



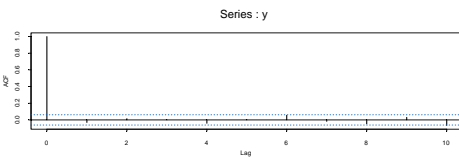
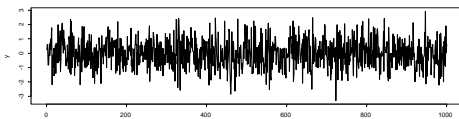
Lecture 2: Time Series Concepts

Econ 512
Eric Zivot
Spring 2009
Updated: March 30, 2009

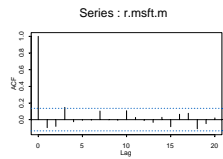
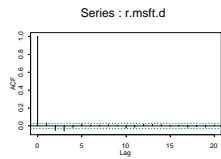
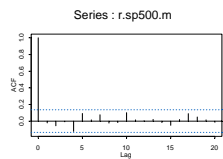
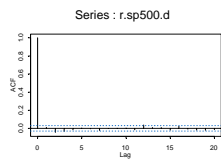
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Gaussian White Noise



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 Test for Autocorrelation: Ljung-Box
 Daily data
 Null Hypothesis: no autocorrelation
 Test Statistics:
 SP500
 Test Stat 35.1892
 p.value 0.0191
 Dist. under Null: chi-square with 20 degrees of freedom
 Total Observ.: 4365

Test for Autocorrelation: Ljung-Box
 Daily data
 Null Hypothesis: no autocorrelation
 Test Statistics:
 MSFT
 Test Stat 43.2323
 p.value 0.0019
 Dist. under Null: chi-square with 20 degrees of freedom
 Total Observ.: 4365

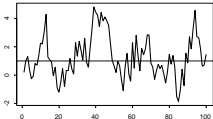
Test for Autocorrelation: Ljung-Box
 Monthly Data
 Null Hypothesis: no autocorrelation
 Test Statistics:
 SP500
 Test Stat 13.0075
 p.value 0.8771
 Dist. under Null: chi-square with 20 degrees of freedom
 Total Observ.: 208

Test for Autocorrelation: Ljung-Box
 Monthly Data
 Null Hypothesis: no autocorrelation
 Test Statistics:
 MSFT
 Test Stat 20.9779
 p.value 0.3984
 Dist. under Null: chi-square with 20 degrees of freedom
 Total Observ.: 208

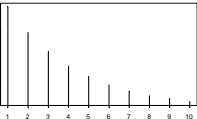
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UW
 Simulated AR(1) with $\phi = 0.75$

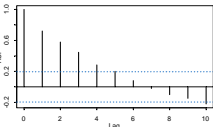
Simulated AR(1)



ACF and IRF for AR(1)



Series : y.ar1

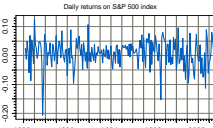


Half-Life
 $> \log(0.5)/\log(0.75)$
 [1] 2.409421


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 Overlapping Annual Returns from Monthly Returns

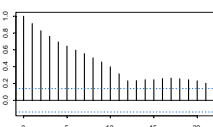
Daily returns on S&P 500 Index



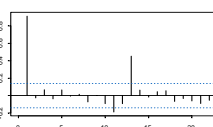
Monthly Annual returns on S&P 500 Index



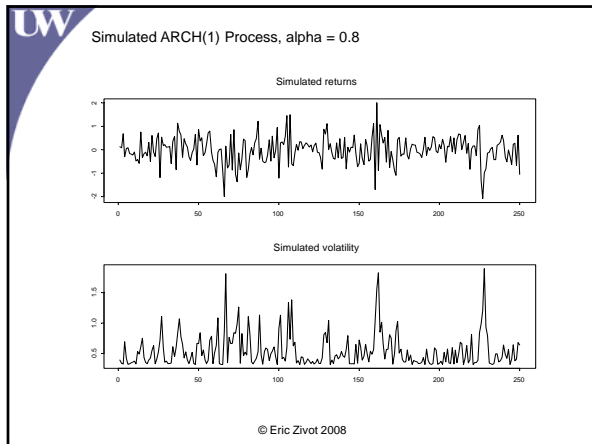
Series : r.sp500.aret

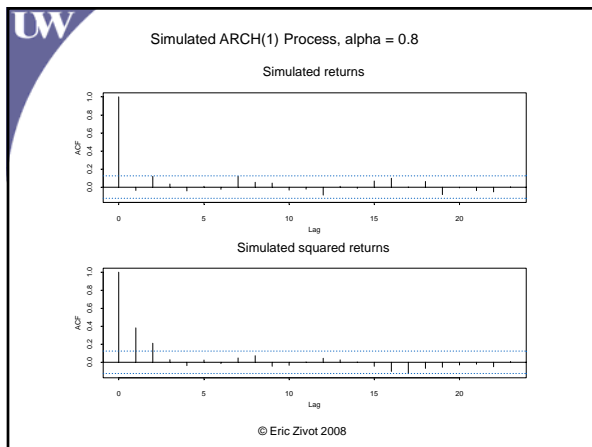


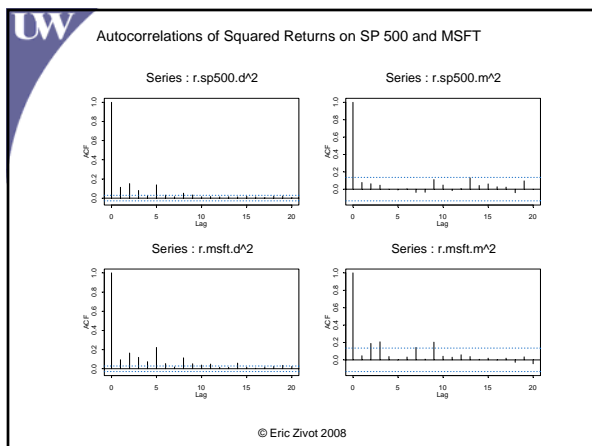
Series : r.sp500.aret

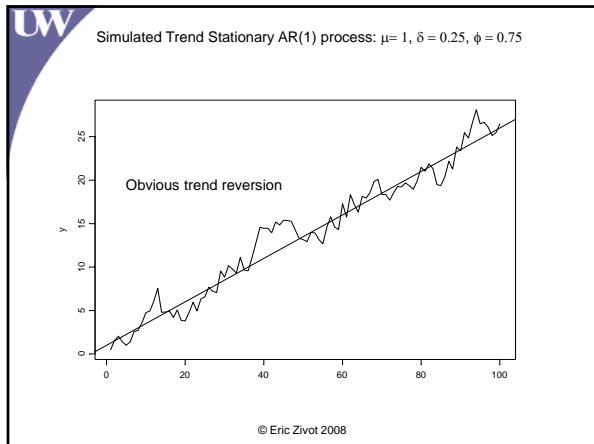


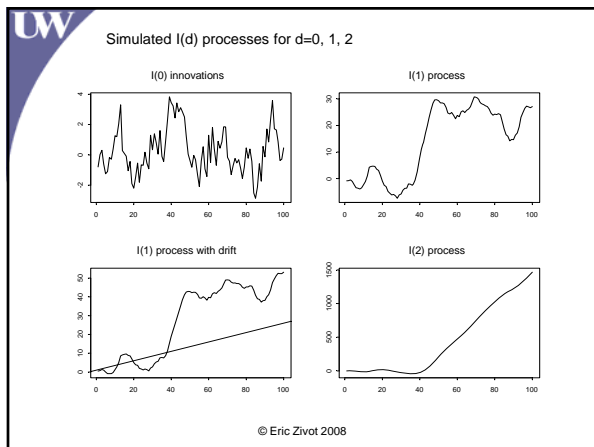
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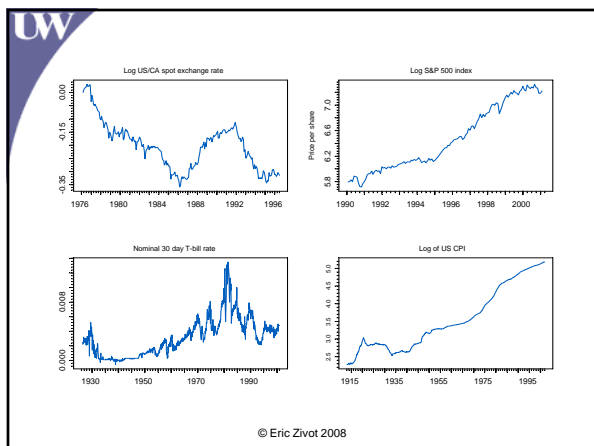


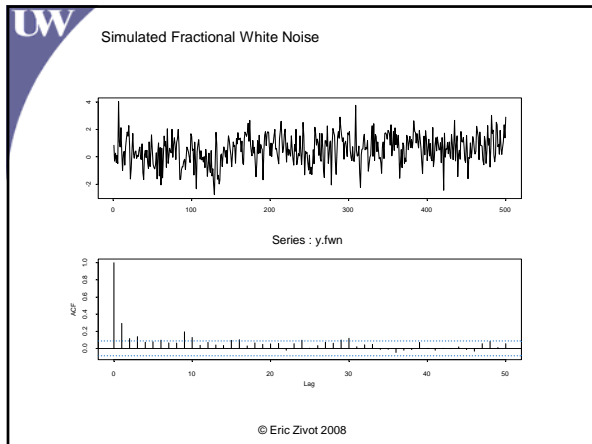


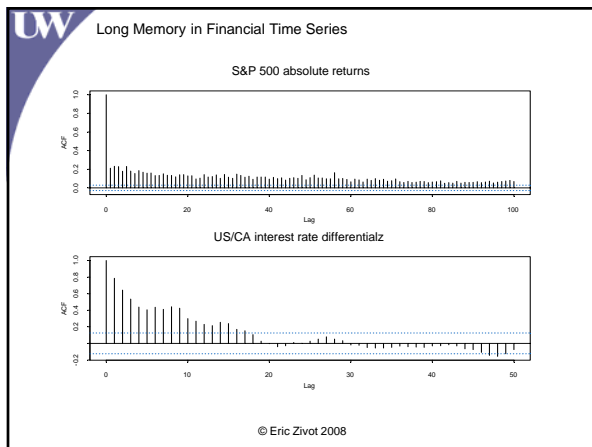












R/S Test for Long Memory in Absolute Returns

Test for Long Memory: Modified R/S Test	Test for Long Memory: R/S Test
Null Hypothesis: no long-term dependence	Null Hypothesis: no long-term dependence
Test Statistics: SP500 5.0707**	Test Statistics: SP500 8.8471**
* : significant at 5% level ** : significant at 1% level	* : significant at 5% level ** : significant at 1% level
Total Observ.: 4365 Bandwidth : 10	Total Observ.: 4365 Bandwidth : 0

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