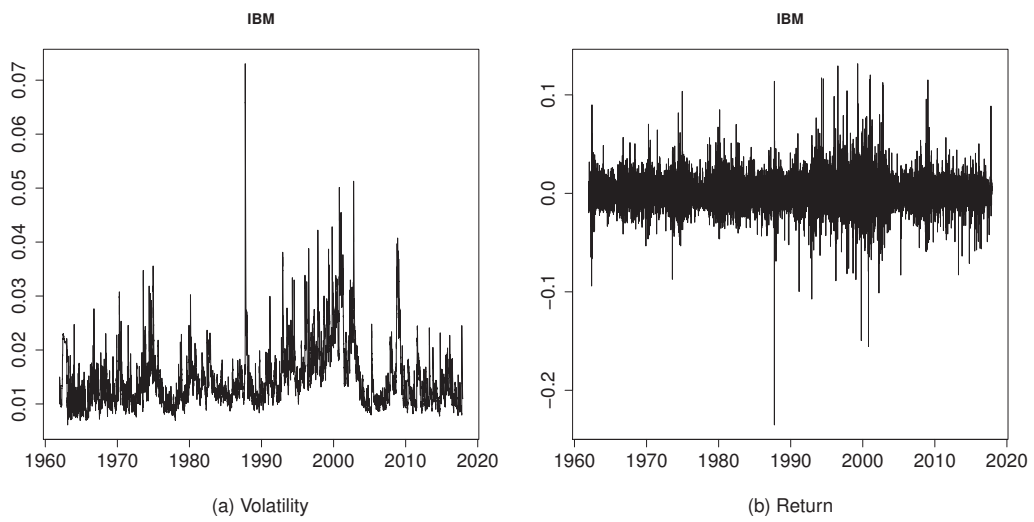
Figure 51: *Chevron.*
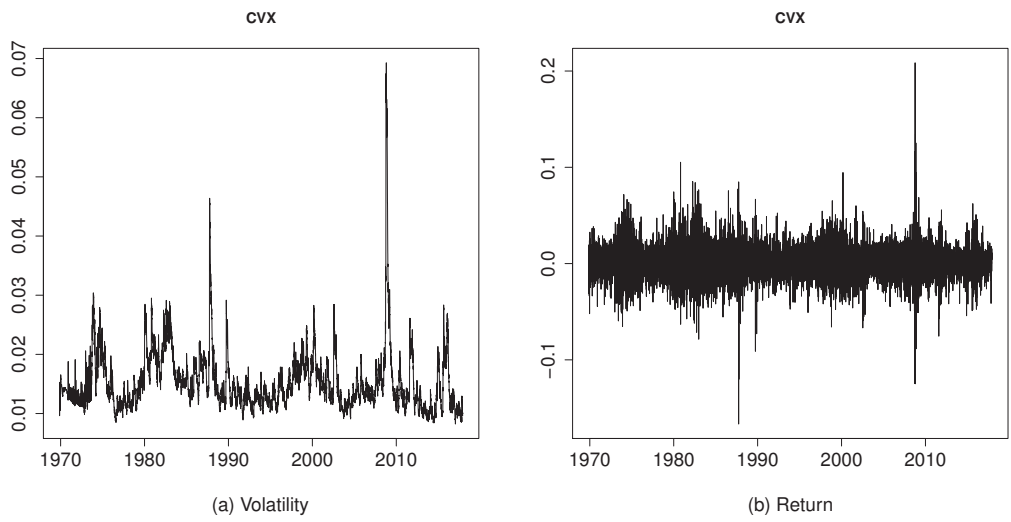
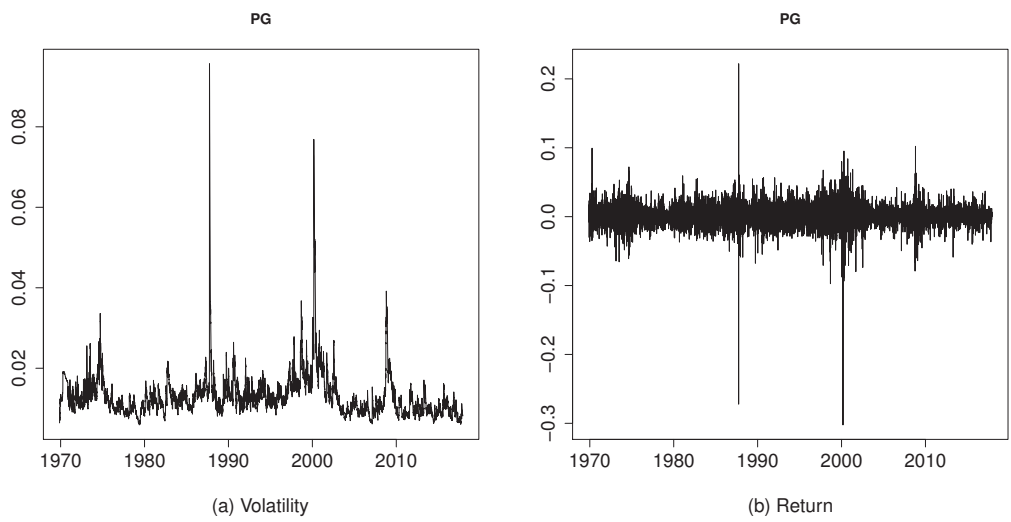| PG	PG
(a) Volatility	(b) Return

Figure 52: *Procter & Gamble.*
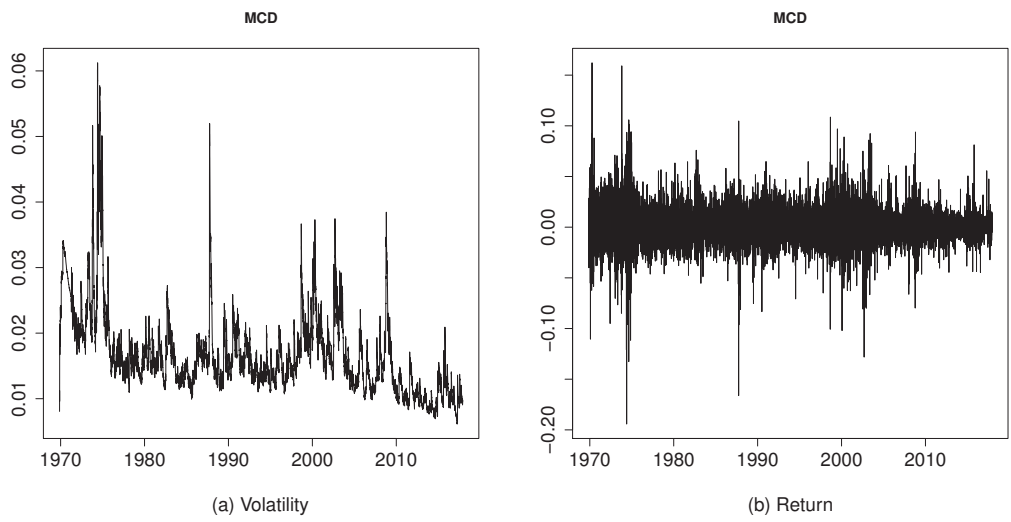
Figure 53: *McDonald's.*
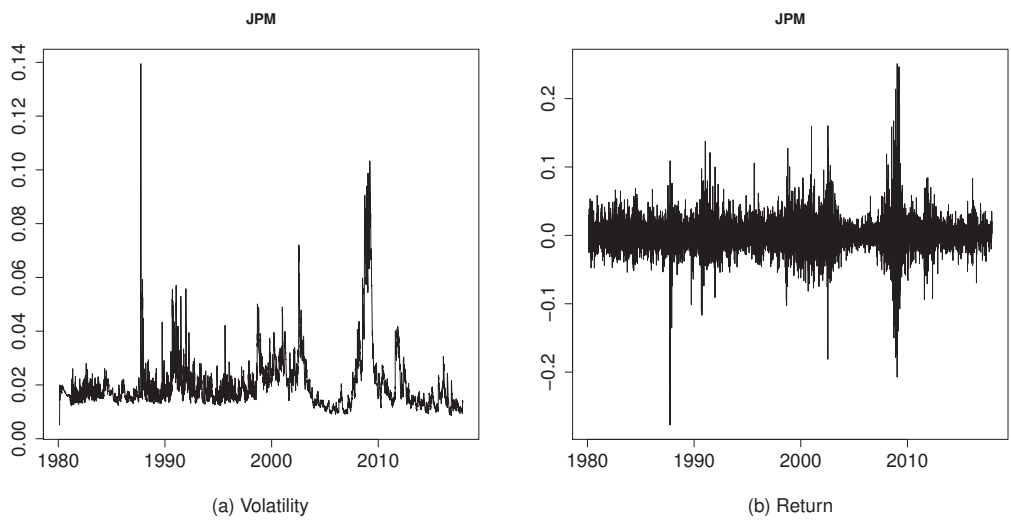
Figure 54: *JPMorgan Chase.*

(a) Volatility

(b) Return
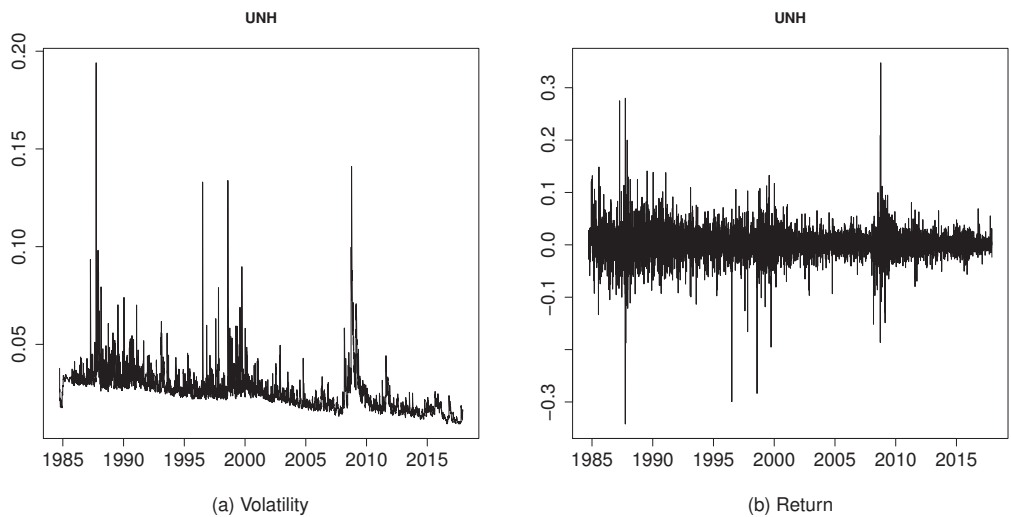
Figure 55: *UnitedHealth Group.*

(a) Volatility

(b) Return
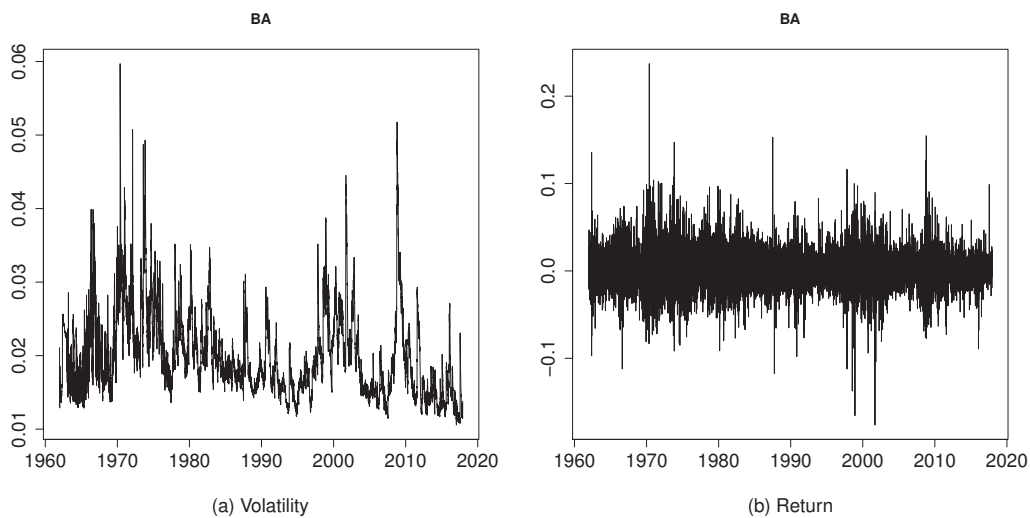
Figure 56: *Boeing.*
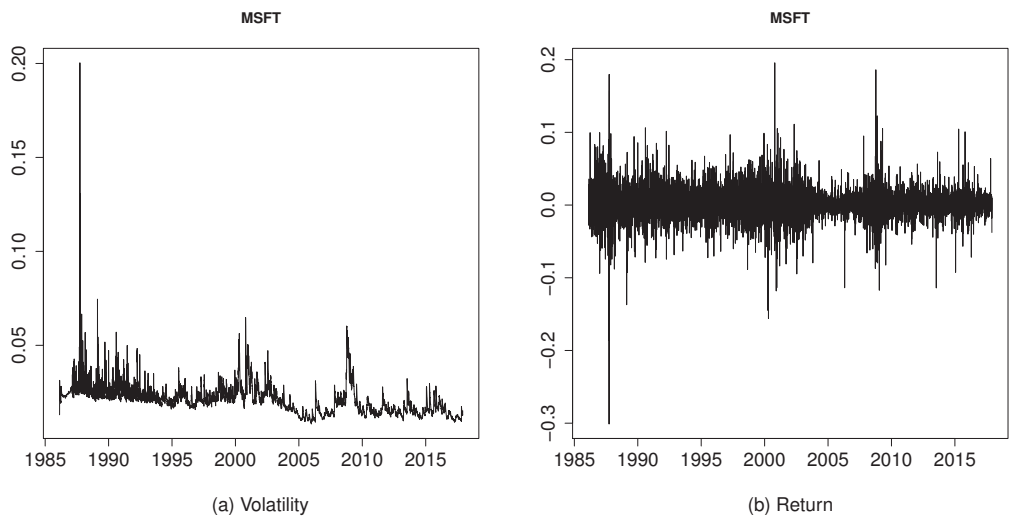
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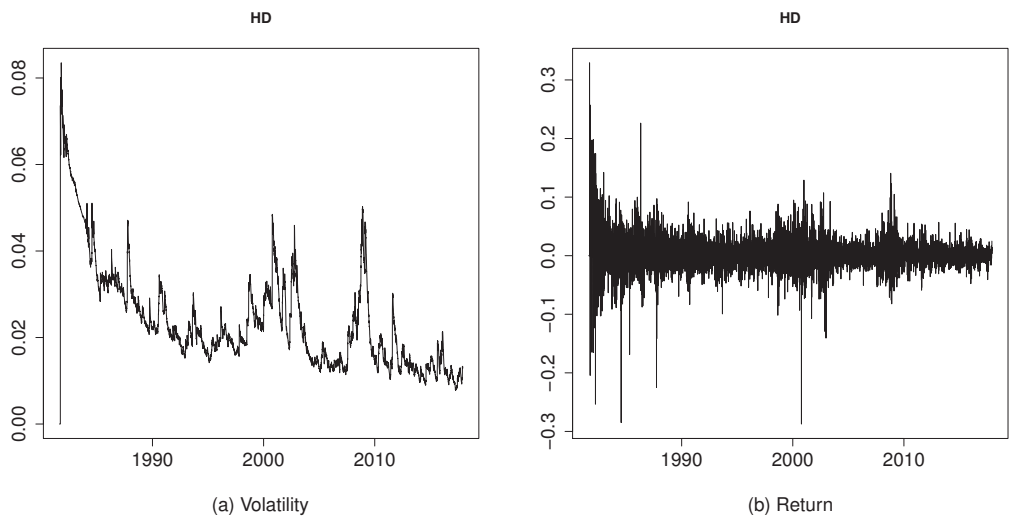
Figure 57: *Home Depot.*

Figure 58: *Visa.*

MSFT
(a) Volatility
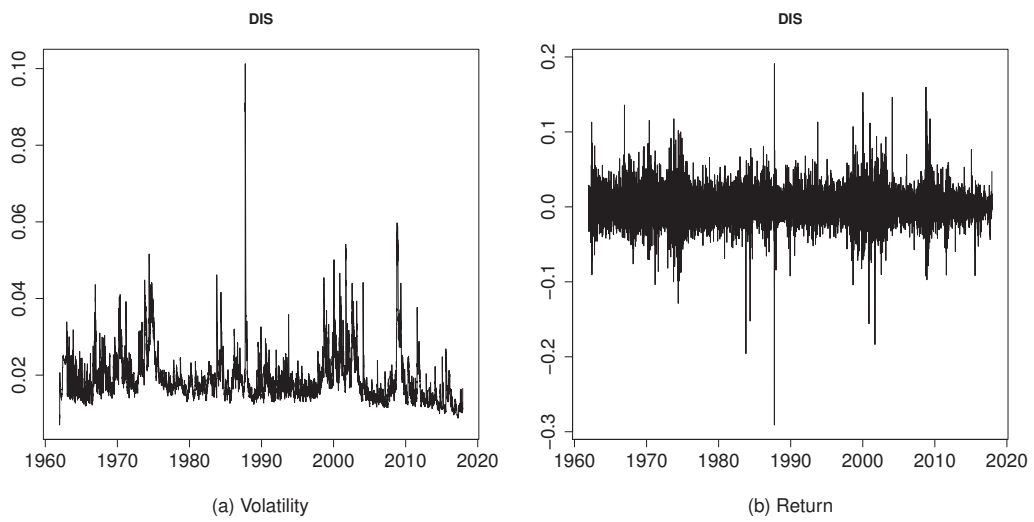
MSFT
(b) Return

Figure 59: *Microsoft.*

DIS
(a) Volatility

DIS
(b) Return

Figure 60: *Walt Disney.*