Project 5: financial volatility

This project uses data from Franses and Van Dijk (2000). This book has a web site containing a rich collection of data sets from several countries on stock prices and exchange rates, which you can download (see http://www.few.eur.nl/few/people/djvandijk/nltsmef/nltsmef.htm, accessed 3 November 2008). In particular, stock price indices from Amsterdam (EOE), Frankfurt (DAX), Hong Kong (Hang Seng), London (FTSE100), New York, (S&P 500), Paris (CAC40), Singapore (Singapore All Shares) and Tokyo (Nikkei) are provided. The exchange rates are the Australian dollar, British pound, Canadian dollar, German DeutschMark, Dutch guilder, French franc, Japanese yen and the Swiss franc, all expressed as number of units of the foreign currency per US dollar. The sample period for the stock indexes runs from 6 January 1986 until 31 December 1997, whereas for the exchange rates the sample covers the period from 2 January 1980 until 31 December 1997.

Investigate financial volatility using this data with ARCH and GARCH models. Do stock returns appear to exhibit volatility? Do exchange rates?

There are many other things you can do using these data, depending on your interests. For example, an issue much studied by financial researchers is whether volatility in financial markets differs depending on the frequency a financial market is observed. For instance, stock markets might be more volatile when observed every day than when observed monthly. You could investigate this issue using this data set. Note that it is available at a daily frequency. When you work with weekly data you can use data every Wednesday. For monthly frequency use the last day of each month.

References

Barro, R. (1991) Economic growth in a cross section of countries. *Quarterly Journal of Economics*, **106** (2), 407–43.

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Franses, P.H. and Van Dijk, D. (2000) *Nonlinear Time Series Models in Empirical Finance*, Cambridge University Press, Cambridge.

Lettau, M. and Ludvigson, S.C. (2001) Consumption, aggregate wealth and expected stock returns. *Journal of Finance*, **56**, 815–49.

Lettau, M. and Ludvigson, S.C. (2004) Understanding trend and cycle in asset values: reevaluating the wealth effect on consumption. *American Economic Review*, **94** (1), 276–99.

Appendix B: Data Directory

Data file	Content	Data type	Chapter
ADVERT.XLS	Sales and advertising expenditure	Cross-sectional, $N = 84$ companies	Chapters 4 and 5
CAY.XLS	Consumption, assets and income	Time series, $T = 206$ quarters	Appendix A
COMPUTE1.XLS	Percentage change in computer purchases and employee productivity	Time series, $T = 98$ months	Chapter 10
COMPUTER.XLS	Percentage change in computer purchases and employee productivity	Time series, $T = 98$ months	Chapter 10
CORMAT.XLS	Artificial variables labeled Y, X and Z	Cross-sectional, $N = 20$	Chapter 3
EDUC.XLS	Education spending, GDP growth	Time series, 1910 through 1995, $T = 86$ years	Chapter 8
ELECTRIC.XLS	Cost of electricity production, output produced and price of inputs	Cross-sectional, $N = 123$ companies	Chapters 4, 5, and 6
EQUITY.XLS	Firm share value, debt, sales, income, assets, SEO dummy	Cross-sectional, $N = 309$ companies	Appendix A

Data file	Content	Data type	Chapter
EX34.XLS	Artificial variables labeled Y, $X1$, $X2$ and $X3$	Cross-sectional, $N = 20$	Chapter 3
EX46.XLS	Artificial variables labeled Y and X	Cross-sectional, $N = 50$	Chapter 4
EXRUK.XLS	UK pound/US dollar exchange rate	Time series, January 1947 through October, 1996, $T = 598$ months	Chapter 2
FIG51.XLS	Artificial variables labeled X and Y	Cross-sectional, $N = 5$	Chapter 5
FIG52.XLS	Artificial variables labeled X and Y	Cross-sectional, $N = 100$	Chapter 5
FIG53.XLS	Artificial variables labeled X and Y	Cross-sectional, $N = 100$	Chapter 5
FIG54.XLS	Artificial variables labeled X and Y	Cross-sectional, $N = 100$	Chapter 5
FIG95.XLS	Artificial variable labeled "b = 0 series"	Time series, $T = 100$	Chapter 9
FIG96.XLS	Artificial variable labeled "b = 0.8 series"	Time series, $T = 100$	Chapter 9
FIG97.XLS	Artificial variable labeled "b = 1 series"	Time series, $T = 100$	Chapter 9
FIG98.XLS	Artificial variable labeled "trend stat"	Time series, $T = 100$	Chapter 9
FOREST.XLS	Forest loss, population density, pasture change, cropland change	Cross-sectional, $N = 70$ countries	Chapters 2, 3, 4, 5 and 6
GDPPC.XLS	Real GDP per capita	Cross-sectional, $N = 90$ countries	Chapters 2 and 5
GROWTH.XLS	GDP growth and explanatory variables	Cross-sectional, $N = 72$ countries	Appendix A
HPRICE.XLS	Housing prices and housing characteristics (e.g. lot size, no. of bedrooms)	Cross-sectional, $N = 546$ houses	Chapters 3, 4, 5, 6 and 7
INCOME.XLS	Log of US personal income and consumption	Time series, 1954Q1 through 1994Q4, $T = 164$ quarters	Chapters 2, 9, 10 and 11
LONGGDP.XLS	Real GDP per capita for Australia, US, UK, Canada	Time series, 1870 through 1993, $T = 124$ years	Chapters 10 and 11
NYSE.XLS	Changes in stock price	Time series, January 1952 through December 1995, $T = 528$ months	Chapter 11

Data file	Content	Data type	Chapter
ORANGE.XLS	Prices of regular oranges and organic oranges	Time series, $T = 181$ months	Chapters 10 and 11
RMPY.XLS	Monthly Treasury Bill rate, price level, money supply, GDP and logged changes of all variables	Time series, 1947Q1 through 1992Q4, $T = 184$ quarters	Chapter 11
SAFETY.XLS and SAFETY1.XLS	Company accident losses, hours spent in safety training	Time series, $T = 60$ months	Chapter 8
STOCK.XLS	Logged stock price data	Time series, $T = 208$ weeks	Chapter 11
WAGE.XLS	Log of UK nominal wages, consumer price index, real GDP, total employment, total potential labor force	Time series, 1855 through 1987, $T = 133$ years	Appendix A
WAGEDISC.XLS	Employee occupation data (e.g. salary, education, experience, sex)	Cross-sectional, $N = 100$ employees	Chapter 7
WP.XLS	Log of UK Wages and Consumer Price Index	Time series, 1857 through 1987, $T = 131$ years	Chapters 10 and 11

User Note

The web site accompanying this book contains a variety of time series and cross-sectional data in Excel file format (".xls").