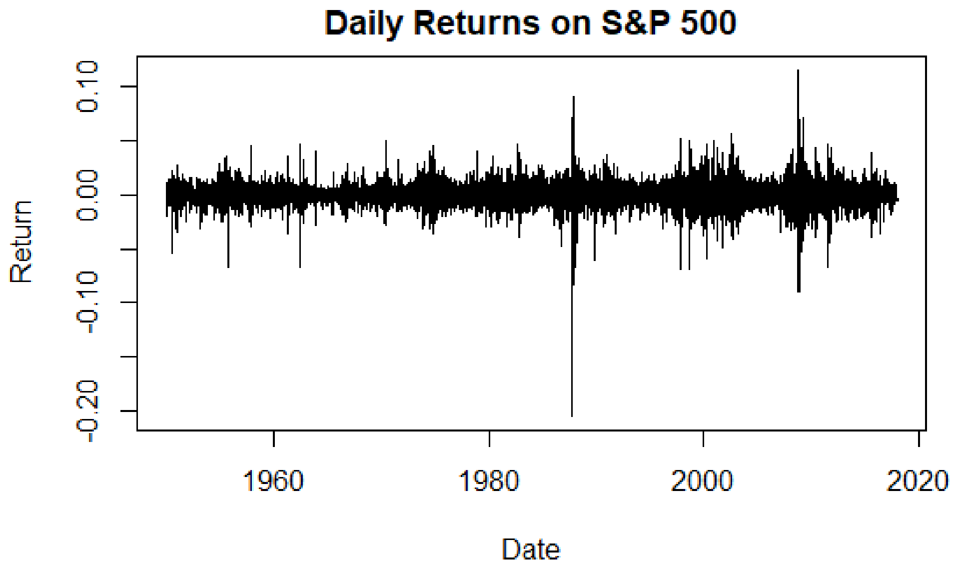
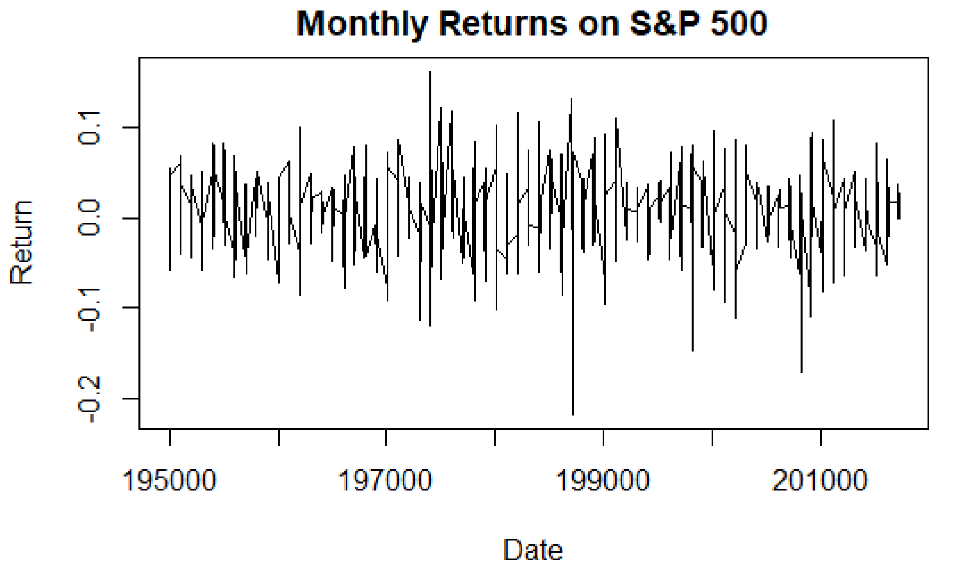
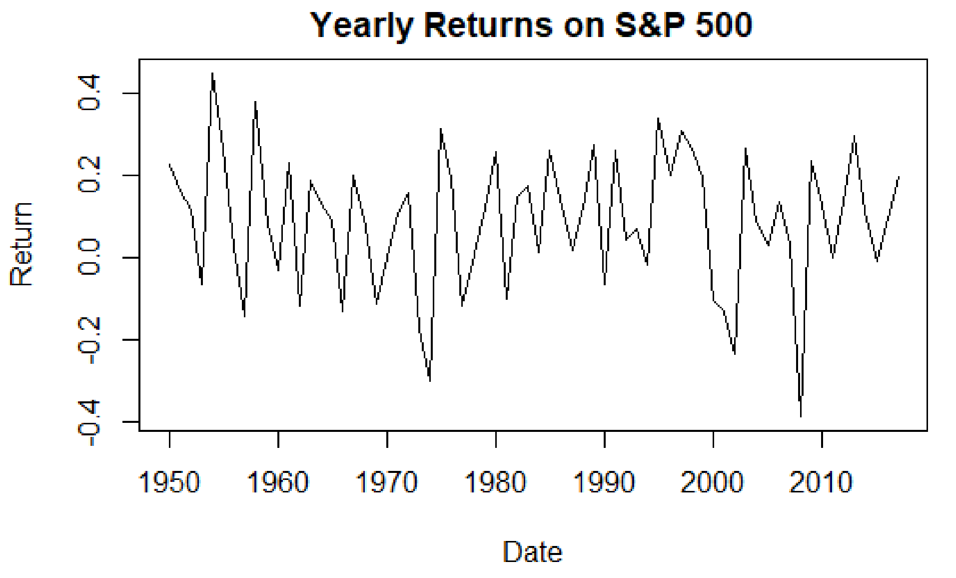
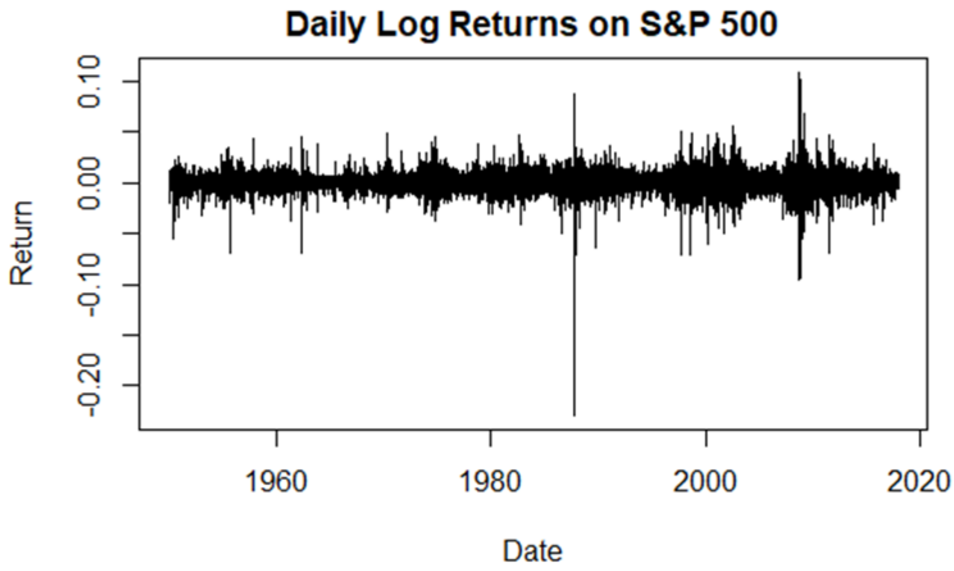
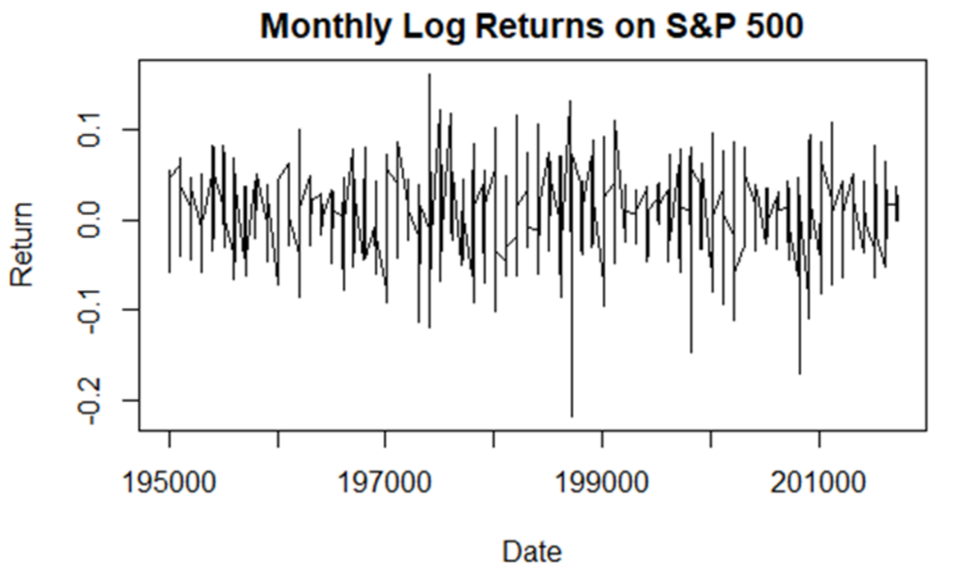
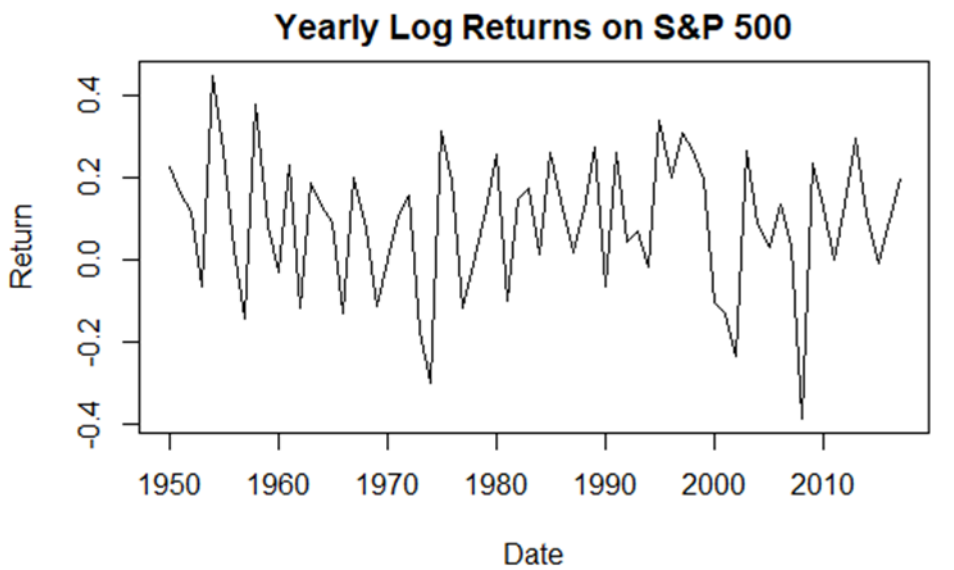
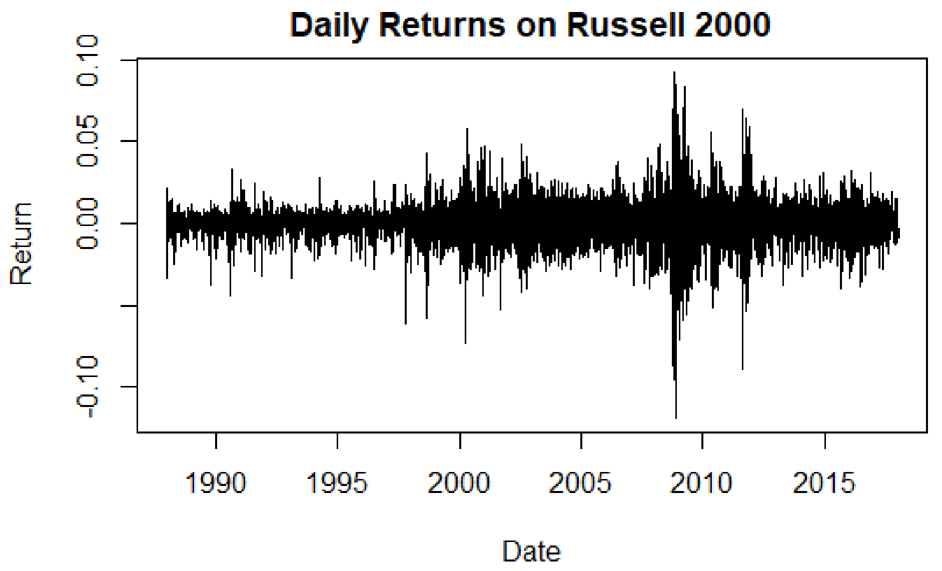
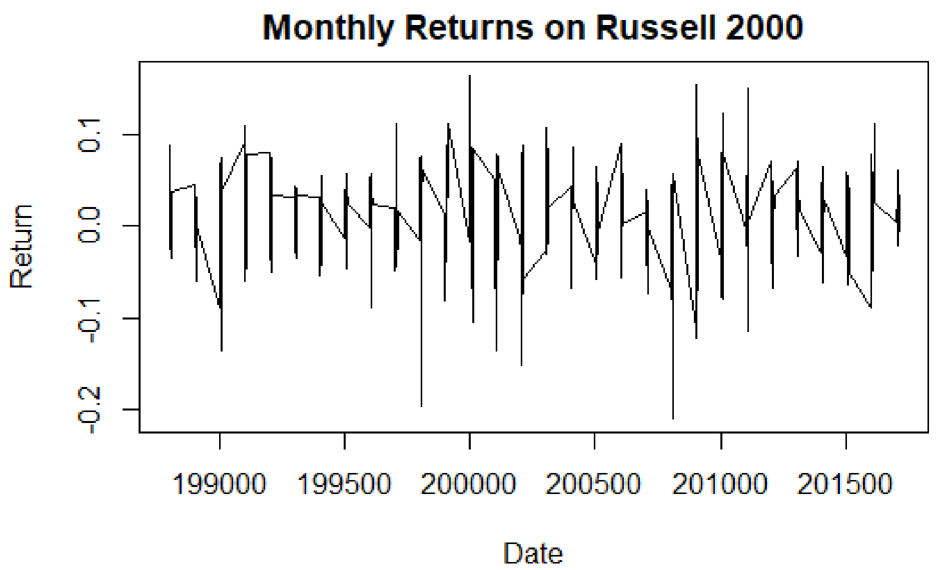
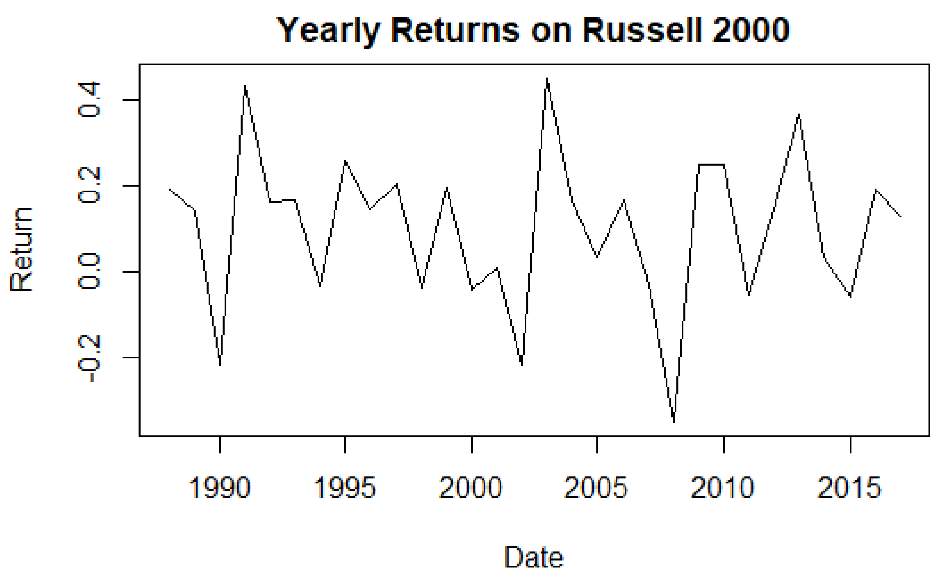
Question 1 – S&P 500

Time series	Plot of returns
Returns Daily	
Returns Monthly	
Returns Yearly	

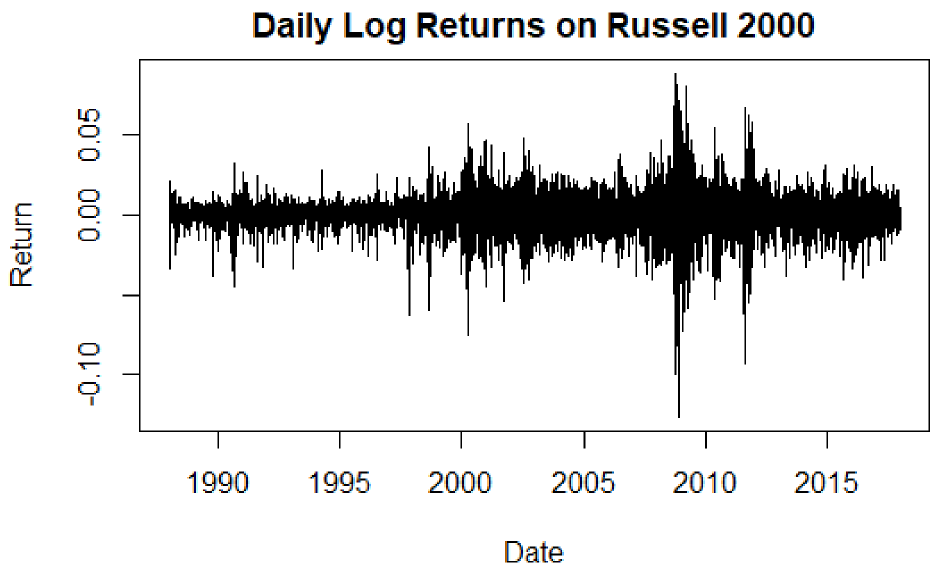
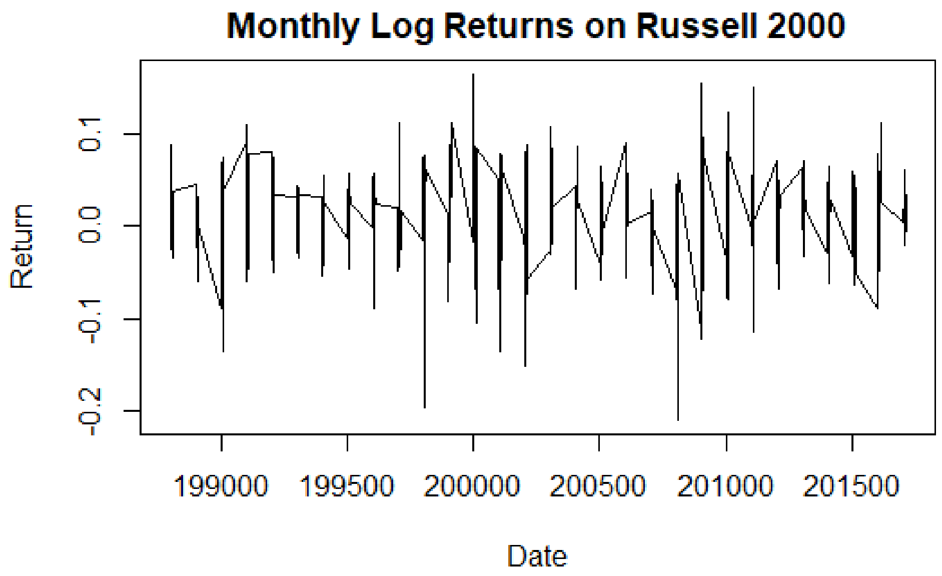
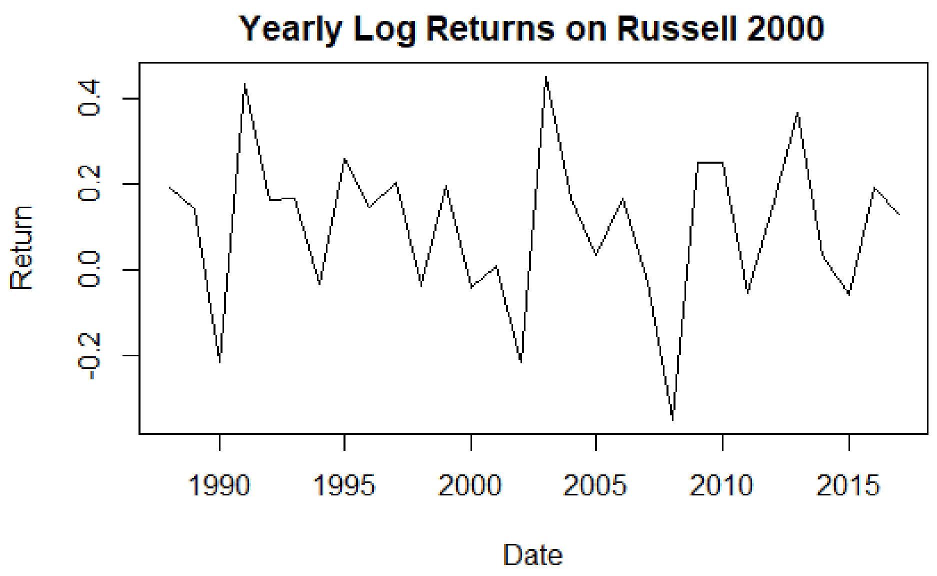
Question 1 – S&P 500

Time series	Plot of returns
Log returns Daily	
Log returns Monthly	
Log returns Yearly	

Question 1 – Russell 2000

Time series	Plot of returns
Returns Daily	
Returns Monthly	
Returns Yearly	

Question 1 – Russell 2000

Time series	Plot of returns
Log returns Daily	
Log returns Monthly	
Log returns Yearly	

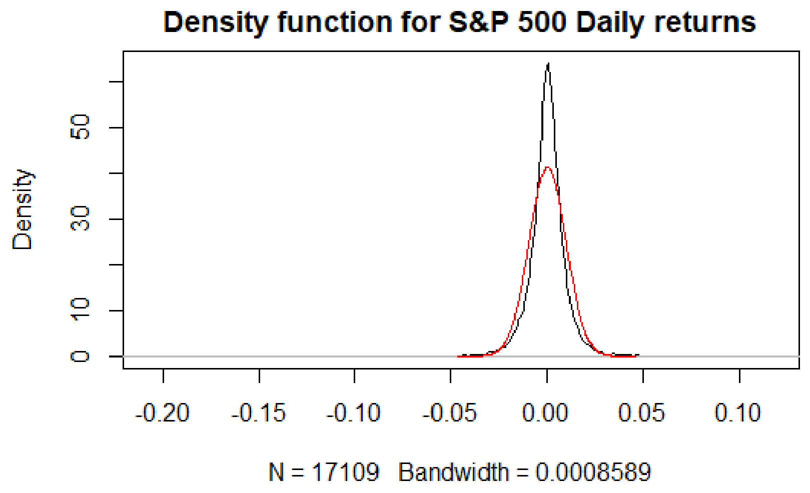
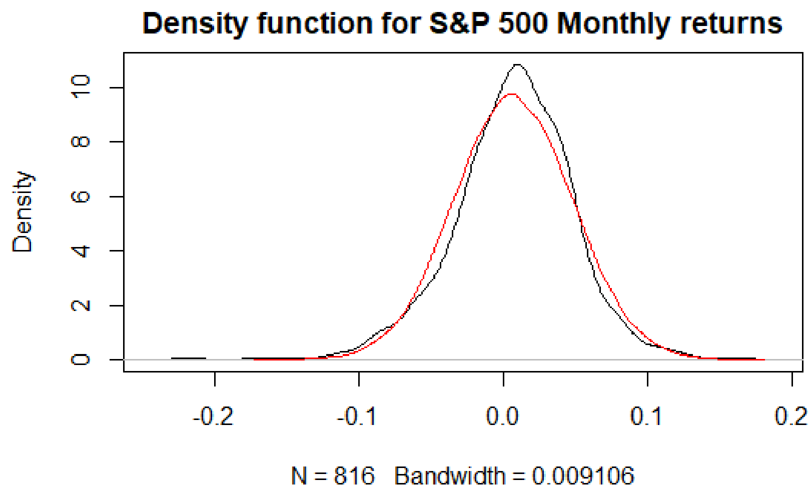
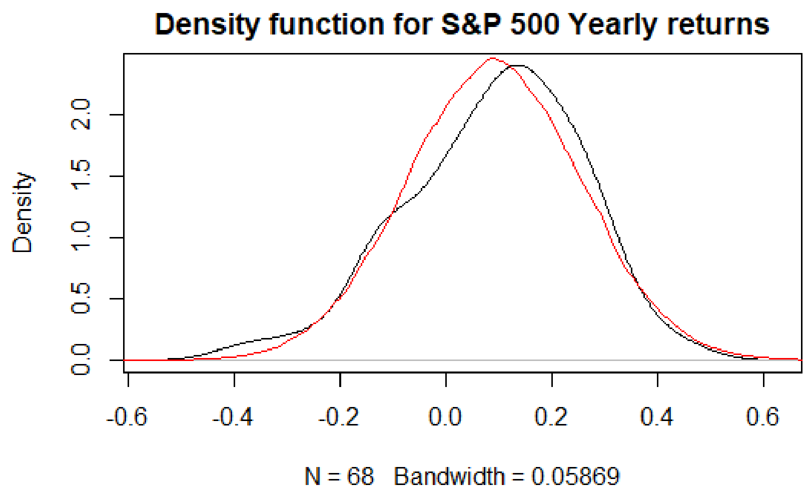
Question 2 – S&P 500

Time series	Sample Mean	Sample Std Dev	Sample Skewness	Sample Kurtosis
Returns Daily	0.03432417 %	0.009608086	-0.64431	24.03687
Returns Monthly	0.7090804 %	0.04104048	-0.4286023	4.804351
Returns Yearly	9.084287 %	0.1649238	-0.4621956	3.078019
Log returns Daily	0.0296813 %	0.009645192	-1.016242	30.40106
Log returns Monthly	0.6223253 %	0.0412572	-0.6678307	5.531857
Log returns Yearly	7.467903 %	0.1618273	-0.9589001	4.193338

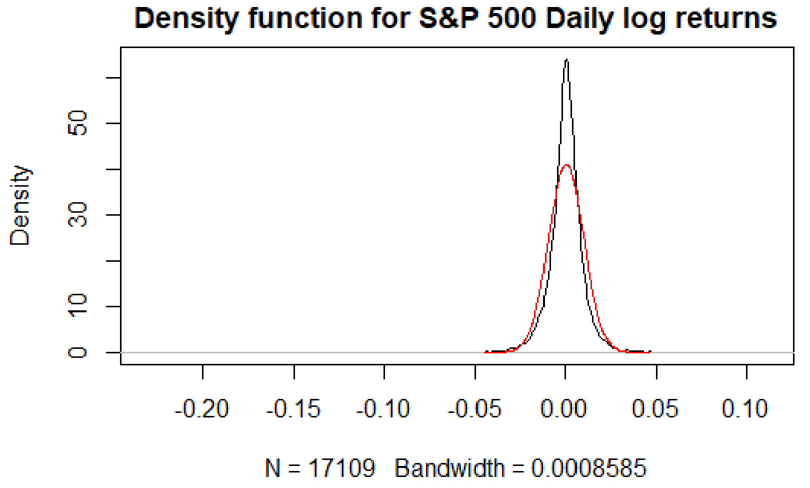
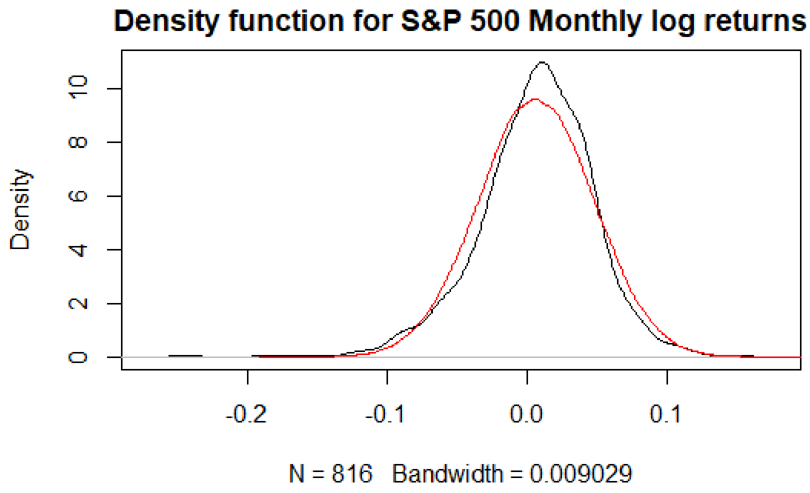
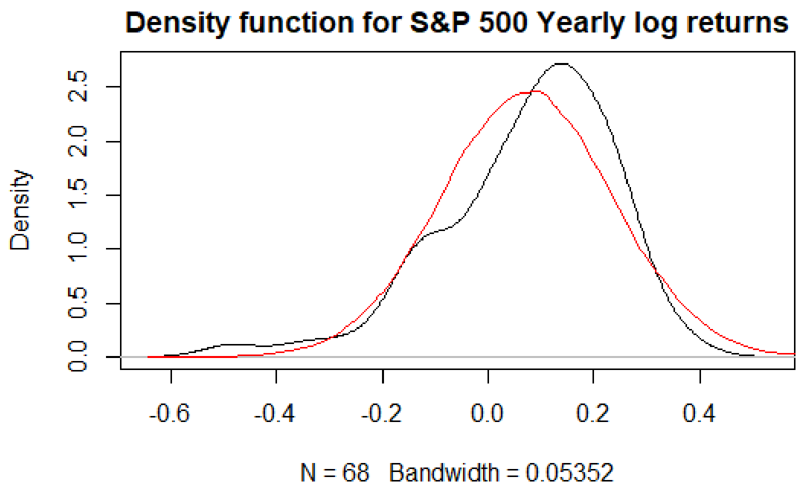
Question 2 – Russell 2000

Time series	Sample Mean	Sample Std Dev	Sample Skewness	Sample Kurtosis
Returns Daily	0.04140406 %	0.01268298	-0.230769	9.647057
Returns Monthly	0.8440984 %	0.05287949	-0.5229669	4.159285
Returns Yearly	10.3712 %	0.1842329	-0.3543695	3.081865
Log returns Daily	0.03333832 %	0.01270516	-0.3969321	9.987913
Log returns Monthly	0.7001046 %	0.05342805	-0.7655969	4.748311
Log returns Yearly	8.401256 %	0.17867	-0.8841062	3.870639

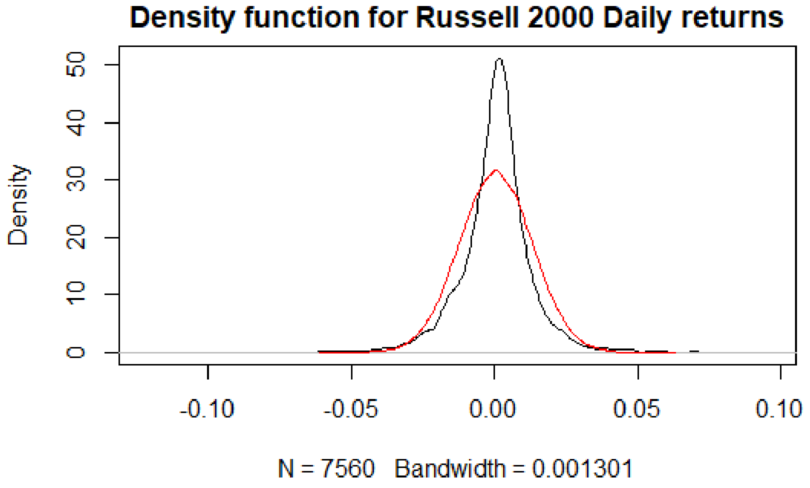
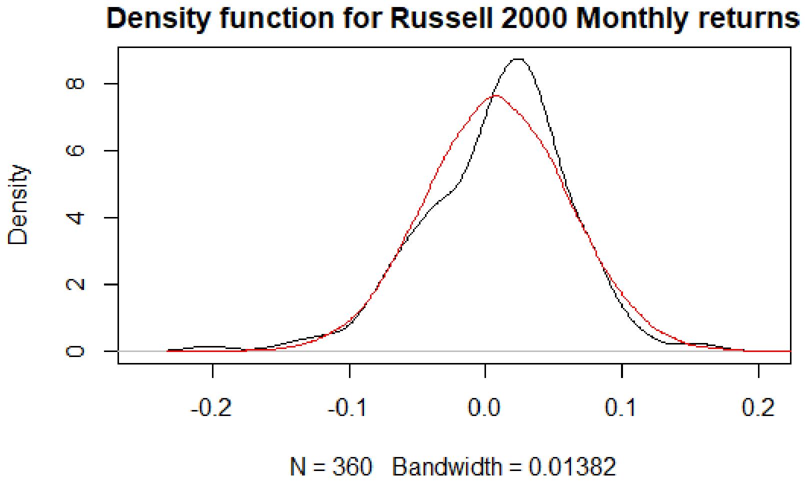
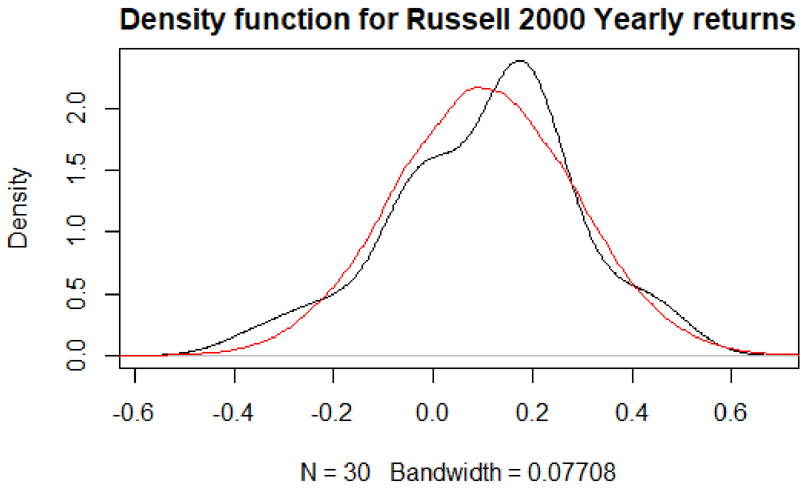
Question 3 – S&P 500

<table>
<tr><th>Time series</th><th>Plot of probability density function & normal pdf</th><th>Are returns normally distributed?</th></tr>
<tr><td>Returns Daily</td><td>
</td><td>Yes</td></tr>
<tr><td>Returns Monthly</td><td>
</td><td>Yes</td></tr>
<tr><td>Returns Yearly</td><td>
</td><td>No</td></tr>
</table>

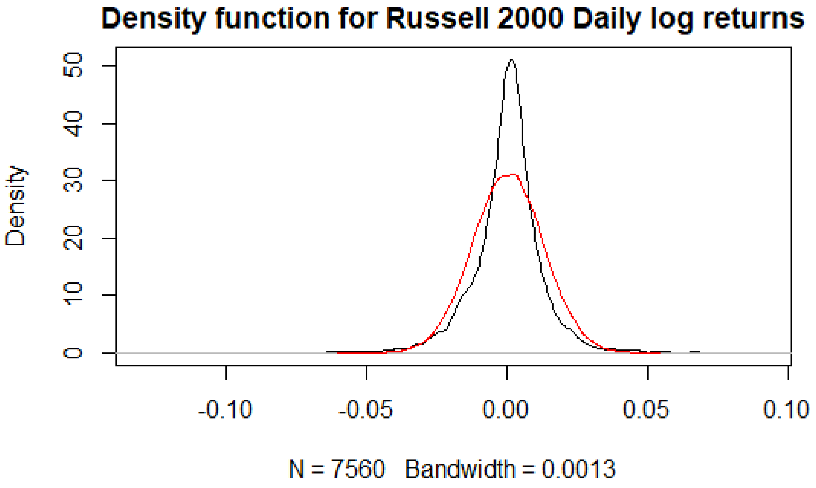
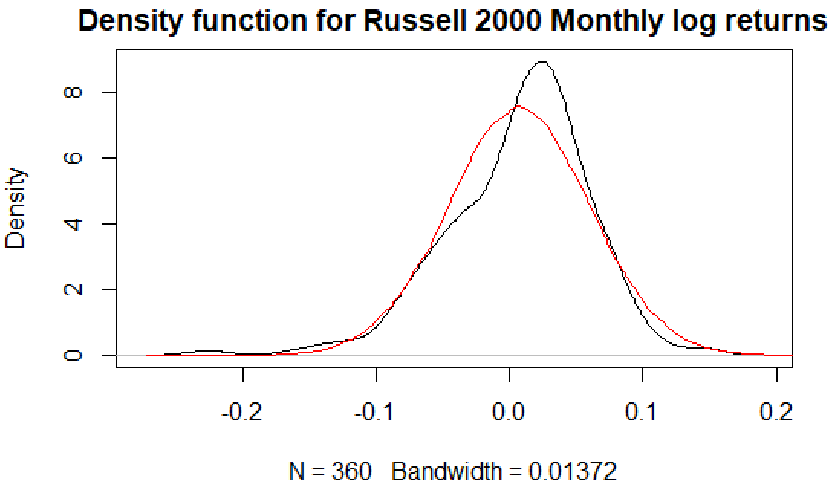
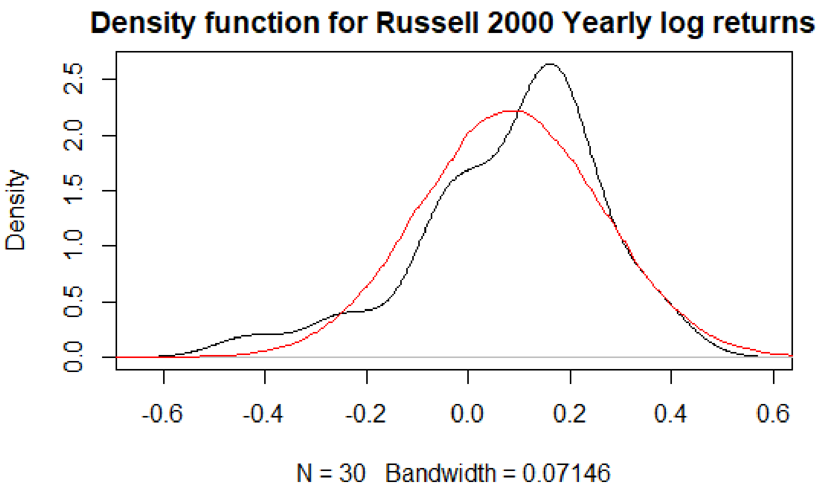
Question 3 – S&P 500

Time series	Plot of probability density function & normal pdf	Are returns normally distributed?
Log returns Daily		Yes
Log returns Monthly		Yes
Log returns Yearly		Yes

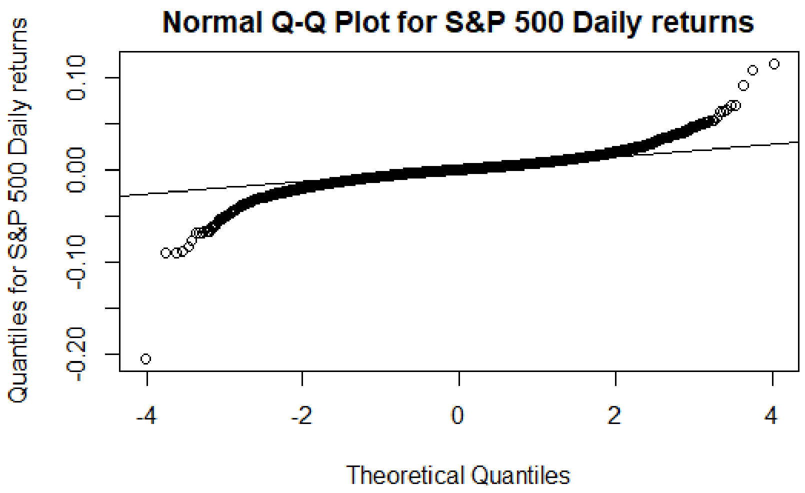
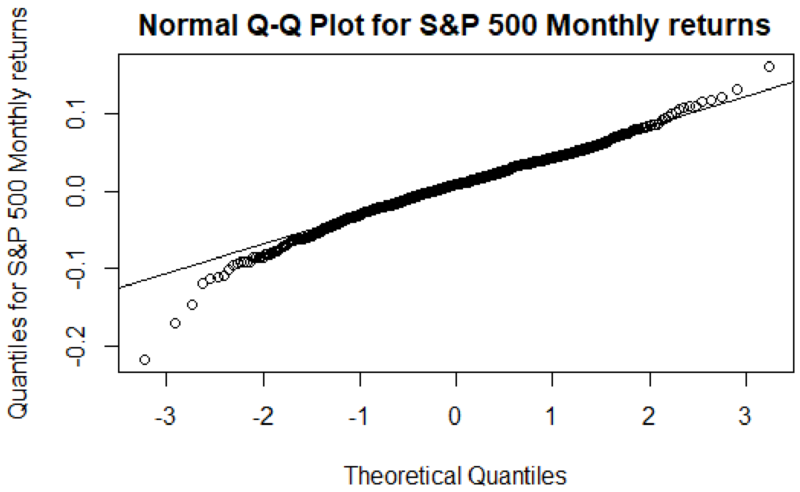
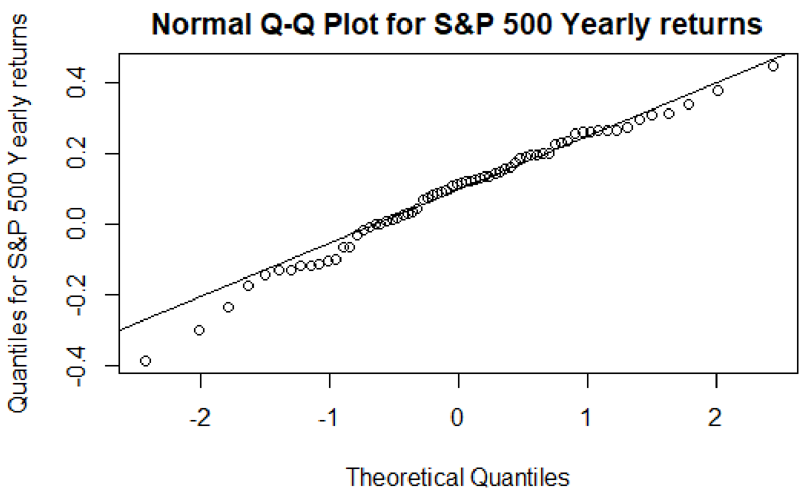
Question 3 – Russell 2000

Time series	Plot of probability density function & normal pdf	Are returns normally distributed?
Returns Daily		Yes
Returns Monthly		Yes
Returns Yearly		No

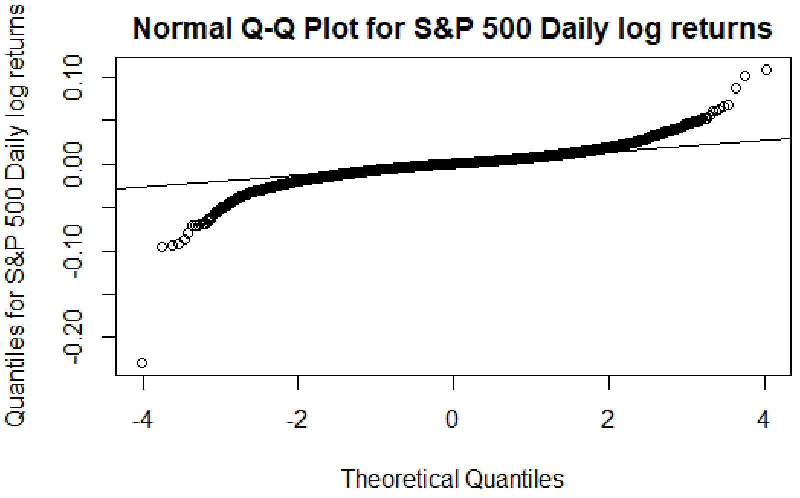
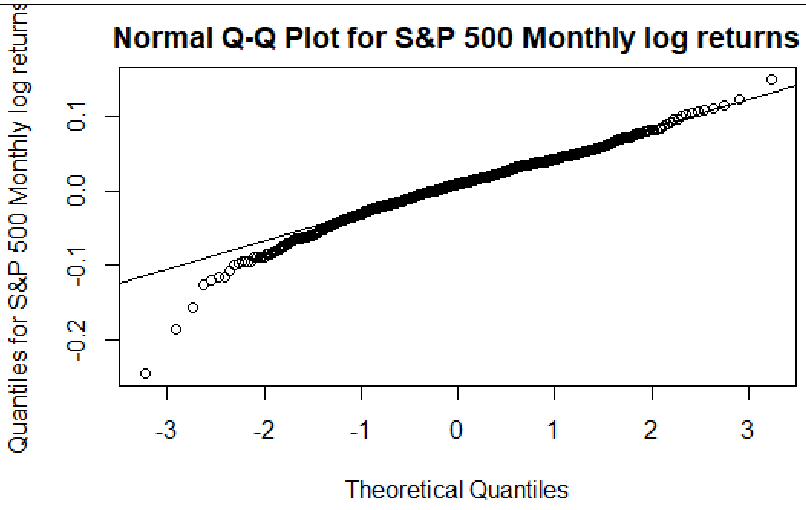
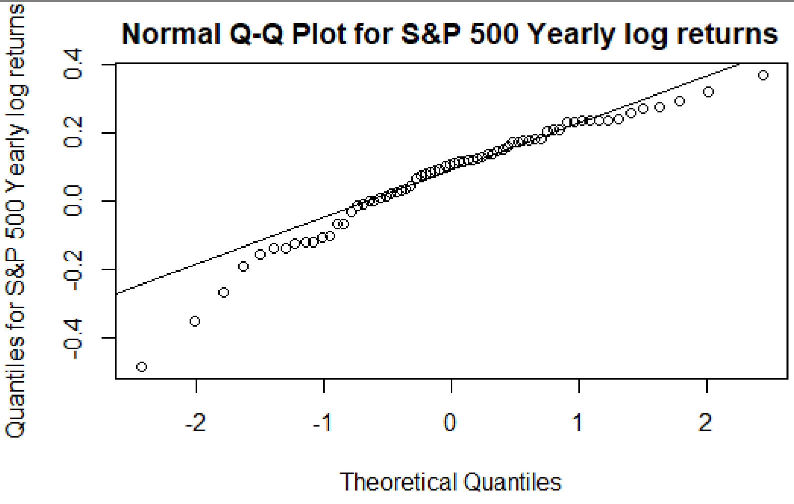
Question 3 – Russell 2000

<table>
<tr><th>Time series</th><th>Plot of probability density function & normal pdf</th><th>Are returns normally distributed?</th></tr>
<tr><td>Log returns Daily</td><td>
</td><td>Yes</td></tr>
<tr><td>Log returns Monthly</td><td>
</td><td>Yes</td></tr>
<tr><td>Log returns Yearly</td><td>
</td><td>No</td></tr>
</table>

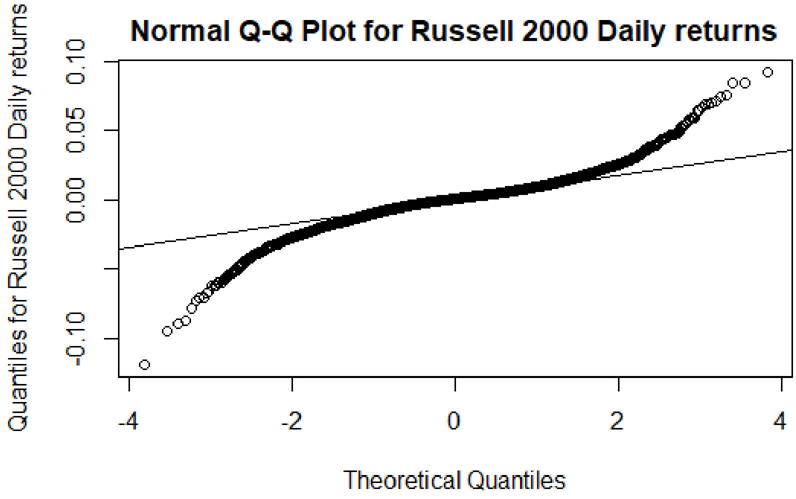
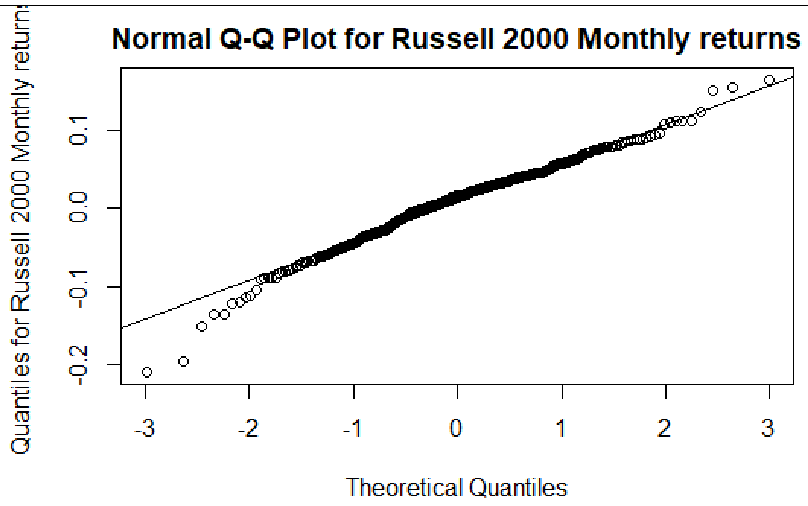
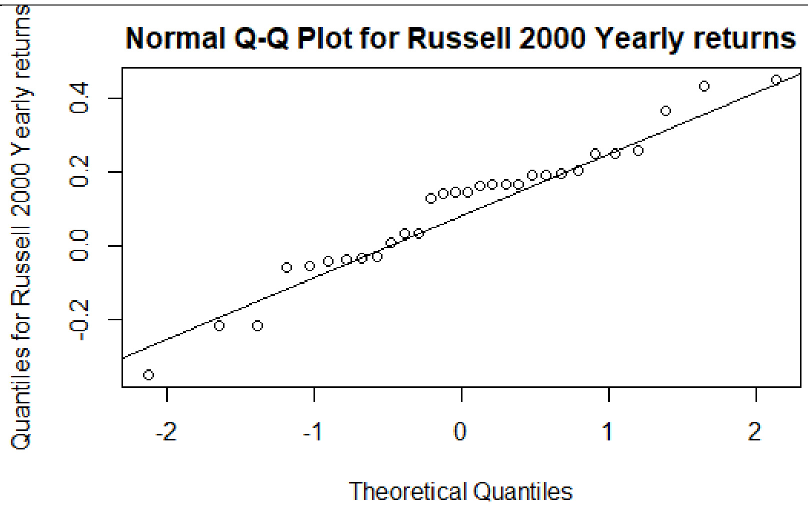
Question 4 – S&P 500

Time series	QQ-plot	Are returns normally distributed?
Returns Daily		No
Returns Monthly		Yes
Returns Yearly		Yes

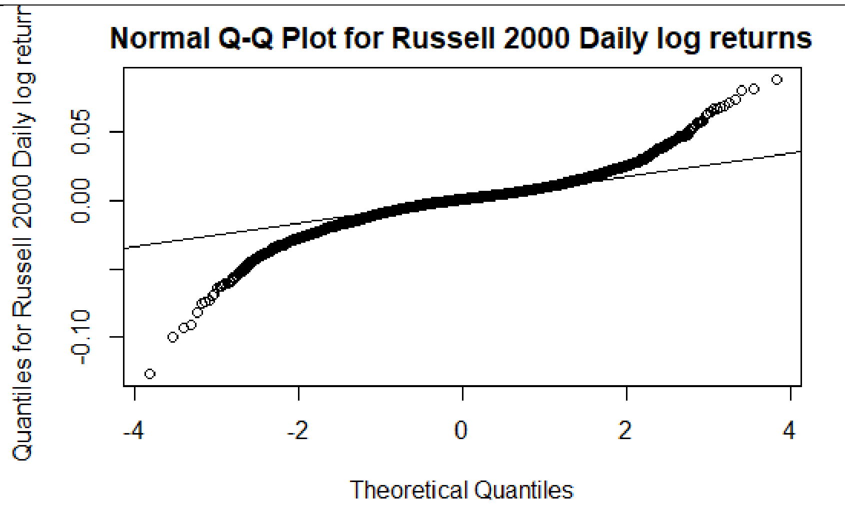
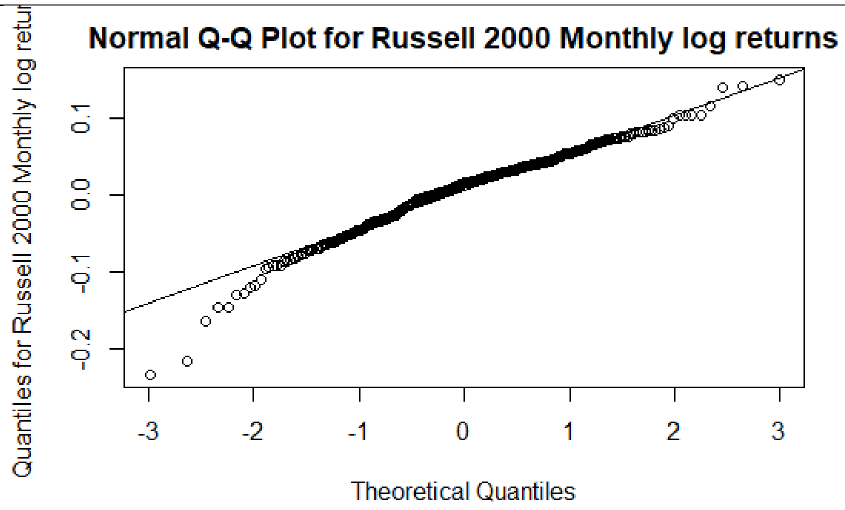
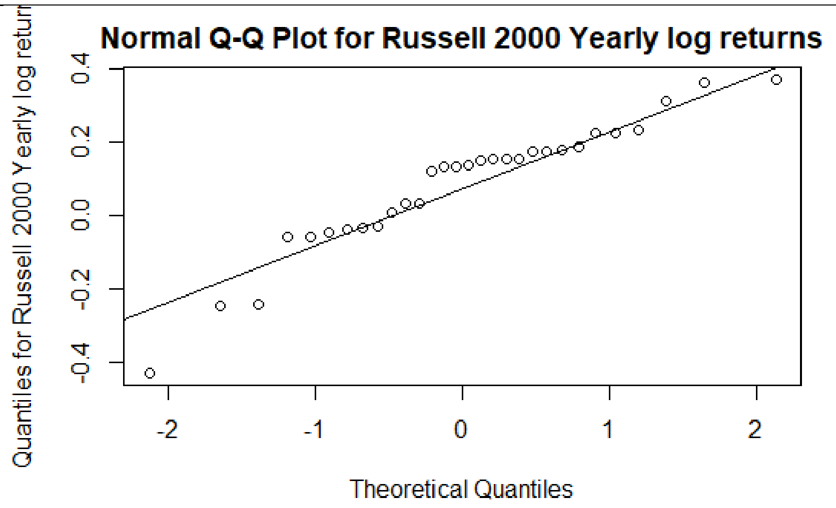
Question 4 – S&P 500

Time series	QQ-plot	Are returns normally distributed?
Log returns Daily		No
Log returns Monthly		Yes
Log returns Yearly		No

Question 4 – Russell 2000

Time series	QQ-plot	Are returns normally distributed?
Returns Daily		No
Returns Monthly		Yes
Returns Yearly		Yes

Question 4 – Russell 2000

Time series	QQ-plot	Are returns normally distributed?
Log returns Daily		No
Log returns Monthly		Yes
Log returns Yearly		Yes

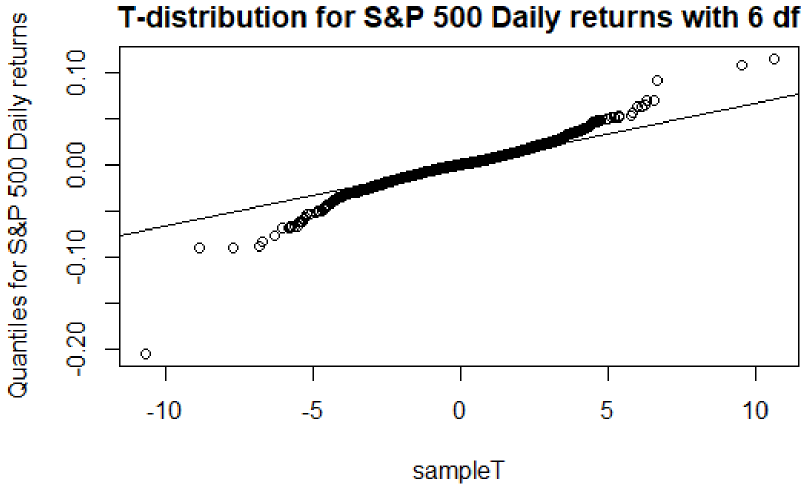
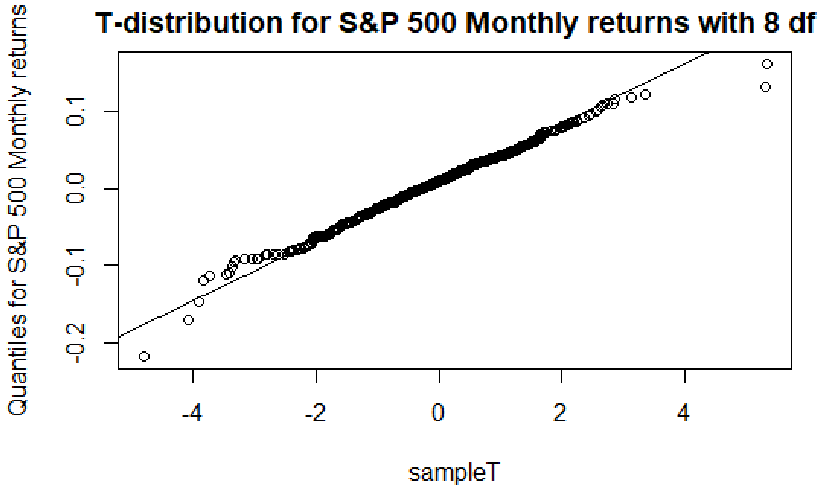
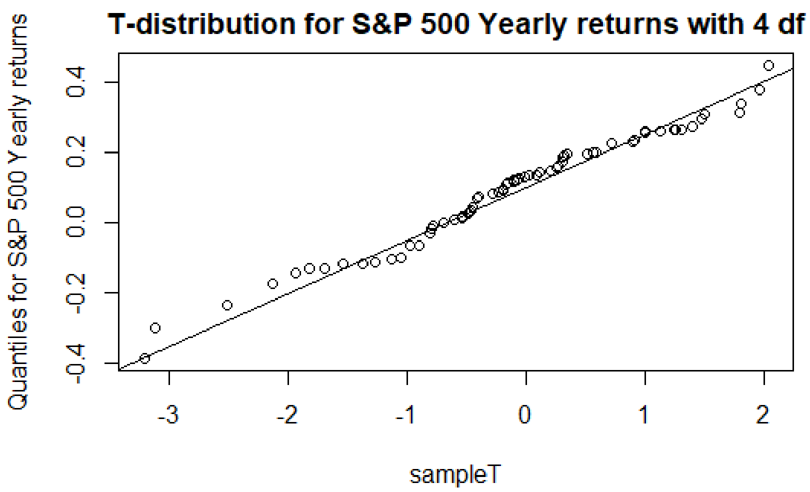
Question 5 – S&P 500

Time series	P-value	Can you reject null hypothesis of a normal distribution at 0.01?
Returns Daily	2.2e-16	No
Returns Monthly	2.36e-08	No
Returns Yearly	0.4282	Yes
Log returns Daily	2.2e-16	No
Log returns Monthly	3.145e-11	No
Log returns Yearly	0.005177	No

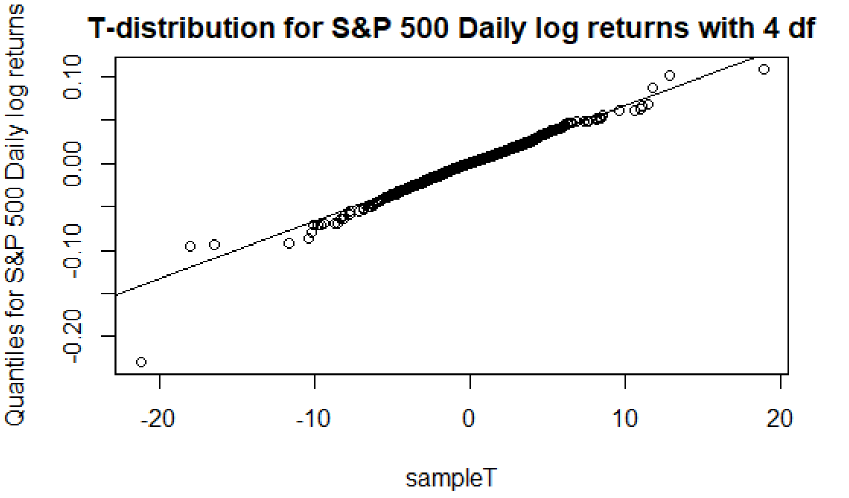
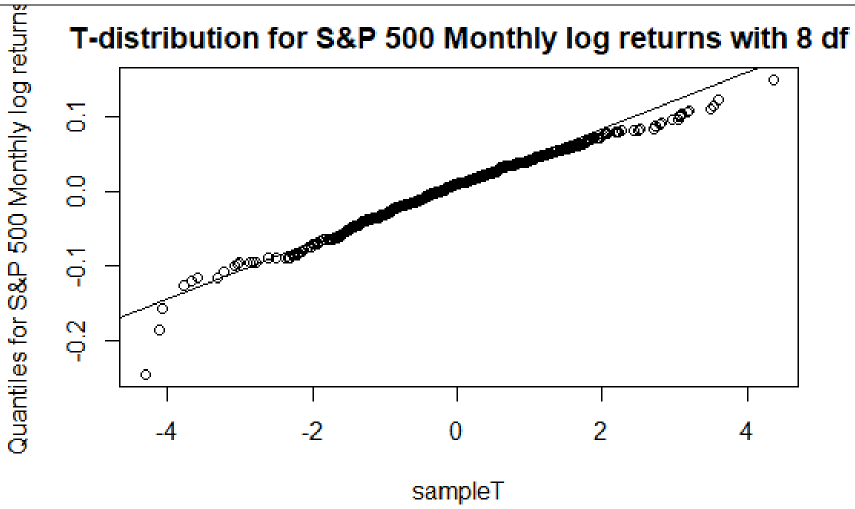
Question 5 – Russell 2000

Time series	P-value	Can you reject null hypothesis of a normal distribution at 0.01?
Returns Daily	2.2e-16	No
Returns Monthly	6.008e-05	No
Returns Yearly	0.3176	Yes
Log returns Daily	2.2e-16	No
Log returns Monthly	2.663e-07	No
Log returns Yearly	0.04078	Yes

Question 6 – S&P 500

Time series	QQ-plot with best t-distribution	Degrees of freedom best t-distribution
Returns Daily		6
Returns Monthly		8
Returns Yearly		4

Question 6 – S&P 500

<table>
<tr><th>Time series</th><th>QQ-plot with best t-distribution</th><th>Degrees of freedom best t-distribution</th></tr>
<tr><td>Log returns Daily</td><td>
</td><td>4</td></tr>
<tr><td>Log returns Monthly</td><td>
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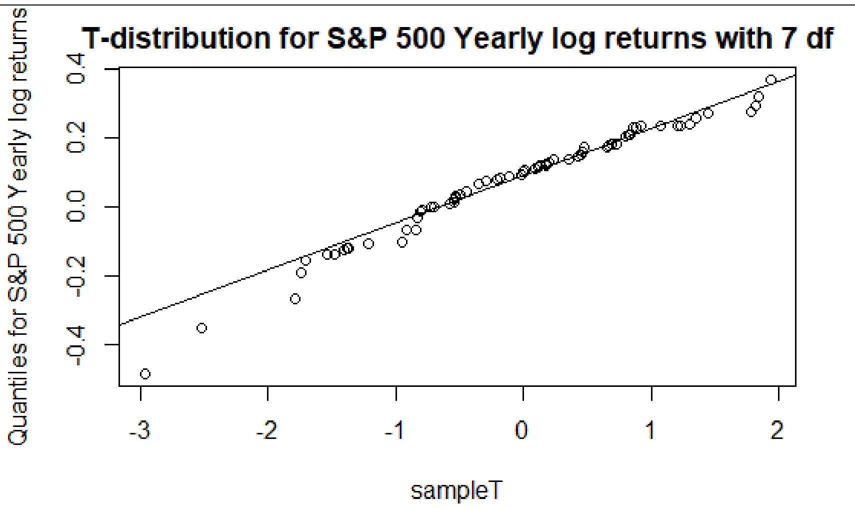
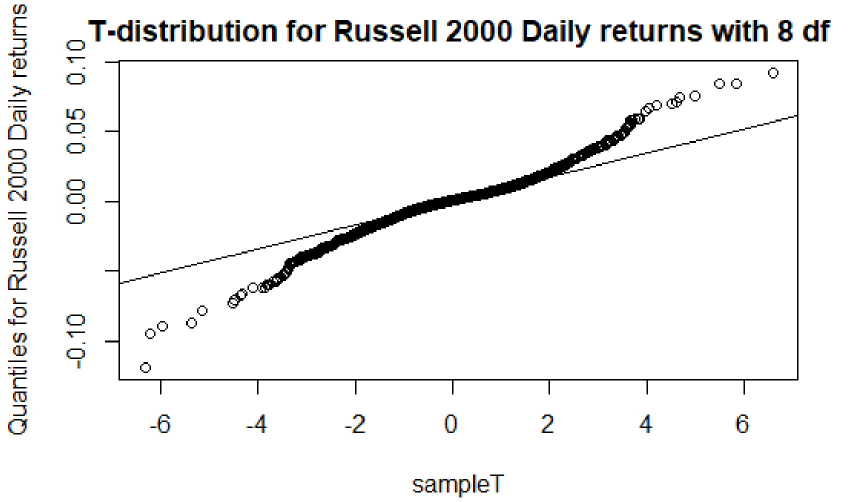
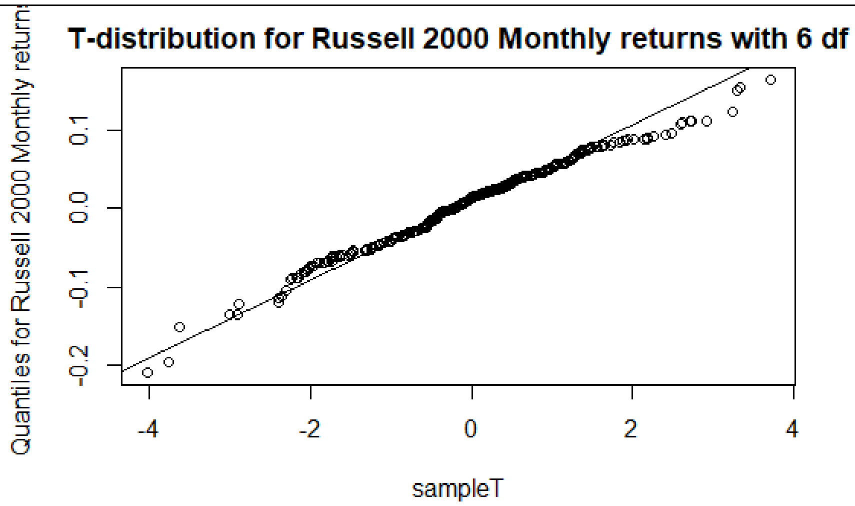
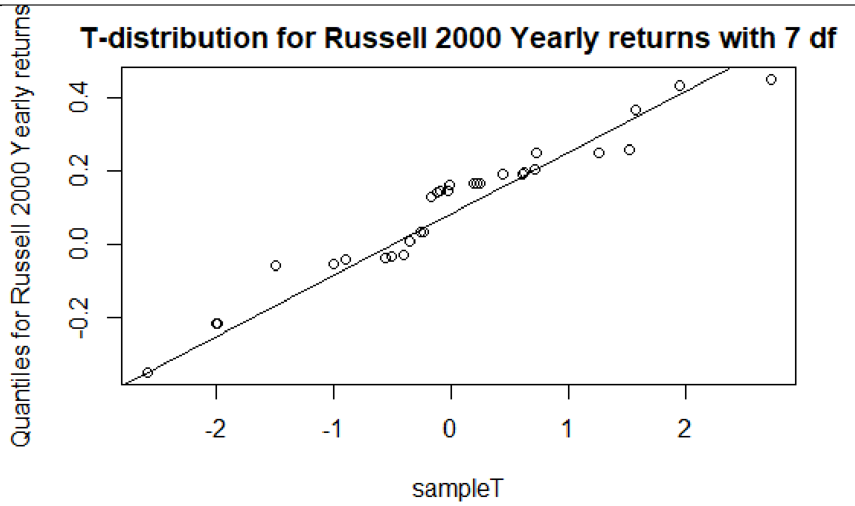
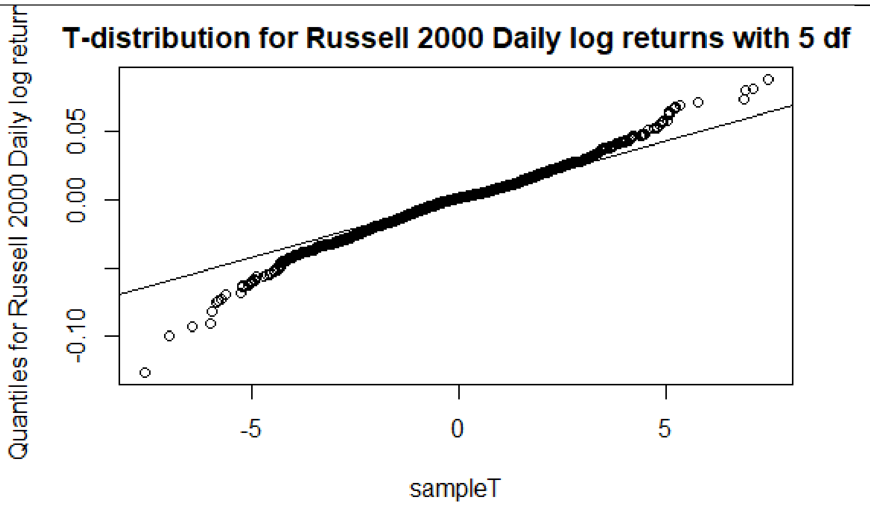
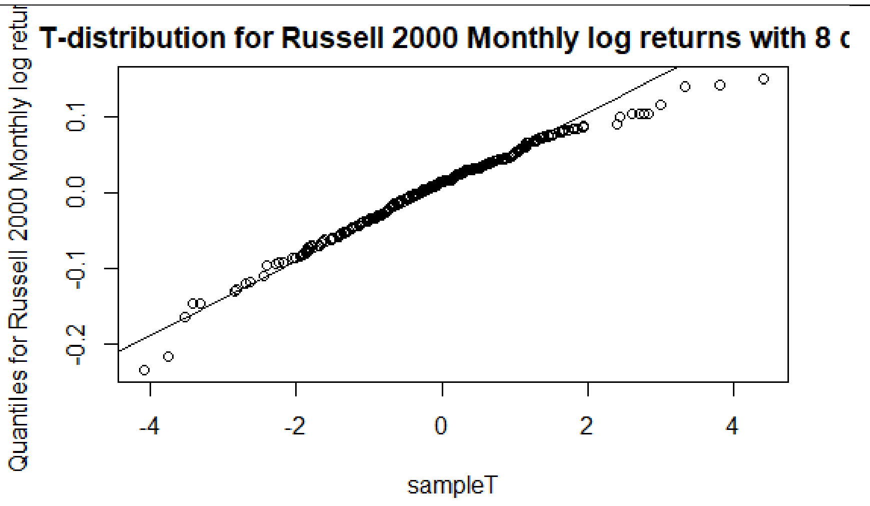
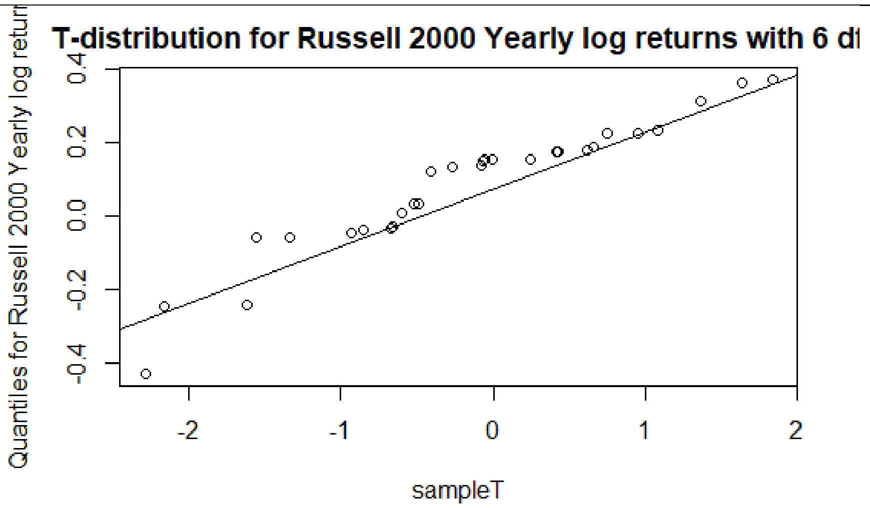
<tr><td>Log returns Yearly</td><td>
</td><td>7</td></tr>
</table>

Question 6 – Russell 2000

Time series	QQ-plot with best t-distribution	Degrees of freedom best t-distribution
Returns Daily		8
Returns Monthly		6
Returns Yearly		7

Question 6 – Russell 2000

Time series	QQ-plot with best t-distribution	Degrees of freedom best t-distribution
Log returns Daily		5
Log returns Monthly		8
Log returns Yearly		6