Appendix A: Normality & Random Walk 1 & 3

B01_AAPL_D

Checking for Normality

Jarque-Bera Statistic: 3932.875
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.044**
	(0.020)
lag2	-0.015
	(0.020)
lag3	-0.013
	(0.020)
lag4	-0.0005
	(0.020)
lag5	0.020
	(0.020)
lag6	-0.024
	(0.020)
lag7	0.083***
	(0.020)
lag8	-0.087***
	(0.020)
lag9	0.064***
	(0.020)
lag10	-0.026
	(0.020)
Constant	0.001**
	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	4.87884573819343*
lag2	5.41357068059669
lag3	5.85740749636997
lag4	5.85793815076691

	Q
lag5	6.83495059811615
lag6	8.26996647036309
lag7	25.5796449932712*
lag8	44.3883032874203*
lag9	54.6989410814337*
lag10	56.339356360054*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0441145	2.910710	2	0.9558855	2.910710	-1.2972494
2	-0.0146045	2.704921	3	0.9314443	6.376783	-1.3620227
3	-0.0133056	2.001424	4	0.9125709	9.754375	-1.4044228
4	-0.0004601	2.234775	5	0.9010628	12.984979	-1.3774646
5	0.0197412	2.510536	6	0.8999712	16.167660	-1.2480822
6	-0.0239250	2.435147	7	0.8923557	19.348705	-1.2277406
7	0.0830936	2.012374	8	0.9074175	22.508858	-0.9790248
8	-0.0866167	2.416948	9	0.8998841	25.644372	-0.9918562
9	0.0641306	2.216108	10	0.9066835	28.765006	-0.8729070
10	-0.0255800	2.178612	11	0.9075957	31.868305	-0.8212101

Returns are Random Walk 3

B02_IBM_D

Checking for Normality

Jarque-Bera Statistic: 12522.24
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.022
	(0.020)
lag2	0.012
	(0.020)
lag3	-0.003
	(0.020)
lag4	-0.041**

	(0.020)
lag5	0.043**
	(0.020)
lag6	-0.053***
	(0.020)
lag7	0.076***
	(0.020)
lag8	-0.052***
	(0.020)
lag9	0.065***
	(0.020)
lag10	-0.003
	(0.020)
Constant	0.00005
	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	1.22521353972694
lag2	1.56615707917243
lag3	1.585820465863
lag4	5.76746446426536
lag5	10.4958181151057
lag6	17.4118945100388*
lag7	32.0634185419914*
lag8	38.8605856420315*
lag9	49.3313734973313*
lag10	49.3521793686339*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0221069	2.955715	2	0.9778931	2.955715	-0.6451179
2	0.0116618	4.067697	3	0.9782986	7.062469	-0.4096863
3	-0.0028006	3.844031	4	0.9771010	11.679063	-0.3361657
4	-0.0408410	2.417107	5	0.9600461	16.271030	-0.4969276
5	0.0434288	2.843744	6	0.9631524	20.676052	-0.4065525
6	-0.0525234	3.251186	7	0.9503645	24.978185	-0.4982567
7	0.0764477	2.376527	8	0.9598856	29.188534	-0.3725086
8	-0.0520699	3.936160	9	0.9557197	33.357951	-0.3846384
9	0.0646268	2.635472	10	0.9653123	37.520010	-0.2841090
10	-0.0028808	2.629516	11	0.9726371	41.645845	-0.2127246

Returns are Random Walk 3

B03_MAR_D

Checking for Normality

Jarque-Bera Statistic: 11647.6
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	0.040**
	(0.020)
lag2	0.016
	(0.020)
lag3	-0.042**
	(0.020)
lag4	-0.016
	(0.020)
lag5	-0.037*
	(0.020)
lag6	-0.052***
	(0.020)
lag7	0.033
	(0.020)
lag8	-0.027
	(0.020)
lag9	0.013
	(0.020)
lag10	-0.025
	(0.020)
Constant	0.001
	(0.0004)

Note: *p<0.1; **p<0.05;** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	4.11085419153654*
lag2	4.7133203886146
lag3	9.09763685373185*
lag4	9.74144747312327*
lag5	13.0960211319459*
lag6	19.8082383002205*
lag7	22.5143319036837*
lag8	24.3288806905579*
lag9	24.7502061259691*

	Q
lag10	26.3276659930518*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0404938	4.801804	2	1.0404938	4.801804	0.9271036
2	0.0155021	5.770466	3	1.0643265	11.101191	0.9686047
3	-0.0418190	3.880956	4	1.0553333	17.544763	0.6627571
4	-0.0160251	4.360709	5	1.0435273	23.783613	0.4477800
5	-0.0365798	4.370580	6	1.0234634	29.901618	0.2152709
6	-0.0517435	3.415446	7	0.9943482	35.866614	-0.0473462
7	0.0328545	3.447495	8	0.9807254	41.641556	-0.1498525
8	-0.0269034	3.393820	9	0.9641513	47.242098	-0.2616677
9	0.0129638	4.402981	10	0.9534848	52.733025	-0.3213622
10	-0.0250843	3.242977	11	0.9401969	58.146454	-0.3934626

Returns are Random Walk 3

B04_GOOG_D

Checking for Normality

Jarque-Bera Statistic: 6444.632
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.050**
	(0.020)
lag2	-0.015
	(0.020)
lag3	-0.017
	(0.020)
lag4	-0.026
	(0.020)
lag5	-0.010
	(0.020)
lag6	-0.050**
	(0.020)

lag7	0.041**
	(0.020)
lag8	-0.079***
	(0.020)
lag9	0.051**
	(0.020)
lag10	-0.006
	(0.020)
Constant	0.001**
	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	6.38823503419663*
lag2	6.9154690580289*
lag3	7.65352308828291
lag4	9.29423467030522
lag5	9.52687370446028
lag6	15.7292126431085*
lag7	20.0116047211134*
lag8	35.684441946706*
lag9	42.3213264514901*
lag10	42.4101139622997*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0504793	2.429936	2	0.9495207	2.429936	-1.62464112002873
2	-0.0145019	2.205686	3	0.9230263	5.300192	-1.67740491523051
3	-0.0171580	2.088646	4	0.9012002	8.195204	-1.73148182982671
4	-0.0255823	1.976578	5	0.8778716	11.049810	-1.84323639006071
5	-0.0096331	2.043460	6	0.8591081	13.865219	-1.89829720080767
6	-0.0497394	1.982686	7	0.8314944	16.651748	-2.07169583400577*
7	0.0413301	1.784119	8	0.8211166	19.401185	-2.03749897397355*
8	-0.0790673	1.636133	9	0.7954746	22.099376	-2.18272464113003*
9	0.0514523	1.619029	10	0.7852513	24.740772	-2.16603490869686*
10	-0.0059511	1.561296	11	0.7758049	27.326283	-2.15167910965012*

Returns are not Random Walk 3

B05_TSLA_D

Checking for Normality

Jarque-Bera Statistic: 2641.848
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.006
	(0.020)
lag2	0.031
	(0.020)
lag3	0.021
	(0.020)
lag4	-0.009
	(0.020)
lag5	-0.012
	(0.020)
lag6	-0.024
	(0.020)
lag7	0.040**
	(0.020)
lag8	0.009
	(0.020)
lag9	0.029
	(0.020)
lag10	0.017
	(0.020)
Constant	0.001**
	(0.001)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.096787
lag2	2.501142
lag3	3.606418
lag4	3.824293
lag5	4.193520
lag6	5.642025
lag7	9.618044
lag8	9.839443
lag9	11.877394
lag10	12.611742

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0062134	2.012328	2	0.9937866	2.012328	-0.2197474
2	0.0309686	2.314108	3	1.0123612	4.605964	0.2889626
3	0.0209970	1.853877	4	1.0321470	7.305314	0.5967093
4	-0.0093224	1.679543	5	1.0402896	9.939082	0.6411520
5	-0.0121358	1.679915	6	1.0416726	12.490766	0.5915591
6	-0.0240371	1.294210	7	1.0357928	14.945982	0.4644887
7	0.0398242	1.503988	8	1.0413390	17.308226	0.4985114
8	0.0093975	1.452140	9	1.0477410	19.600150	0.5410076
9	0.0285115	1.194933	10	1.0585649	21.825984	0.6289153
10	0.0171149	1.614006	11	1.0705326	23.999347	0.7223238

Returns are Random Walk 3

B06_KO_D

Checking for Normality

Jarque-Bera Statistic: 12276.7
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.017
	(0.020)
lag2	0.017
	(0.020)
lag3	-0.031
	(0.020)
lag4	-0.080***
	(0.020)
lag5	0.062***
	(0.020)
lag6	-0.042**
	(0.020)
lag7	0.057***
	(0.020)
lag8	-0.012
	(0.020)
lag9	0.044**

	(0.020)
lag10	-0.039**
	(0.020)
Constant	0.0004
	(0.0002)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.722607573051025
lag2	1.43945627980858
lag3	3.82833450897569
lag4	19.9922736126786*
lag5	29.5634410305178*
lag6	33.905383958885*
lag7	41.9269106304662*
lag8	42.2599297954501*
lag9	47.1336628629725*
lag10	51.0142217592761*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0169775	4.275861	2	0.9830225	4.275861	-0.4119115
2	0.0169097	5.208961	3	0.9886365	9.916625	-0.1810394
3	-0.0308688	5.351188	4	0.9760091	16.167445	-0.2993424
4	-0.0802965	5.001544	5	0.9363140	22.672116	-0.6710261
5	0.0617882	5.142444	6	0.9304467	29.283246	-0.6448365
6	-0.0416164	5.658679	7	0.9143654	36.001337	-0.7160308
7	0.0565655	3.539339	8	0.9164457	42.706265	-0.6414524
8	-0.0115254	4.732971	9	0.9155026	49.317190	-0.6036509
9	0.0440914	4.312041	10	0.9235663	55.847200	-0.5131278
10	-0.0393432	4.136903	11	0.9230106	62.289912	-0.4893994

Returns are Random Walk 3

B07_NKE_D

Checking for Normality

Jarque-Bera Statistic: 12734.83

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.029
	(0.020)
lag2	-0.019
	(0.020)
lag3	-0.031
	(0.020)
lag4	-0.059***
	(0.020)
lag5	0.034*
	(0.020)
lag6	-0.041**
	(0.020)
lag7	0.043**
	(0.020)
lag8	-0.037*
	(0.020)
lag9	0.012
	(0.020)
lag10	-0.004
	(0.020)
Constant	0.001**
	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	2.16968045565634
lag2	3.1161740861209
lag3	5.60225730395631
lag4	14.4439086061098*
lag5	17.4213526352595*
lag6	21.6110659577352*
lag7	26.2258733672445*
lag8	29.6090903254286*
lag9	29.9914352009037*
lag10	30.0270714656337*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0294185	2.925466	2	0.9705815	2.925466	-0.8629086
2	-0.0194304	3.223557	3	0.9478217	6.633521	-1.0163876

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
3	-0.0314906	1.891741	4	0.9206965	10.278791	-1.2409741
4	-0.0593867	1.854324	5	0.8806667	13.638522	-1.6211360
5	0.0344623	2.102889	6	0.8654676	16.806603	-1.6463735
6	-0.0408804	2.704388	7	0.8429310	19.916607	-1.7657300
7	0.0429042	2.239648	8	0.8367546	23.021363	-1.7069349
8	-0.0367357	2.990640	9	0.8237873	26.152092	-1.7287239
9	0.0123495	2.211797	10	0.8158833	29.315801	-1.7060191
10	-0.0037702	1.879898	11	0.8087309	32.475338	-1.6838738

Returns are Random Walk 3

B08_MA_D

Checking for Normality

Jarque-Bera Statistic: 7779.729
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.073***
	(0.020)
lag2	-0.021
	(0.020)
lag3	-0.010
	(0.020)
lag4	-0.062***
	(0.020)
lag5	-0.028
	(0.020)
lag6	-0.094***
	(0.020)
lag7	0.057***
	(0.020)
lag8	-0.053***
	(0.020)
lag9	0.036*
	(0.020)
lag10	-0.025
	(0.020)
Constant	0.001***

	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	13.2859481768339*
lag2	14.4049228696133*
lag3	14.6640485387292*
lag4	24.3718599183592*
lag5	26.27885794088*
lag6	48.2526029769574*
lag7	56.4594211126182*
lag8	63.4562896560627*
lag9	66.6671956300285*
lag10	68.265924404258*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0727979	4.202121	2	0.9272021	4.202121	-1.78166669363412
2	-0.0211268	4.102275	3	0.8888516	9.293670	-1.82915844945712
3	-0.0101667	3.047389	4	0.8645930	14.318894	-1.7952626985415
4	-0.0622277	3.307933	5	0.8251468	19.144303	-2.00491260551683*
5	-0.0275802	3.152867	6	0.7896559	23.833391	-2.16161837141204*
6	-0.0936213	4.536414	7	0.7375563	28.531487	-2.46499208367025*
7	0.0572150	3.849366	8	0.7127854	33.316768	-2.49641458013171*
8	-0.0528293	4.181569	9	0.6817793	38.182921	-2.58366085075505*
9	0.0357879	4.286656	10	0.6641320	43.135461	-2.56562432213548*
10	-0.0252528	2.755453	11	0.6451018	48.120911	-2.56671974122667*

Returns are not Random Walk 3

B09_V_D

Checking for Normality

Jarque-Bera Statistic: 8856.087

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:

lag1	-0.114***
	(0.020)
lag2	-0.011
	(0.020)
lag3	-0.004
	(0.020)
lag4	-0.067***
	(0.020)
lag5	-0.013
	(0.020)
lag6	-0.097***
	(0.020)
lag7	0.053***
	(0.020)
lag8	-0.035*
	(0.020)
lag9	0.027
	(0.020)
lag10	-0.037*
	(0.020)
Constant	0.001***
	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	32.4473435264386*
lag2	32.7654931747397*
lag3	32.7964139167493*
lag4	43.9749855135208*
lag5	44.4143631918707*
lag6	67.8616370932201*
lag7	74.8829028762198*
lag8	77.9851485154417*
lag9	79.7993443709231*
lag10	83.1780850271237*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1137660	4.302455	2	0.8862340	4.302455	-2.75166676766727*
2	-0.0112652	3.815369	3	0.8408019	9.344528	-2.61276763201775*
3	-0.0035119	3.052811	4	0.8163299	14.259095	-2.44024907968705*
4	-0.0667753	3.297156	5	0.7749365	18.989760	-2.59111627433894*
5	-0.0132386	3.645217	6	0.7429281	23.657379	-2.65162995560602*
6	-0.0967095	4.933477	7	0.6924336	28.433169	-2.89379523942822*
7	0.0529213	3.444196	8	0.6677931	33.327087	-2.88703151934958*

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
8	-0.0351772	3.160195	9	0.6408112	38.237136	-2.9142161990161*
9	0.0269008	3.905236	10	0.6246057	43.143105	-2.86730278868945*
10	-0.0367113	3.161696	11	0.6046719	48.037261	-2.86160790323791*

Returns are not Random Walk 3

B10_WMT_D

Checking for Normality

Jarque-Bera Statistic: 29649.66
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.054***
	(0.020)
lag2	-0.005
	(0.020)
lag3	-0.011
	(0.020)
lag4	-0.051**
	(0.020)
lag5	-0.010
	(0.020)
lag6	-0.019
	(0.020)
lag7	0.013
	(0.020)
lag8	-0.066***
	(0.020)
lag9	0.060***
	(0.020)
lag10	0.004
	(0.020)
Constant	0.0004*
	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	7.20377112292408*
lag2	7.25825230146374*
lag3	7.57396005176228
lag4	14.209769870505*
lag5	14.4416539747687*
lag6	15.3006824243848*
lag7	15.699039886549*
lag8	26.5950681091155*
lag9	35.7202596639627*
lag10	35.7597937128482*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0536047	5.293206	2	0.9463953	5.293206	-1.168921
2	-0.0046617	3.740772	3	0.9254193	11.072710	-1.124453
3	-0.0112219	3.501337	4	0.9093203	16.525820	-1.119103
4	-0.0514482	1.841384	5	0.8790817	21.472796	-1.309150
5	-0.0096174	1.395957	6	0.8557168	25.828448	-1.424322
6	-0.0185109	2.016036	7	0.8337387	29.736198	-1.529643
7	0.0126055	1.778814	8	0.8204066	33.339814	-1.560452
8	-0.0659260	2.304782	9	0.7953869	36.742984	-1.693510
9	0.0603315	2.621511	10	0.7874375	40.040796	-1.685299
10	0.0039711	2.041106	11	0.7816554	43.273491	-1.665226

Returns are Random Walk 3

B11_META_D

Checking for Normality

Jarque-Bera Statistic: 79915.72
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.031
	(0.020)
lag2	0.005

	(0.020)
lag3	-0.032
	(0.020)
lag4	-0.022
	(0.020)
lag5	-0.011
	(0.020)
lag6	-0.024
	(0.020)
lag7	0.001
	(0.020)
lag8	-0.061***
	(0.020)
lag9	0.031
	(0.020)
lag10	-0.033
	(0.020)
Constant	0.001
	(0.0005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	2.45720006349405
lag2	2.52497915751517
lag3	5.02710325931544
lag4	6.22131191173745
lag5	6.55018968369545
lag6	8.00585922369993
lag7	8.00844690205779
lag8	17.4011973854217*
lag9	19.7746483113622*
lag10	22.4626989311409*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0313071	1.639984	2	0.9686929	1.639984	-1.226493
2	0.0051996	2.496598	3	0.9617236	4.025125	-0.957157
3	-0.0315920	1.499894	4	0.9424429	6.561534	-1.127295
4	-0.0218254	1.862452	5	0.9221444	9.051384	-1.298298
5	-0.0114535	1.343273	6	0.9047941	11.470809	-1.410290
6	-0.0240965	1.621167	7	0.8855164	13.812979	-1.545401
7	0.0010160	1.673692	8	0.8713121	16.111321	-1.608473
8	-0.0612096	1.310005	9	0.8466622	18.367278	-1.795017
9	0.0307690	1.524828	10	0.8330960	20.580504	-1.845782
10	-0.0327447	2.143118	11	0.8160429	22.782636	-1.933554

B12_AMZN_D

Checking for Normality

Jarque-Bera Statistic: 4525.991
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.010
	(0.020)
lag2	0.007
	(0.020)
lag3	-0.028
	(0.020)
lag4	-0.011
	(0.020)
lag5	0.005
	(0.020)
lag6	-0.001
	(0.020)
lag7	0.009
	(0.020)
lag8	-0.054***
	(0.020)
lag9	0.031
	(0.020)
lag10	-0.015
	(0.020)
Constant	0.001*
	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.2263737
lag2	0.3593704
lag3	2.3618021
lag4	2.6424026
lag5	2.7138120

	Q
lag6	2.7163167
lag7	2.9186577
lag8	10.2124315
lag9	12.5964608
lag10	13.1380783

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0095025	2.080074	2	0.9904975	2.080074	-0.3305507
2	0.0072836	1.558919	3	0.9921858	4.390763	-0.1870933
3	-0.0282619	1.570124	4	0.9788989	6.631617	-0.4110899
4	-0.0105795	1.695027	5	0.9666950	8.845917	-0.5617976
5	0.0053370	1.442563	6	0.9603380	11.033149	-0.5990541
6	-0.0009995	1.597918	7	0.9555118	13.191921	-0.6145151
7	0.0089839	1.356763	8	0.9541381	15.321859	-0.5878117
8	-0.0539385	1.377865	9	0.9410833	17.416252	-0.7082764
9	0.0308375	1.413098	10	0.9368070	19.479202	-0.7183322
10	-0.0146984	1.787503	11	0.9306357	21.529031	-0.7500070

Returns are Random Walk 3

B13_MSFT_D

Checking for Normality

Jarque-Bera Statistic: 8827.144
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.124***
	(0.020)
lag2	-0.027
	(0.020)
lag3	-0.007
	(0.020)
lag4	-0.038*
	(0.020)

lag5	-0.015
	(0.020)
lag6	-0.074***
	(0.020)
lag7	0.029
	(0.020)
lag8	-0.100***
	(0.020)
lag9	0.055***
	(0.020)
lag10	-0.019
	(0.020)
Constant	0.001***
	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	38.525933236013*
lag2	40.3320705234892*
lag3	40.4689346160562*
lag4	44.0891588659679*
lag5	44.6185156537376*
lag6	58.2006044316025*
lag7	60.2788326020747*
lag8	85.530960959113*
lag9	93.2435147329856*
lag10	94.1425051342415*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1239651	5.394488	2	0.8760349	5.394488	-2.67772457365409*
2	-0.0268410	3.997107	3	0.8168192	11.366693	-2.72586555320233*
3	-0.0073887	2.693162	4	0.7835170	16.807995	-2.64915496018905*
4	-0.0380006	2.790443	5	0.7483355	21.735818	-2.70816798324367*
5	-0.0145311	2.560604	6	0.7200374	26.308527	-2.73837745961136*
6	-0.0736048	2.757678	7	0.6787946	30.639503	-2.91127745264792*
7	0.0287918	2.401731	8	0.6550604	34.792486	-2.93387699081688*
8	-0.1003626	2.507629	9	0.6142977	38.801170	-3.10650031349197*
9	0.0554654	2.583970	10	0.5927806	42.702291	-3.12639931528389*
10	-0.0189365	2.931517	11	0.5717327	46.535404	-3.14966772743966*

Returns are not Random Walk 3

B14_INTC_D

Checking for Normality

Jarque-Bera Statistic: 21914.62
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.130***
	(0.020)
lag2	0.042**
	(0.020)
lag3	0.034*
	(0.020)
lag4	-0.037*
	(0.020)
lag5	0.012
	(0.020)
lag6	-0.031
	(0.020)
lag7	0.037*
	(0.020)
lag8	-0.069***
	(0.020)
lag9	0.063***
	(0.020)
lag10	-0.007
	(0.020)
Constant	0.0002
	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	42.6622364183463*
lag2	47.0086306842002*
lag3	49.9275624006677*
lag4	53.4024191692293*
lag5	53.7911705565375*
lag6	56.2557338642486*
lag7	59.6910884114321*
lag8	71.6618644680126*
lag9	81.7068434072548*
lag10	81.8382600861271*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1304502	7.860285	2	0.8695498	7.860285	-2.3343561283168*
2	0.0416378	4.624174	3	0.8538250	16.029028	-1.83172917447529
3	0.0341220	3.064044	4	0.8630235	23.075825	-1.43056954481979
4	-0.0372299	2.816712	5	0.8536507	29.192801	-1.35892125781897
5	0.0124526	3.254590	6	0.8515531	34.732414	-1.26370410421835
6	-0.0313540	2.628938	7	0.8410964	39.885469	-1.26231549730767
7	0.0370176	2.301347	8	0.8425084	44.712568	-1.18163754011927
8	-0.0691009	2.470517	9	0.8282508	49.272883	-1.22753079179669
9	0.0632991	2.745010	10	0.8295045	53.637476	-1.16793939090722
10	-0.0072402	2.733429	11	0.8292139	57.863226	-1.12640030891776

Returns are not Random Walk 3

B15_PEP_D

Checking for Normality

Jarque-Bera Statistic: 58519.81
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.145***
	(0.020)
lag2	0.025
	(0.020)
lag3	-0.056***
	(0.020)
lag4	-0.052***
	(0.020)
lag5	0.022
	(0.020)
lag6	-0.045**
	(0.020)
lag7	0.098***
	(0.020)
lag8	-0.011

	(0.020)
lag9	0.063***
	(0.020)
lag10	-0.036*
	(0.020)
Constant	0.001**
	(0.0002)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	52.4717382804602*
lag2	54.073342690416*
lag3	62.0082247371275*
lag4	68.7669751824249*
lag5	69.9373835142983*
lag6	75.0278026471794*
lag7	99.1849249092861*
lag8	99.4790153964269*
lag9	109.328652458858*
lag10	112.573532071911*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1446724	14.150252	2	0.8553276	14.15025	-1.929501
2	0.0252755	14.774414	3	0.8239539	31.72241	-1.568140
3	-0.0562591	13.568556	4	0.7801374	50.00462	-1.559868
4	-0.0519226	10.546097	5	0.7330785	67.87105	-1.625484
5	0.0216069	8.888932	6	0.7089082	84.81525	-1.585749
6	-0.0450609	10.397936	7	0.6787692	100.95795	-1.603941
7	0.0981625	6.564627	8	0.6807055	116.33434	-1.485180
8	-0.0108309	6.403846	9	0.6798047	130.87158	-1.404216
9	0.0626806	6.393530	10	0.6916202	144.63730	-1.286434
10	-0.0359768	5.269929	11	0.6947461	157.69791	-1.219523

Returns are Random Walk 3

M_SPY_D

Checking for Normality

Jarque-Bera Statistic: 22327.68

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.083***
	(0.020)
lag2	0.038*
	(0.020)
lag3	0.017
	(0.020)
lag4	-0.065***
	(0.020)
lag5	0.017
	(0.020)
lag6	-0.075***
	(0.020)
lag7	0.106***
	(0.020)
lag8	-0.077***
	(0.020)
lag9	0.088***
	(0.020)
lag10	-0.036*
	(0.020)
Constant	0.0005**
	(0.0002)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	17.2618599617544*
lag2	20.8468622067439*
lag3	21.5422375321801*
lag4	32.2898947830274*
lag5	33.0327316014025*
lag6	47.047997060219*
lag7	75.3489080827653*
lag8	90.0478266890342*
lag9	109.666444064747*
lag10	112.999134970412*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0829787	8.598955	2	0.9170213	8.598955	-1.4196635
2	0.0378153	10.059266	3	0.9145719	19.757815	-0.9642124
3	0.0166545	7.062247	4	0.9216745	31.172476	-0.7038159
4	-0.0654756	6.766487	5	0.8997458	42.101143	-0.7751704
5	0.0172135	6.411375	6	0.8908645	52.551074	-0.7552953
6	-0.0747693	7.230201	7	0.8631581	62.678698	-0.8671632
7	0.1062486	5.644187	8	0.8689404	72.535606	-0.7720314
8	-0.0765712	6.421278	9	0.8564219	82.137878	-0.7948005
9	0.0884621	5.202612	10	0.8640995	91.504199	-0.7127580
10	-0.0364603	5.151025	11	0.8637521	100.623543	-0.6814308

Returns are Random Walk 3

S16_RL_D

Checking for Normality

Jarque-Bera Statistic: 19863.27
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	0.005
	(0.020)
lag2	-0.004
	(0.020)
lag3	-0.021
	(0.020)
lag4	-0.032
	(0.020)
lag5	0.020
	(0.020)
lag6	-0.021
	(0.020)
lag7	0.003
	(0.020)
lag8	-0.036*
	(0.020)
lag9	-0.010

	(0.020)
lag10	-0.018
	(0.020)
Constant	-0.0001
	(0.0005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.0618905
lag2	0.1056331
lag3	1.1842451
lag4	3.6938184
lag5	4.7370891
lag6	5.7972551
lag7	5.8226460
lag8	9.1401842
lag9	9.3980246
lag10	10.1681651

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0049686	1.964406	2	1.0049686	1.964406	0.1778528
2	-0.0041771	2.230316	3	1.0038401	4.483528	0.0909854
3	-0.0207422	1.906201	4	0.9929047	7.126779	-0.1333417
4	-0.0316390	1.604654	5	0.9736879	9.717246	-0.4234734
5	0.0203996	1.649431	6	0.9676765	12.224338	-0.4638176
6	-0.0205641	2.141199	7	0.9575072	14.706654	-0.5559040
7	0.0031825	1.335975	8	0.9506759	17.163898	-0.5973008
8	-0.0363773	1.527638	9	0.9372787	19.569394	-0.7113243
9	-0.0101414	1.566678	10	0.9245328	21.928976	-0.8085202
10	-0.0175270	1.551345	11	0.9109175	24.250344	-0.9075593

Returns are Random Walk 3

S17_WWE_D

Checking for Normality

Jarque-Bera Statistic: 701700.8

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	0.008
	(0.020)
lag2	0.024
	(0.020)
lag3	0.028
	(0.020)
lag4	-0.016
	(0.020)
lag5	-0.014
	(0.020)
lag6	0.004
	(0.020)
lag7	-0.018
	(0.020)
lag8	0.017
	(0.020)
lag9	0.013
	(0.020)
lag10	0.049**
	(0.020)
Constant	0.001
	(0.001)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.1548425
lag2	1.6129790
lag3	3.6148274
lag4	4.2581619
lag5	4.7825387
lag6	4.8328027
lag7	5.6487428
lag8	6.3914984
lag9	6.8097882
lag10	12.8353956

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0078590	2.025024	2	1.007859	2.025024	0.2770732
2	0.0241169	2.416598	3	1.026557	4.674085	0.6162633

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
3	0.0282578	1.278803	4	1.050034	7.292601	0.9295411
4	-0.0160192	1.852350	5	1.057713	9.778771	0.9259238
5	-0.0144625	1.191313	6	1.058012	12.155677	0.8347720
6	0.0044777	1.089156	7	1.059504	14.392016	0.7869166
7	-0.0180406	1.122011	8	1.056113	16.501988	0.6930117
8	0.0172126	1.193171	9	1.057301	18.513832	0.6681242
9	0.0129170	1.091666	10	1.060835	20.448276	0.6749403
10	0.0490256	2.257409	11	1.072640	22.356572	0.7707489

Returns are Random Walk 3

S18_DLB_D

Checking for Normality

Jarque-Bera Statistic: 25890.29
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.060***
	(0.020)
lag2	0.015
	(0.020)
lag3	0.012
	(0.020)
lag4	-0.018
	(0.020)
lag5	-0.017
	(0.020)
lag6	-0.065***
	(0.020)
lag7	0.048**
	(0.020)
lag8	-0.035*
	(0.020)
lag9	0.057***
	(0.020)
lag10	-0.001
	(0.020)
Constant	0.0004

	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	8.93441974705372*
lag2	9.50660713697584*
lag3	9.85194343178731*
lag4	10.6572083083912*
lag5	11.3637854765648*
lag6	21.8471500521175*
lag7	27.6505276830602*
lag8	30.6465387252911*
lag9	38.7480638469313*
lag10	38.7503247248367*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0596975	5.154631	2	0.9403025	5.154631	-1.3191642
2	0.0151075	4.575593	3	0.9304750	11.197385	-1.0423756
3	0.0117366	4.195542	4	0.9314296	17.222397	-0.8289563
4	-0.0179222	3.128528	5	0.9248334	22.970420	-0.7868318
5	-0.0167881	3.095675	6	0.9148399	28.382769	-0.8019553
6	-0.0646656	4.326756	7	0.8892259	33.628687	-0.9583520
7	0.0481131	3.428798	8	0.8820436	38.802510	-0.9500213
8	-0.0345696	3.974503	9	0.8687752	43.926639	-0.9933299
9	0.0568468	2.772728	10	0.8695299	48.988861	-0.9351989
10	-0.0009496	2.311163	11	0.8699747	53.935381	-0.8882448

Returns are Random Walk 3

S19_CROX_D

Checking for Normality

Jarque-Bera Statistic: 15717.42

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:

lag1	-0.004
	(0.020)
lag2	0.040**
	(0.020)
lag3	-0.043**
	(0.020)
lag4	-0.028
	(0.020)
lag5	-0.032
	(0.020)
lag6	-0.013
	(0.020)
lag7	0.007
	(0.020)
lag8	0.020
	(0.020)
lag9	0.026
	(0.020)
lag10	0.019
	(0.020)
Constant	0.001
	(0.001)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.0458284769367288
lag2	4.00694140620124
lag3	8.7279094016225*
lag4	10.6306380120853*
lag5	13.2072148466276*
lag6	13.6602133285392*
lag7	13.7843737284669
lag8	14.7842691435609
lag9	16.479441115001
lag10	17.4168983836687

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0042755	3.315753	2	0.9957245	3.315753	-0.1177989
2	0.0397495	2.805852	3	1.0207989	7.141717	0.3904644
3	-0.0433949	2.163719	4	1.0116387	10.807225	0.1776195
4	-0.0275493	2.670116	5	0.9951229	14.340752	-0.0646128
5	-0.0320586	3.320225	6	0.9734261	17.917956	-0.3149578
6	-0.0134422	1.743014	7	0.9540878	21.484723	-0.4969411
7	0.0070374	2.102334	8	0.9413434	24.953362	-0.5891066

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
8	0.0199710	2.268353	9	0.9358691	28.337290	-0.6044073
9	0.0260034	2.588458	10	0.9366903	31.670945	-0.5643922
10	0.0193374	2.505488	11	0.9408782	34.981100	-0.5015021

Returns are Random Walk 3

S20_HAS_D

Checking for Normality

Jarque-Bera Statistic: 43719.28
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	0.017
	(0.020)
lag2	0.017
	(0.020)
lag3	-0.002
	(0.020)
lag4	-0.004
	(0.020)
lag5	0.019
	(0.020)
lag6	-0.035*
	(0.020)
lag7	-0.009
	(0.020)
lag8	-0.065***
	(0.020)
lag9	0.041**
	(0.020)
lag10	-0.021
	(0.020)
Constant	0.0003
	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01
Portmanteau Statisitics for 10 lags

	Q
lag1	0.758753706903702
lag2	1.49056351716871
lag3	1.50402112472144
lag4	1.54772765601398
lag5	2.46258697487586
lag6	5.46528259617927
lag7	5.65227340881559
lag8	16.1853923686777*
lag9	20.36611703286*
lag10	21.5012264566001*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0173970	3.770192	2	1.017397	3.770192	0.4495035
2	0.0170853	4.670688	3	1.034586	8.778425	0.5856460
3	-0.0023169	2.418734	4	1.042022	13.758303	0.5683797
4	-0.0041754	1.994777	5	1.044814	18.244636	0.5263634
5	0.0191029	4.306185	6	1.053043	22.559967	0.5602682
6	-0.0346082	5.958633	7	1.049032	27.128997	0.4722854
7	-0.0086364	3.007836	8	1.043865	31.929186	0.3894635
8	-0.0648189	4.311121	9	1.025442	36.837973	0.2103044
9	0.0408365	2.703420	10	1.018871	41.786027	0.1464620
10	-0.0212785	2.648549	11	1.009626	46.686417	0.0706797

Returns are Random Walk 3

S21_MAT_D

Checking for Normality

Jarque-Bera Statistic: 14387.89
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	0.046**
	(0.020)
lag2	0.001

	(0.020)
lag3	-0.004
	(0.020)
lag4	-0.010
	(0.020)
lag5	-0.046**
	(0.020)
lag6	0.0005
	(0.020)
lag7	0.009
	(0.020)
lag8	-0.034*
	(0.020)
lag9	0.019
	(0.020)
lag10	0.012
	(0.020)
Constant	-0.0002
	(0.0005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	5.3491472297618*
lag2	5.35093058190425
lag3	5.38888097751455
lag4	5.63242464071487
lag5	10.9806857128913
lag6	10.9813008316435
lag7	11.1678670172158
lag8	14.0665168029314
lag9	14.9735471288018
lag10	15.3422118306097

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0461918	2.133475	2	1.046192	2.133475	1.5865834
2	0.0008434	2.300579	3	1.062151	4.815325	1.4209525
3	-0.0038907	2.095021	4	1.068186	7.624654	1.2388690
4	-0.0098562	1.554982	5	1.067864	10.364142	1.0575818
5	-0.0461880	3.344755	6	1.052253	13.174003	0.7222658
6	0.0004953	2.116268	7	1.041244	16.108576	0.5155597
7	0.0086266	1.509061	8	1.035144	19.043332	0.4040427
8	-0.0340033	1.554351	9	1.022844	21.912059	0.2448315
9	0.0190210	2.134287	10	1.016807	24.723854	0.1695833
10	0.0121266	2.440845	11	1.014073	27.517353	0.1345970

S22_PII_D

Checking for Normality

Jarque-Bera Statistic: 8937.859
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.018
	(0.020)
lag2	-0.007
	(0.020)
lag3	-0.013
	(0.020)
lag4	-0.009
	(0.020)
lag5	0.024
	(0.020)
lag6	-0.068***
	(0.020)
lag7	0.092***
	(0.020)
lag8	-0.035*
	(0.020)
lag9	0.082***
	(0.020)
lag10	0.008
	(0.020)
Constant	0.0001
	(0.0005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.831790973613506
lag2	0.943819295771884
lag3	1.36958273218323
lag4	1.57818424440781
lag5	3.08088104357592

	Q
lag6	14.615471593091*
lag7	35.9515298209548*
lag8	38.9594252099739*
lag9	55.7787703198947*
lag10	55.9334543604746*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0182150	4.233705	2	0.9817850	4.233705	-0.4441312
2	-0.0066848	4.593808	3	0.9712568	9.568279	-0.4661870
3	-0.0130319	3.553860	4	0.9594767	15.008109	-0.5247869
4	-0.0091218	2.971828	5	0.9487600	20.203330	-0.5719253
5	0.0244827	4.546122	6	0.9497764	25.306857	-0.5008764
6	-0.0678303	3.604928	7	0.9311223	30.420914	-0.6265191
7	0.0922529	3.557157	8	0.9401949	35.507270	-0.5035251
8	-0.0346381	3.306449	9	0.9395541	40.543492	-0.4762645
9	0.0819082	3.265195	10	0.9554230	45.515841	-0.3314905
10	0.0078550	3.184148	11	0.9698349	50.421044	-0.2131282

Returns are Random Walk 3

S23_VAC_D

Checking for Normality

Jarque-Bera Statistic: 398917.6
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	0.017
	(0.020)
lag2	0.075***
	(0.020)
lag3	-0.057***
	(0.020)
lag4	-0.054***
	(0.020)

lag5	0.047**
	(0.020)
lag6	-0.138***
	(0.020)
lag7	0.053***
	(0.020)
lag8	-0.012
	(0.020)
lag9	0.040**
	(0.020)
lag10	0.014
	(0.020)
Constant	0.001
	(0.001)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.719807286754741
lag2	14.8690216088524*
lag3	23.1215674369063*
lag4	30.3143374334278*
lag5	35.8288354799314*
lag6	83.4613680267067*
lag7	90.6041484423217*
lag8	90.9569767404915*
lag9	95.0458716949952*
lag10	95.5519701863703*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0169446	9.127093	2	1.0169446	9.127093	0.2813885
2	0.0751258	25.051983	3	1.0726766	27.360158	0.6970712
3	-0.0573742	12.058861	4	1.0718555	48.602658	0.5170969
4	-0.0535637	11.403922	5	1.0499374	68.982513	0.3016463
5	0.0469003	7.268164	6	1.0509587	87.824740	0.2728047
6	-0.1378398	8.977515	7	1.0123055	105.183851	0.0601957
7	0.0533773	5.379040	8	0.9966598	121.233488	-0.0152194
8	-0.0118633	4.557574	9	0.9818547	136.002972	-0.0780604
9	0.0403855	4.880206	10	0.9780877	149.636522	-0.0898690
10	0.0142082	4.468762	11	0.9775890	162.302261	-0.0882553

Returns are Random Walk 3

S24_COLM_D

Checking for Normality

Jarque-Bera Statistic: 34811.51
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.039*
	(0.020)
lag2	-0.003
	(0.020)
lag3	-0.019
	(0.020)
lag4	-0.034*
	(0.020)
lag5	0.006
	(0.020)
lag6	-0.066***
	(0.020)
lag7	-0.012
	(0.020)
lag8	-0.034*
	(0.020)
lag9	0.026
	(0.020)
lag10	-0.024
	(0.020)
Constant	0.001
	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	3.7964350016851
lag2	3.81706555046075
lag3	4.70674905756363
lag4	7.56485163131967
lag5	7.66567025014411
lag6	18.7014517119562*
lag7	19.0797801687902*
lag8	22.0624675608888*
lag9	23.7455897601218*
lag10	25.1431840906431*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0389144	2.843700	2	0.9610856	2.843700	-1.15773866164882
2	-0.0028687	2.330357	3	0.9462016	6.091181	-1.09360349895729
3	-0.0188383	2.153145	4	0.9293406	9.266969	-1.16450935344979
4	-0.0337646	1.601944	5	0.9057181	12.269911	-1.35035953979289
5	0.0063415	2.114619	6	0.8920836	15.142102	-1.39134903350299
6	-0.0663475	2.654805	7	0.8633882	18.009244	-1.61503521241609
7	-0.0122845	1.444785	8	0.8387956	20.861842	-1.77068854599773
8	-0.0344927	1.949104	9	0.8120030	23.664273	-1.93885813946635
9	0.0259108	1.705872	10	0.7957510	26.420175	-1.99358006996199*
10	-0.0236109	1.297542	11	0.7781611	29.114097	-2.06266041113609*

Returns are not Random Walk 3

S25_WEN_D

Checking for Normality

Jarque-Bera Statistic: 525323.3
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.063***
	(0.020)
lag2	0.039*
	(0.020)
lag3	-0.025
	(0.020)
lag4	-0.019
	(0.020)
lag5	-0.093***
	(0.020)
lag6	-0.088***
	(0.020)
lag7	0.046**
	(0.020)
lag8	-0.035*

	(0.020)
lag9	-0.024
	(0.020)
lag10	-0.022
	(0.020)
Constant	0.001**
	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	9.82542102940108*
lag2	13.6375441627033*
lag3	15.2335373193491*
lag4	16.1273329442854*
lag5	37.9364961806686*
lag6	57.2208049609169*
lag7	62.4149968378958*
lag8	65.4395655753309*
lag9	66.930431846858*
lag10	68.1064526198215*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0626035	36.058410	2	0.9373965	36.05841	-0.5230422
2	0.0389948	27.712147	3	0.9425252	76.42035	-0.3298485
3	-0.0252312	31.863778	4	0.9324739	116.80951	-0.3134541
4	-0.0188817	14.808179	5	0.9188905	154.97715	-0.3268734
5	-0.0932701	9.320287	6	0.8787448	188.90907	-0.4426042
6	-0.0877051	10.109753	7	0.8250107	218.88909	-0.5933910
7	0.0455179	3.233858	8	0.7960897	245.34876	-0.6531139
8	-0.0347340	3.564428	9	0.7658768	268.61956	-0.7166667
9	-0.0243861	3.528645	10	0.7368293	289.21530	-0.7763695
10	-0.0216586	4.013161	11	0.7091253	307.62416	-0.8320270

Returns are Random Walk 3

S26_LPX_D

Checking for Normality

Jarque-Bera Statistic: 8932.911

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.002
	(0.020)
lag2	0.036*
	(0.020)
lag3	-0.001
	(0.020)
lag4	0.003
	(0.020)
lag5	-0.005
	(0.020)
lag6	-0.088***
	(0.020)
lag7	0.066***
	(0.020)
lag8	-0.025
	(0.020)
lag9	0.014
	(0.020)
lag10	0.014
	(0.020)
Constant	0.0005
	(0.001)

Note: *p<0.1; **p<0.05;** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.00914718069409028
lag2	3.21273981997224
lag3	3.21658907328063
lag4	3.24068703552911
lag5	3.31202839929255
lag6	22.6030953503196*
lag7	33.6296799077139*
lag8	35.1884404260754*
lag9	35.6664187050796*
lag10	36.1586313531009*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0019101	3.529530	2	0.9980899	3.529530	-0.0510093
2	0.0357472	5.437496	3	1.0212846	8.691384	0.3622114
3	-0.0012391	4.362909	4	1.0322624	14.469665	0.4255090
4	0.0031004	4.502775	5	1.0400892	20.378295	0.4455384
5	-0.0053345	3.254912	6	1.0435289	26.196707	0.4266740
6	-0.0877205	5.714461	7	1.0209229	32.005395	0.1855459
7	0.0663198	2.995982	8	1.0205483	37.810122	0.1676538
8	-0.0249352	4.161856	9	1.0147158	43.536583	0.1118918
9	0.0138079	3.295550	10	1.0128114	49.179402	0.0916529
10	0.0140120	1.932491	11	1.0138009	54.670999	0.0936417

Returns are Random Walk 3

S27_HE_D

Checking for Normality

Jarque-Bera Statistic: 95303.74
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	0.013
	(0.020)
lag2	-0.081***
	(0.020)
lag3	-0.094***
	(0.020)
lag4	-0.081***
	(0.020)
lag5	-0.012
	(0.020)
lag6	-0.090***
	(0.020)
lag7	0.089***
	(0.020)
lag8	0.014
	(0.020)
lag9	0.081***

	(0.020)
lag10	-0.002
	(0.020)
Constant	0.0004
	(0.0003)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.420133509396586
lag2	16.977035889128*
lag3	38.9562098051337*
lag4	55.2661173047517*
lag5	55.6453181446029*
lag6	75.7959635379001*
lag7	95.8044574533077*
lag8	96.2987970120521*
lag9	112.820178662662*
lag10	112.825845140456*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0129454	16.736454	2	1.0129454	16.73645	0.1587546
2	-0.0812667	14.550856	3	0.9630828	36.22074	-0.3077454
3	-0.0936329	10.993914	4	0.8913350	54.95636	-0.7353975
4	-0.0806582	8.371205	5	0.8160231	72.17405	-1.0864616
5	-0.0122987	7.931076	6	0.7617156	87.95402	-1.2747042
6	-0.0896535	6.946503	7	0.6973092	102.54678	-1.4996151
7	0.0893367	5.608532	8	0.6713386	116.09240	-1.5303416
8	0.0140422	4.344042	9	0.6542598	128.66074	-1.5292149
9	0.0811794	6.225531	10	0.6568325	140.41889	-1.4528973
10	-0.0015034	4.002820	11	0.6586642	151.50359	-1.3912718

Returns are Random Walk 3

S28_DISH_D

Checking for Normality

Jarque-Bera Statistic: 10295.89

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.019
	(0.020)
lag2	0.011
	(0.020)
lag3	0.055***
	(0.020)
lag4	-0.024
	(0.020)
lag5	-0.005
	(0.020)
lag6	-0.061***
	(0.020)
lag7	0.077***
	(0.020)
lag8	-0.030
	(0.020)
lag9	0.038*
	(0.020)
lag10	-0.026
	(0.020)
Constant	-0.0004
	(0.001)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	0.888246613870442
lag2	1.19350814891175
lag3	8.65068384216508*
lag4	10.09031544222*
lag5	10.1599939549172
lag6	19.5267476735589*
lag7	34.4263302123342*
lag8	36.6434637076985*
lag9	40.2762165192324*
lag10	42.0116464043554*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0188230	4.381742	2	0.9811770	4.381742	-0.4511363
2	0.0110347	3.679332	3	0.9822591	9.425023	-0.2899192

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
3	0.0545394	6.171476	4	1.0100698	15.081121	0.1300903
4	-0.0239634	3.783905	5	1.0171709	21.070668	0.1876699
5	-0.0052720	3.727568	6	1.0201476	26.979927	0.1946007
6	-0.0611248	2.877163	7	1.0048096	32.678548	0.0422104
7	0.0770921	2.501484	8	1.0125791	38.096809	0.1022464
8	-0.0297385	2.894016	9	1.0120135	43.255558	0.0916414
9	0.0380663	2.205908	10	1.0191743	48.181616	0.1385867
10	-0.0263103	2.220066	11	1.0202495	52.886646	0.1396955

Returns are Random Walk 3

S29_MUSA_D

Checking for Normality

Jarque-Bera Statistic: 9214.637
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:
lag1	-0.059***
	(0.020)
lag2	0.033
	(0.020)
lag3	-0.067***
	(0.020)
lag4	-0.093***
	(0.020)
lag5	0.066***
	(0.020)
lag6	-0.030
	(0.020)
lag7	0.095***
	(0.020)
lag8	-0.030
	(0.020)
lag9	0.038*
	(0.020)
lag10	0.024
	(0.020)
Constant	0.0003

	(0.0004)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	8.73943889091026*
lag2	11.4270841257433*
lag3	22.7989211989931*
lag4	44.4346309548648*
lag5	55.2933568184039*
lag6	57.5233611200775*
lag7	80.3221988588466*
lag8	82.5586008978462*
lag9	86.08504800974*
lag10	87.4851928094998*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0590425	3.681110	2	0.9409575	3.681110	-1.543892
2	0.0327423	3.351449	3	0.9431049	8.033728	-1.007066
3	-0.0673501	3.686488	4	0.9105035	12.555568	-1.267154
4	-0.0928984	4.104598	5	0.8537833	17.265815	-1.765408
5	0.0658131	3.886654	6	0.8379075	22.126040	-1.728831
6	-0.0298247	3.812792	7	0.8180464	27.068634	-1.754564
7	0.0953628	3.490487	8	0.8269912	32.036490	-1.533513
8	-0.0298674	2.922747	9	0.8273111	36.964287	-1.425000
9	0.0375052	3.426961	10	0.8350680	41.830776	-1.279377
10	0.0236325	3.089984	11	0.8457115	46.638960	-1.133446

Returns are Random Walk 3

S30_SLAB_D

Checking for Normality

Jarque-Bera Statistic: 9480.992

Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 10 lags

	Dependent variable:

lag1	-0.130***
	(0.020)
lag2	0.026
	(0.020)
lag3	-0.028
	(0.020)
lag4	-0.030
	(0.020)
lag5	0.011
	(0.020)
lag6	-0.024
	(0.020)
lag7	0.057***
	(0.020)
lag8	-0.084***
	(0.020)
lag9	0.045**
	(0.020)
lag10	0.001
	(0.020)
Constant	0.001
	(0.0005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 10 lags

	Q
lag1	42.2702636345538*
lag2	43.9571305487507*
lag3	45.9417009043295*
lag4	48.250644817256*
lag5	48.533011682369*
lag6	49.9669817318277*
lag7	58.1836725828882*
lag8	75.6723460510531*
lag9	80.7300928511401*
lag10	80.7341488628142*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1298495	3.850494	2	0.8701505	3.850494	-3.31988999916477*
2	0.0259396	3.248152	3	0.8441604	8.288946	-2.71562510820535*
3	-0.0281356	3.999361	4	0.8170975	12.911604	-2.55370695091872*
4	-0.0303480	3.886700	5	0.7887206	17.716067	-2.51834377220084*
5	0.0106128	2.219762	6	0.7733403	22.443733	-2.40031558446172*
6	-0.0239162	2.648495	7	0.7555212	26.964834	-2.36202249234495*
7	0.0572494	2.496394	8	0.7564691	31.302947	-2.18375040333765*

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
8	-0.0835221	2.047368	9	0.7386460	35.462773	-2.2018331180964*
9	0.0449160	2.111354	10	0.7333707	39.451999	-2.12968299719675*
10	0.0012720	2.522533	11	0.7292858	43.306364	-2.06384350629563*

Returns are not Random Walk 3

B01_AAPL_M

Checking for Normality

Jarque-Bera Statistic: 1.339888
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	0.022
	(0.096)
lag2	-0.178*
	(0.096)
lag3	0.024
	(0.098)
lag4	-0.035
	(0.098)
lag5	-0.076
	(0.098)
Constant	0.026***
	(0.009)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.0555307
lag2	3.6528832
lag3	3.7163844
lag4	3.8523115
lag5	4.5034334

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0220706	1.1462651	2	1.0220706	1.146265	0.2201021
2	-0.1776393	0.9495629	3	0.9110013	2.459833	-0.6058756
3	0.0236014	1.2422043	4	0.8672673	3.839210	-0.7232848
4	-0.0345303	0.9906669	5	0.8272148	5.255327	-0.8047464
5	-0.0755751	0.9380084	6	0.7753215	6.658905	-0.9296353

Returns are Random Walk 3

B02_IBM_M

Checking for Normality

Jarque-Bera Statistic: 8.070775
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.217**
	(0.096)
lag2	-0.150
	(0.099)
lag3	-0.154
	(0.101)
lag4	-0.079
	(0.101)
lag5	-0.004
	(0.099)
Constant	0.001
	(0.006)

Note: *p<0.1; **p<0.05;** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	5.3441351005912*
lag2	7.91923550219492*
lag3	10.6387220237097*
lag4	11.3534176011137*
lag5	11.3548289710989*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.2165142	1.0100351	2	0.7834858	1.010035	-2.30022583211704*
2	-0.1502950	0.9740948	3	0.6111178	2.228549	-2.78137426450615*
3	-0.1544511	1.3850396	4	0.4477082	3.592934	-3.11097441714518*
4	-0.0791787	0.5969583	5	0.3179910	4.970325	-3.26625556981848*
5	-0.0035186	0.6772994	6	0.2303399	6.262987	-3.28367838382554*

Returns are not Random Walk 3

B03_MAR_M

Checking for Normality

Jarque-Bera Statistic: 98.9745
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.164*
	(0.096)
lag2	-0.065
	(0.097)
lag3	0.092
	(0.098)
lag4	0.044
	(0.098)
lag5	-0.078
	(0.097)
Constant	0.015
	(0.009)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	3.049316
lag2	3.532561
lag3	4.489771
lag4	4.713577
lag5	5.411647

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1635493	2.0851999	2	0.8364507	2.085200	-1.2092815
2	-0.0651075	0.9438329	3	0.7385292	4.126503	-1.3743095
3	0.0916328	1.4582355	4	0.7353849	6.000091	-1.1534218
4	0.0443081	0.8040661	5	0.7512215	7.759152	-0.9535820
5	-0.0782523	1.5813398	6	0.7356952	9.461450	-0.9174419

Returns are Random Walk 3

B04_GOOG_M

Checking for Normality

Jarque-Bera Statistic: 1.620213
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.119
	(0.098)
lag2	-0.037
	(0.098)
lag3	0.112
	(0.098)
lag4	0.102
	(0.101)
lag5	-0.031
	(0.101)
Constant	0.012*
	(0.007)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	1.610110
lag2	1.768628
lag3	3.185908
lag4	4.383159
lag5	4.490042

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1188435	0.8438173	2	0.8811565	0.8438173	-1.3813496
2	-0.0372895	0.7562174	3	0.8166823	1.8362162	-1.4444244
3	0.1115001	1.0725226	4	0.8401953	2.9229369	-0.9980038
4	0.1024802	0.6256785	5	0.8952952	4.0356482	-0.5564964
5	-0.0306199	1.2153212	6	0.9218218	5.1739609	-0.3669665

Returns are Random Walk 3

B05_TSLA_M

Checking for Normality

Jarque-Bera Statistic: 60.44243
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	0.137
	(0.099)
lag2	-0.008
	(0.092)
lag3	-0.001
	(0.092)
lag4	0.279***
	(0.091)
lag5	-0.111
	(0.094)
Constant	0.014
	(0.017)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	2.15142689727855
lag2	2.15915582742331
lag3	2.15940983321741
lag4	11.0432139487798*
lag5	12.4381758299109*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.1373760	1.2029583	2	1.137376	1.202958	1.337328
2	-0.0082339	0.9257695	3	1.177679	2.550046	1.187993
3	-0.0014927	1.3779423	4	1.197084	3.976911	1.055189
4	0.2791561	1.0160101	5	1.320389	5.457126	1.464361
5	-0.1106187	1.0575903	6	1.365720	6.934375	1.482850

Returns are Random Walk 3

B06_KO_M

Checking for Normality

Jarque-Bera Statistic: 17.59301
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.233**
	(0.096)
lag2	-0.206**
	(0.099)
lag3	-0.019
	(0.101)
lag4	-0.077
	(0.100)
lag5	-0.067
	(0.098)
Constant	0.011**
	(0.005)

Note: *p<0.1; **p<0.05;** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	6.20088280222271*
lag2	11.0472167331814*
lag3	11.0875788226068*
lag4	11.7597744449994*
lag5	12.2644101149536*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.2332246	1.4391688	2	0.7667754	1.439169	-2.07573017018528*
2	-0.2061837	0.9038615	3	0.5515781	2.960238	-2.78276083331742*
3	-0.0188163	0.8210142	4	0.4345713	4.347245	-2.89549770738094*
4	-0.0767884	0.7458265	5	0.3336519	5.630614	-2.99830447059359*
5	-0.0665329	0.7411613	6	0.2441946	6.839400	-3.08569795405974*

Returns are not Random Walk 3

B07_NKE_M

Checking for Normality

Jarque-Bera Statistic: 0.6267093
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	0.051
	(0.096)
lag2	-0.205**
	(0.097)
lag3	0.083
	(0.098)
lag4	-0.005
	(0.103)
lag5	0.174*
	(0.104)
Constant	0.011
	(0.007)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.299368
lag2	5.098938
lag3	5.887778
lag4	5.890330
lag5	9.345486

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0512449	1.176660	2	1.0512449	1.176660	0.5044025
2	-0.2051865	1.388294	3	0.9315355	2.708859	-0.4441449
3	0.0831844	1.475766	4	0.9132730	4.404720	-0.4412121
4	-0.0047315	1.083904	5	0.9004229	6.129308	-0.4294435
5	0.1740931	1.082163	6	0.9498872	7.814320	-0.1914059

Returns are Random Walk 3

B08_MA_M

Checking for Normality

Jarque-Bera Statistic: 1.57434
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.166*
	(0.096)
lag2	-0.293***
	(0.098)
lag3	0.088
	(0.102)
lag4	-0.061
	(0.101)
lag5	-0.035
	(0.101)
Constant	0.024***
	(0.008)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	3.1299020117604
lag2	12.9050908125885*
lag3	13.7899010774505*
lag4	14.2126891429729*
lag5	14.3548205761358*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1656964	1.5847014	2	0.8343036	1.584701	-1.40537314784476
2	-0.2928263	1.2894683	3	0.5838540	3.390344	-2.41310549059378*
3	0.0880993	1.2938783	4	0.5026788	5.178516	-2.33338684115321*
4	-0.0608988	0.9858116	5	0.4296142	6.899482	-2.31853109369924*
5	-0.0353096	1.0343746	6	0.3691345	8.541284	-2.30477006297999*

Returns are not Random Walk 3

B09_V_M

Checking for Normality

Jarque-Bera Statistic: 0.3478234
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.170*
	(0.096)
lag2	-0.324***
	(0.096)
lag3	0.060
	(0.102)
lag4	-0.134
	(0.100)
lag5	0.004
	(0.100)
Constant	0.022***
	(0.007)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	3.28816650042153
lag2	15.2291191174248*
lag3	15.6428824120995*
lag4	17.6968245589892*
lag5	17.6986905277089*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1698339	1.3633631	2	0.8301661	1.363363	-1.55299883660641
2	-0.3236436	1.2401351	3	0.5577923	2.974928	-2.73741397157539*
3	0.0602454	1.1718439	4	0.4517281	4.600663	-2.72921761087902*
4	-0.1342276	0.8724971	5	0.3343986	6.165584	-2.86206535658462*
5	0.0040458	0.8614747	6	0.2575275	7.647144	-2.86670600936429*

Returns are not Random Walk 3

B10_WMT_M

Checking for Normality

Jarque-Bera Statistic: 3.913062
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.068
	(0.096)
lag2	-0.054
	(0.096)
lag3	-0.015
	(0.097)
lag4	-0.011
	(0.097)
lag5	-0.164*
	(0.097)
Constant	0.010*
	(0.005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.5342307
lag2	0.8696517
lag3	0.8940304
lag4	0.9087827
lag5	3.9817723

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0684561	0.8170592	2	0.9315439	0.8170592	-0.8086073
2	-0.0542429	1.1213556	3	0.8725633	1.9509300	-0.9741505
3	-0.0146235	1.1824114	4	0.8357612	3.2553417	-0.9719184
4	-0.0113757	1.0149676	5	0.8091297	4.6255617	-0.9475639
5	-0.1641830	0.8715021	6	0.7366477	5.9934716	-1.1485511

Returns are Random Walk 3

B11_META_M

Checking for Normality

Jarque-Bera Statistic: 80.94939
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	0.056
	(0.096)
lag2	-0.123
	(0.098)
lag3	0.158
	(0.104)
lag4	0.112
	(0.105)
lag5	0.056
	(0.105)
Constant	0.009
	(0.010)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.359379
lag2	2.080117
lag3	4.912904
lag4	6.336206
lag5	6.688075

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0561467	1.5588103	2	1.0561467	1.558810	0.4801531
2	-0.1228584	1.1805991	3	0.9929566	3.295929	-0.0414234
3	0.1576357	0.5576909	4	1.0401794	4.827345	0.1952548
4	0.1117367	1.4363998	5	1.1132078	6.277363	0.4824365
5	0.0555569	1.0871125	6	1.1804124	7.745753	0.6921288

Returns are Random Walk 3

B12_AMZN_M

Checking for Normality

Jarque-Bera Statistic: 4.244571
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.050
	(0.097)
lag2	0.023
	(0.098)
lag3	0.064
	(0.099)
lag4	0.031
	(0.100)
lag5	0.063
	(0.100)
Constant	0.013
	(0.010)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.2892458
lag2	0.3474278
lag3	0.8161628
lag4	0.9240838
lag5	1.3701629

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0503711	0.6931116	2	0.9496289	0.6931116	-0.6459991
2	0.0225913	1.1133324	3	0.9478995	1.7270129	-0.4232985
3	0.0641226	1.9986565	4	0.9790961	3.1724978	-0.1253083
4	0.0307681	0.6277463	5	1.0101212	4.7571441	0.0495465
5	0.0625538	0.8648146	6	1.0516560	6.2783132	0.2201159

Returns are Random Walk 3

B13_MSFT_M

Checking for Normality

Jarque-Bera Statistic: 1.283419
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.219**
	(0.097)
lag2	0.045
	(0.099)
lag3	-0.070
	(0.096)
lag4	-0.059
	(0.100)
lag5	0.047
	(0.099)
Constant	0.024***
	(0.008)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	5.44429237349198*
lag2	5.67981898772376
lag3	6.24119486108781
lag4	6.64357107699699
lag5	6.89373963115514

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.2185336	0.9221085	2	0.7814664	0.9221085	-2.42985136888329*
2	0.0454535	1.1545559	3	0.7389242	2.1524399	-1.89999989958597
3	-0.0701737	1.3803475	4	0.6825662	3.5743869	-1.79268835909407
4	-0.0594106	1.0580823	5	0.6249872	5.0758738	-1.77722779207329
5	0.0468451	0.8522101	6	0.6022162	6.5592526	-1.6583351291357

Returns are not Random Walk 3

B14_INTC_M

Checking for Normality

Jarque-Bera Statistic: 3.951663
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	0.063
	(0.097)
lag2	-0.141
	(0.096)
lag3	0.161*
	(0.096)
lag4	-0.090
	(0.100)
lag5	0.090
	(0.102)
Constant	0.003
	(0.007)

Note: *p<0.1; **p<0.05;** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.4461238
lag2	2.7065124
lag3	5.6779569
lag4	6.5939363
lag5	7.5117039

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0625569	0.9519549	2	1.0625569	0.9519549	0.6845726
2	-0.1408118	0.8554466	3	0.9895347	2.0725628	-0.0776161
3	0.1614475	1.6959810	4	1.0337473	3.4213405	0.1948019
4	-0.0896376	0.8671560	5	1.0244198	4.8930206	0.1178708
5	0.0897251	1.0885214	6	1.0481099	6.3674437	0.2035654

Returns are Random Walk 3

B15_PEP_M

Checking for Normality

Jarque-Bera Statistic: 0.001923355
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.233**
	(0.096)
lag2	-0.380***
	(0.098)
lag3	-0.078
	(0.105)
lag4	-0.144
	(0.100)
lag5	-0.047
	(0.098)
Constant	0.018***
	(0.005)

Note: *p<0.1; **p<0.05;** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	6.20256645879978*
lag2	22.6231474623359*
lag3	23.3106351160654*
lag4	25.6689303071134*
lag5	25.9209489765986*

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.2332562	1.1717164	2	0.7667438	1.171716	-2.30077659086747*
2	-0.3795263	1.1543533	3	0.4359742	2.596097	-3.73758379611537*
3	-0.0776569	0.7300390	4	0.2317609	3.973225	-4.11507012833279*
4	-0.1438291	0.8315628	5	0.0517013	5.262138	-4.4138386096006*
5	-0.0470180	0.7382962	6	-0.0840110	6.488607	-4.54370778324732*

Returns are not Random Walk 3

M_SPY_M

Checking for Normality

Jarque-Bera Statistic: 7.003045
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.219**
	(0.097)
lag2	-0.179*
	(0.099)
lag3	0.018
	(0.101)
lag4	0.004
	(0.103)
lag5	0.022
	(0.102)
Constant	0.013**
	(0.005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	5.48667446658802*
lag2	9.13895474227768*
lag3	9.17651698857436*
lag4	9.17854653067533
lag5	9.23283588776761

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.2193826	2.0666680	2	0.7806174	2.066668	-1.62936821858069
2	-0.1789904	1.4435441	3	0.5881630	4.315652	-2.1166772002003*
3	0.0181520	1.2480295	4	0.5010117	6.405554	-2.10505961455069*
4	0.0042194	0.9456337	5	0.4504087	8.319414	-2.03444469367054*
5	0.0218225	1.2795560	6	0.4239476	10.117529	-1.93364706613925

Returns are not Random Walk 3

S16_RL_M

Checking for Normality

Jarque-Bera Statistic: 10.94663
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.074
	(0.096)
lag2	0.052
	(0.098)
lag3	-0.108
	(0.099)
lag4	-0.024
	(0.099)
lag5	0.026
	(0.099)
Constant	-0.003
	(0.010)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.6194924
lag2	0.9319891
lag3	2.2569477
lag4	2.3221260
lag5	2.3989445

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0737166	0.9761646	2	0.9262834	0.9761646	-0.7966297
2	0.0523565	0.4786862	3	0.9366154	1.9481532	-0.4848689
3	-0.1078074	0.9195044	4	0.8878778	2.9049327	-0.7023864
4	-0.0239111	0.7848208	5	0.8490707	3.9023437	-0.8157613
5	0.0259586	0.5787125	6	0.8318522	4.8951811	-0.8114451

Returns are Random Walk 3

S17_WWE_M

Checking for Normality

Jarque-Bera Statistic: 24.05386
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	0.066
	(0.096)
lag2	0.025
	(0.095)
lag3	-0.124
	(0.095)
lag4	-0.099
	(0.096)
lag5	0.155
	(0.096)
Constant	0.018
	(0.014)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.4904604
lag2	0.5642002
lag3	2.3218775
lag4	3.4318765
lag5	6.1825643

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.0655918	2.152275	2	1.0655918	2.152275	0.4773677
2	0.0254331	1.119571	3	1.1044111	4.323854	0.5361220
3	-0.1241701	1.488395	4	1.0617357	6.334289	0.2619026
4	-0.0986754	1.664111	5	0.9966603	8.340837	-0.0123469
5	0.1553346	1.156306	6	1.0050549	10.325368	0.0167962

Returns are Random Walk 3

S18_DLB_M

Checking for Normality

Jarque-Bera Statistic: 0.7550606
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.096
	(0.096)
lag2	-0.015
	(0.097)
lag3	-0.066
	(0.097)
lag4	0.093
	(0.099)
lag5	0.055
	(0.099)
Constant	0.007
	(0.007)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	1.041093
lag2	1.065873
lag3	1.566375
lag4	2.544216
lag5	2.890382

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0955636	1.1291797	2	0.9044364	1.129180	-0.9602036
2	-0.0147432	0.8640486	3	0.8627531	2.391452	-0.9475979
3	-0.0662599	0.8243983	4	0.8087815	3.610802	-1.0744356
4	0.0926151	0.7642854	5	0.8134446	4.784830	-0.9105985
5	0.0551048	0.7321764	6	0.8349216	5.918130	-0.7245200

Returns are Random Walk 3

S19_CROX_M

Checking for Normality

Jarque-Bera Statistic: 6.544818
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	0.178*
	(0.095)
lag2	-0.034
	(0.099)
lag3	0.046
	(0.099)
lag4	0.076
	(0.099)
lag5	-0.123
	(0.098)
Constant	0.014
	(0.014)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	3.609302
lag2	3.738491
lag3	3.981139
lag4	4.637034
lag5	6.369009

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	0.1779341	1.6832307	2	1.177934	1.683231	1.464333
2	-0.0336636	1.2765318	3	1.214803	3.559758	1.215577
3	0.0461356	0.9818975	4	1.256305	5.309275	1.187661
4	0.0758516	1.2434245	5	1.311547	6.974639	1.259550
5	-0.1232589	1.0298069	6	1.307289	8.593984	1.119186

Returns are Random Walk 3

S20_HAS_M

Checking for Normality

Jarque-Bera Statistic: 6.125273
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.101
	(0.096)
lag2	0.030
	(0.097)
lag3	0.077
	(0.096)
lag4	-0.0001
	(0.098)
lag5	0.008
	(0.097)
Constant	0.005
	(0.007)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	1.172130
lag2	1.273985
lag3	1.958417
lag4	1.958418
lag5	1.966150

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1013994	0.7990191	2	0.8986006	0.7990191	-1.2111819
2	0.0298909	0.8474816	3	0.8847280	1.7971369	-0.9180907
3	0.0774841	1.0797309	4	0.9165338	2.9152074	-0.5219493
4	-0.0000596	1.6165241	5	0.9355934	4.2155341	-0.3349317
5	0.0082356	0.7125288	6	0.9510451	5.6034875	-0.2208106

Returns are Random Walk 3

S21_MAT_M

Checking for Normality

Jarque-Bera Statistic: 1.932412
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.176*
	(0.096)
lag2	-0.054
	(0.097)
lag3	0.007
	(0.097)
lag4	-0.030
	(0.098)
lag5	0.090
	(0.096)
Constant	-0.008
	(0.011)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	3.526138
lag2	3.861893
lag3	3.866710
lag4	3.970817
lag5	4.885035

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1758722	1.690637	2	0.8241278	1.690637	-1.444191
2	-0.0542698	1.124230	3	0.7293238	3.505234	-1.543632
3	0.0065005	1.137987	4	0.6851721	5.212660	-1.472299
4	-0.0302196	1.049613	5	0.6465933	6.843171	-1.442443
5	0.0895514	1.035905	6	0.6507245	8.414427	-1.285607

Returns are Random Walk 3

S22_PII_M

Checking for Normality

Jarque-Bera Statistic: 46.79261
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.137
	(0.097)
lag2	-0.124
	(0.097)
lag3	-0.016
	(0.097)
lag4	-0.129
	(0.098)
lag5	0.016
	(0.098)
Constant	0.004
	(0.011)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	2.136825
lag2	3.896463
lag3	3.925085
lag4	5.808957
lag5	5.836647

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1369090	3.3246378	2	0.8630910	3.324638	-0.8017008
2	-0.1242394	1.5504306	3	0.7346284	6.599547	-1.1029347
3	-0.0158451	0.6909157	4	0.6624745	9.203594	-1.1879009
4	-0.1285503	0.7399361	5	0.5677621	11.304269	-1.3726317
5	0.0155853	0.7875482	6	0.5098156	13.098708	-1.4460980

Returns are Random Walk 3

S23_VAC_M

Checking for Normality

Jarque-Bera Statistic: 81.38695
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.030
	(0.096)
lag2	-0.165*
	(0.096)
lag3	0.075
	(0.098)
lag4	-0.064
	(0.098)
lag5	-0.002
	(0.098)
Constant	0.013
	(0.011)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.1002096
lag2	3.1858570
lag3	3.8256323
lag4	4.2988501
lag5	4.2995026

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0296485	3.7435810	2	0.9703515	3.743581	-0.1636105
2	-0.1645208	0.9932748	3	0.8507882	7.096711	-0.5980356
3	0.0749137	1.0968647	4	0.8284634	9.690548	-0.5883491
4	-0.0644285	0.7135103	5	0.7892971	11.830038	-0.6540785
5	-0.0023924	0.6540842	6	0.7623888	13.651314	-0.6866448

Returns are Random Walk 3

S24_COLM_M

Checking for Normality

Jarque-Bera Statistic: 8.368696
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.004
	(0.096)
lag2	-0.118
	(0.098)
lag3	0.014
	(0.099)
lag4	-0.024
	(0.099)
lag5	0.067
	(0.099)
Constant	0.010
	(0.008)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.0015479
lag2	1.5941770
lag3	1.6157765
lag4	1.6789087
lag5	2.1925940

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0036848	0.9402653	2	0.9963152	0.9402653	-0.0405735
2	-0.1181966	0.8813457	3	0.9162892	2.0632919	-0.6222338
3	0.0137648	1.3340665	4	0.8831586	3.3304592	-0.6835923
4	-0.0235328	1.0669044	5	0.8538671	4.7007241	-0.7196445
5	0.0671268	1.1281931	6	0.8567151	6.1122858	-0.6188011

Returns are Random Walk 3

S25_WEN_M

Checking for Normality

Jarque-Bera Statistic: 25.46439
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.110
	(0.095)
lag2	-0.068
	(0.096)
lag3	-0.145
	(0.096)
lag4	-0.066
	(0.097)
lag5	0.149
	(0.096)
Constant	0.016**
	(0.008)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	1.371762
lag2	1.900863
lag3	4.285875
lag4	4.786488
lag5	7.303325

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1096950	2.1391197	2	0.8903050	2.139120	-0.8007958
2	-0.0681267	0.9411694	3	0.8083222	4.221177	-0.9961104
3	-0.1446415	0.6190926	4	0.6950101	5.908962	-1.3396222
4	-0.0662672	0.7792904	5	0.6005159	7.352336	-1.5730381
5	0.1485850	0.7428070	6	0.5870481	8.663167	-1.4980058

Returns are Random Walk 3

S26_LPX_M

Checking for Normality

Jarque-Bera Statistic: 3.791052
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.195**
	(0.095)
lag2	-0.064
	(0.096)
lag3	-0.060
	(0.095)
lag4	-0.116
	(0.095)
lag5	-0.104
	(0.095)
Constant	0.019*
	(0.011)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	4.32473379946041*
lag2	4.78529498432712
lag3	5.19985481312391
lag4	6.73090806837201
lag5	7.96911279296846

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.1947723	1.0694498	2	0.8052277	1.069450	-2.01094169533394*
2	-0.0635611	1.0958307	3	0.6979295	2.388280	-2.0869791377454*
3	-0.0603033	0.7994532	4	0.6141288	3.701956	-2.14130826570303*
4	-0.1158891	1.1691428	5	0.5174927	5.014501	-2.30060730032524*
5	-0.1042183	1.0813997	6	0.4183292	6.358065	-2.46301587160959*

Returns are not Random Walk 3

S27_HE_M

Checking for Normality

Jarque-Bera Statistic: 156.9592
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.029
	(0.096)
lag2	-0.095
	(0.096)
lag3	0.063
	(0.097)
lag4	0.016
	(0.099)
lag5	-0.065
	(0.100)
Constant	0.008
	(0.005)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.0932327
lag2	1.1310921
lag3	1.5768865
lag4	1.6071104
lag5	2.0851151

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0285977	0.8042291	2	0.9714023	0.8042291	-0.3404821
2	-0.0954150	1.2957905	3	0.8982597	2.0056475	-0.7670406
3	0.0625338	0.5893200	4	0.8929553	3.2526360	-0.6337238
4	0.0162826	1.0209703	5	0.8962856	4.4652849	-0.5240428
5	-0.0647536	0.6083454	6	0.8769214	5.6482758	-0.5529388

Returns are Random Walk 3

S28_DISH_M

Checking for Normality

Jarque-Bera Statistic: 30.40142
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.020
	(0.096)
lag2	-0.149
	(0.096)
lag3	0.066
	(0.097)
lag4	-0.040
	(0.097)
lag5	0.096
	(0.097)
Constant	-0.010
	(0.011)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.0453418
lag2	2.5603401
lag3	3.0590754
lag4	3.2380478
lag5	4.2925716

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0199433	1.7928086	2	0.9800567	1.792809	-0.1590313
2	-0.1485308	1.5065152	3	0.8743884	3.856778	-0.6829200
3	0.0661428	0.8136291	4	0.8546257	5.743742	-0.6476534
4	-0.0396224	0.7953647	5	0.8269191	7.406953	-0.6790188
5	0.0961780	1.0243693	6	0.8405073	8.939217	-0.5695651

Returns are Random Walk 3

S29_MUSA_M

Checking for Normality

Jarque-Bera Statistic: 0.6084595
Returns are Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.063
	(0.097)
lag2	-0.072
	(0.097)
lag3	-0.016
	(0.098)
lag4	0.042
	(0.098)
lag5	-0.029
	(0.097)
Constant	0.006
	(0.008)

Note: *p<0.1;* ***p<0.05;*** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	0.4545622
lag2	1.0468691
lag3	1.0749589
lag4	1.2766912
lag5	1.3736464

Returns are Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.0631458	1.2549633	2	0.9368542	1.254963	-0.6018401
2	-0.0720810	0.8983295	3	0.8677516	2.630304	-0.8706424
3	-0.0156972	1.0535761	4	0.8253517	3.985391	-0.9340739
4	0.0420664	0.9961547	5	0.8167384	5.339974	-0.8467485
5	-0.0291631	0.8692622	6	0.8012751	6.675936	-0.8211995

Returns are Random Walk 3

S30_SLAB_M

Checking for Normality

Jarque-Bera Statistic: 13.67687
Returns are not Normally Distributed

Checking for Random Walk 1

Regressing Log Returns on its 5 lags

	Dependent variable:
lag1	-0.205**
	(0.096)
lag2	0.006
	(0.100)
lag3	-0.182*
	(0.099)
lag4	-0.027
	(0.100)
lag5	-0.022
	(0.100)
Constant	0.015
	(0.009)

Note: *p<0.1; **p<0.05;** p<0.01

Portmanteau Statisitics for 5 lags

	Q
lag1	4.81184051834754*
lag2	4.81618131441122
lag3	8.57528967621049*
lag4	8.65666482252107
lag5	8.71385378180015

Returns are not Random Walk 1

Checking for Random Walk 3

	row_k	delta_k	q	VR_q	Theta_q	Psi_q
1	-0.2054486	0.9187008	2	0.7945514	0.9187008	-2.28859300037543*
2	0.0061707	0.6036949	3	0.7301823	1.9015547	-2.089144261092*
3	-0.1815892	1.4727353	4	0.6072032	3.0389555	-2.40579282741007*
4	-0.0267174	0.9152683	5	0.5227287	4.3101882	-2.45453701039693*
5	-0.0223977	0.6515093	6	0.4589466	5.5770932	-2.44618128597735*

Returns are not Random Walk 3

##Summary of results

	Checking for Random Walk 1		Checking for Random Walk 3	Forecast Model
	Pearson's AutoCorrelation Coefficients	Portmanteau Statistics	Variance Ratio	Last.Lag.to.be.included
B01_AAPL_D	lag1 lag7 lag8 lag9	lag1 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
B02_IBM_D	lag4 lag5 lag6 lag7 lag8 lag9	lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
B03_MAR_D	lag1 lag3 lag6	lag1 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
B04_GOOG_D	lag1 lag6 lag7 lag8 lag9	lag1 lag2 lag6 lag7 lag8 lag9 lag10	6 7 8 9 10	lag9
B05_TSLA_D	lag7	Random Walk 1	Random Walk 3	0 (Random Walk)
B06_KO_D	lag4 lag5 lag6 lag7 lag9 lag10	lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
B07_NKE_D	lag4 lag6 lag7	lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
B08_MA_D	lag1 lag4 lag6 lag7 lag8	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	4 5 6 7 8 9 10	lag8
B09_V_D	lag1 lag4 lag6 lag7	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	1 2 3 4 5 6 7 8 9 10	lag7
B10_WMT_D	lag1 lag4 lag8 lag9	lag1 lag2 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
B11_META_D	lag8	lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
B12_AMZN_D	lag8	Random Walk 1	Random Walk 3	0 (Random Walk)
B13_MSFT_D	lag1 lag6 lag8 lag9	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	1 2 3 4 5 6 7 8 9 10	lag9
B14_INTC_D	lag1 lag2 lag8 lag9	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	1	lag9
B15_PEP_D	lag1 lag3 lag4 lag6 lag7 lag9	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
M_SPY_D	lag1 lag4 lag6 lag7 lag8 lag9	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S16_RL_D	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S17_WWE_D	lag10	Random Walk 1	Random Walk 3	0 (Random Walk)
S18_DLB_D	lag1 lag6 lag7 lag9	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S19_CROX_D	lag2 lag3	lag3 lag4 lag5 lag6	Random Walk 3	0 (Random Walk)

	Checking for Random Walk 1		Checking for Random Walk 3	Forecast Model
	Pearson's AutoCorrelation Coefficients	Portmanteau Statistics	Variance Ratio	Last.Lag.to.be.included
S20_HAS_D	lag8 lag9	lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S21_MAT_D	lag1 lag5	lag1	Random Walk 3	0 (Random Walk)
S22_PII_D	lag6 lag7 lag9	lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S23_VAC_D	lag2 lag3 lag4 lag5 lag6 lag7 lag9	lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S24_COLM_D	lag6	lag6 lag7 lag8 lag9 lag10	9 10	lag6
S25_WEN_D	lag1 lag5 lag6 lag7	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S26_LPX_D	lag6 lag7	lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S27_HE_D	lag2 lag3 lag4 lag6 lag7 lag9	lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S28_DISH_D	lag3 lag6 lag7	lag3 lag4 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S29_MUSA_D	lag1 lag3 lag4 lag5 lag7	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	Random Walk 3	0 (Random Walk)
S30_SLAB_D	lag1 lag7 lag8 lag9	lag1 lag2 lag3 lag4 lag5 lag6 lag7 lag8 lag9 lag10	1 2 3 4 5 6 7 8 9 10	lag9
B01_AAPL_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
B02_IBM_M	lag1	lag1 lag2 lag3 lag4 lag5	1 2 3 4 5	lag1
B03_MAR_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
B04_GOOG_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
B05_TSLA_M	lag4	lag4 lag5	Random Walk 3	0 (Random Walk)
B06_KO_M	lag1 lag2	lag1 lag2 lag3 lag4 lag5	1 2 3 4 5	lag2
B07_NKE_M	lag2	Random Walk 1	Random Walk 3	0 (Random Walk)
B08_MA_M	lag2	lag2 lag3 lag4 lag5	2 3 4 5	lag2
B09_V_M	lag2	lag2 lag3 lag4 lag5	2 3 4 5	lag2
B10_WMT_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
B11_META_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
B12_AMZN_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
B13_MSFT_M	lag1	lag1	1	lag1
B14_INTC_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
B15_PEP_M	lag1 lag2	lag1 lag2 lag3 lag4 lag5	1 2 3 4 5	lag2
M_SPY_M	lag1	lag1 lag2 lag3	2 3 4	lag1
S16_RL_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S17_WWE_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S18_DLB_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S19_CROX_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S20_HAS_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S21_MAT_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S22_PII_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S23_VAC_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S24_COLM_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S25_WEN_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S26_LPX_M	lag1	lag1	1 2 3 4 5	lag1
S27_HE_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)

	Checking for Random Walk 1		Checking for Random Walk 3	Forecast Model
	Pearson's AutoCorrelation Coefficients	Portmanteau Statistics	Variance Ratio	Last.Lag.to.be.included
S28_DISH_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S29_MUSA_M	Random Walk 1	Random Walk 1	Random Walk 3	0 (Random Walk)
S30_SLAB_M	lag1	lag1 lag3	1 2 3 4 5	lag1