

Vypočítejte očekávanou výnosnost a riziko portfolia, které je složeno z: akcií ERSTE, KB a VIG v podílech 35%, 35% a 30%. Použijte jednodenní výnosnosti za pos podíly akcií v portfoliu vyrovnaly, tj. každý by měl stejný podíl v portfoliu? Jak by se spočet výnosnosti daných akcií jsou navzájem nezávislé?

Datum	ERSTE	KB	VIG	výnosnost		
				ERSTE	KB	VIG
19.02.2010	728.10	3 770.00	934.00	0.010548	0.01072386	0.007551
18.02.2010	720.50	3 730.00	927.00	-0.00346	0.00838064	-0.02164
17.02.2010	723.00	3 699.00	947.50	0.019746	0.00900164	0.029556
16.02.2010	709.00	3 666.00	920.30	0.013581	0.03267606	0.020854
15.02.2010	699.50	3 550.00	901.50	0.024908	-0.0083799	0.002112
12.02.2010	682.50	3 580.00	899.60	-0.00438	-0.0191781	0.010787
11.02.2010	685.50	3 650.00	890.00	-0.01791	-0.0295134	-0.00168
10.02.2010	698.00	3 761.00	891.50	0.02768	0.02956474	0.006208
09.02.2010	679.20	3 653.00	886.00	0.036156	0.02296276	0.005561
08.02.2010	655.50	3 571.00	881.10	-0.02745	0.02028571	0.001819
05.02.2010	674.00	3 500.00	879.50	-0.0246	-0.0543096	-0.03458
04.02.2010	691.00	3 701.00	911.00	-0.05459	-0.0135928	-0.00055
03.02.2010	730.90	3 752.00	911.50	-0.00137	-0.002393	-0.02524
02.02.2010	731.90	3 761.00	935.10	-0.01095	-0.0151872	0.014098
01.02.2010	740.00	3 819.00	922.10	0.020971	0.00104849	-0.00582
29.01.2010	724.80	3 815.00	927.50	-0.02054	0.00157522	-0.01497
28.01.2010	740.00	3 809.00	941.60	-0.01333	0.00236842	0.004802
27.01.2010	750.00	3 800.00	937.10	-0.00253	0	-0.01627
26.01.2010	751.90	3 800.00	952.60	-0.00252	-0.0231362	-0.03004
25.01.2010	753.80	3 890.00	982.10	0.016862	0.00516796	0.01867
22.01.2010	741.30	3 870.00	964.10	-0.04472	-0.0300752	-0.02132
21.01.2010	776.00	3 990.00	985.10	-0.01772	-0.0025	-0.01302
20.01.2010	790.00	4 000.00	998.10	-0.00878	0.00755668	0.006048
19.01.2010	797.00	3 970.00	992.10	-0.00125	0.00915099	-0.0148
18.01.2010	798.00	3 934.00	1 007.00	0.015009	0.03390276	0.00199
15.01.2010	786.20	3 805.00	1 005.00	-0.01107	-0.0293367	0.005
14.01.2010	795.00	3 920.00	1 000.00	0.046053	-0.0187735	0.021868
13.01.2010	760.00	3 995.00	978.60	0.008894	0.01011378	0.022464
12.01.2010	753.30	3 955.00	957.10	-0.00027	0.00329782	-0.00468
11.01.2010	753.50	3 942.00	961.60	0.027267	0.04840426	-0.0061
08.01.2010	733.50	3 760.00	967.50	0.010191	-0.0105263	-0.00565
07.01.2010	726.10	3 800.00	973.00	-0.00941	-0.0039318	0
06.01.2010	733.00	3 815.00	973.00	0.025462	-0.011658	-0.00307
05.01.2010	714.80	3 860.00	976.00	0.026274	-0.0140485	0.017727
04.01.2010	696.50	3 915.00	959.00	-0.00286	-0.0035632	0.018047
30.12.2009	698.50	3 929.00	942.00	-0.00626	-0.01775	-0.00957
29.12.2009	702.90	4 000.00	951.10	0.018696	0.02040816	0.013858
28.12.2009	690.00	3 920.00	938.10	0.010249	0.00384123	-0.00887
23.12.2009	683.00	3 905.00	946.50	-0.01272	0.00618397	-0.00263
22.12.2009	691.80	3 881.00	949.00	0.012143	0.00544041	0.010865
21.12.2009	683.50	3 860.00	938.80	0.000732	0.0025974	0.025115
18.12.2009	683.00	3 850.00	915.80	-0.02707	-0.0102828	0.010259
17.12.2009	702.00	3 890.00	906.50	-0.01266	0.00516796	-0.01692

16.12.2009	711.00	3 870.00	922.10	0.029987	0.01842105	-0.00421
15.12.2009	690.30	3 800.00	926.00	-0.02638	0.01333333	0.013573
14.12.2009	709.00	3 750.00	913.60	-0.01116	0.00482315	-0.02289
11.12.2009	717.00	3 732.00	935.00	0.006316	0.02106703	0.018408
10.12.2009	712.50	3 655.00	918.10	0.003239	-0.0174731	0.032153
09.12.2009	710.20	3 720.00	889.50	-0.03571	-0.0210526	-0.02776
08.12.2009	736.50	3 800.00	914.90	-0.0046	-0.0180879	-0.00262
07.12.2009	739.90	3 870.00	917.30	-0.00818	-0.0152672	-0.02321
04.12.2009	746.00	3 930.00	939.10	0.014276	0.0234375	-0.00266
03.12.2009	735.50	3 840.00	941.60	0.016586	0.01775775	0.003731
02.12.2009	723.50	3 773.00	938.10	0.001384	0.01152815	0.010884
01.12.2009	722.50	3 730.00	928.00	0.01049	-0.0184211	-0.01098
30.11.2009	715.00	3 800.00	938.30	-0.01107	0.02425876	-0.03368
27.11.2009	723.00	3 710.00	971.00	0.021186	0.00678426	0.036729
26.11.2009	708.00	3 685.00	936.60	-0.04466	-0.0199468	-0.04749
25.11.2009	741.10	3 760.00	983.30	-0.01711	-0.0246433	0.003572
24.11.2009	754.00	3 855.00	979.80	-0.00199	-0.0064433	-0.0086
23.11.2009	755.50	3 880.00	988.30	-0.0033	0.01570681	-0.00172
20.11.2009	758.00	3 820.00	990.00	-0.00066	0.01004759	0.013721
19.11.2009	758.50	3 782.00	976.60	0.001452	0.0013238	0.004113
18.11.2009	757.40	3 777.00	972.60	-0.02145	0.0194332	-0.02359
16.11.2009	774.00	3 705.00	996.10	-0.01086	0.00406504	0.008096
13.11.2009	782.50	3 690.00	988.10	-0.01881	-0.0080645	0.013332
12.11.2009	797.50	3 720.00	975.10	0.016571	0.01196953	-0.01901
11.11.2009	784.50	3 676.00	994.00	-0.00064	-0.0040639	-0.00211
10.11.2009	785.00	3 691.00	996.10	-0.00381	0.01792609	-0.0035
09.11.2009	788.00	3 626.00	999.60	0.03548	0.02458322	0.011638
06.11.2009	761.00	3 539.00	988.10	0.003958	-0.0196676	-0.01877
05.11.2009	758.00	3 610.00	1 007.00	0.002646	0.05094614	-0.01275
04.11.2009	756.00	3 435.00	1 020.00	0.023004	0.0023344	0.022454
03.11.2009	739.00	3 427.00	997.60	-0.01203	-0.0346479	-0.02483
02.11.2009	748.00	3 550.00	1 023.00	-0.01579	-0.0092102	0.003925
30.10.2009	760.00	3 583.00	1 019.00	0.054092	0.00364146	-0.01546
29.10.2009	721.00	3 570.00	1 035.00	-0.0425	-0.0208448	-0.03181
27.10.2009	753.00	3 646.00	1 069.00	-0.03462	-0.0405263	-0.01475
26.10.2009	780.00	3 800.00	1 085.00	-0.00637	-0.0034094	0.002773
23.10.2009	785.00	3 813.00	1 082.00	0.009127	0.05302403	-0.00185
22.10.2009	777.90	3 621.00	1 084.00	-0.00461	-0.0250404	-0.00733
21.10.2009	781.50	3 714.00	1 092.00	-0.01164	-0.0016129	0.012048
20.10.2009	790.70	3 720.00	1 079.00	0.00662	0.00567721	-0.01998
19.10.2009	785.50	3 699.00	1 101.00	0.013418	-0.0252964	-0.00811
16.10.2009	775.10	3 795.00	1 110.00	-0.01261	-0.0013158	0.006346
15.10.2009	785.00	3 800.00	1 103.00	0	-0.0054959	0.034709
14.10.2009	785.00	3 821.00	1 066.00	0.03836	0.03831522	0.021073
13.10.2009	756.00	3 680.00	1 044.00	-0.01818	-0.0008146	-0.01416
12.10.2009	770.00	3 683.00	1 059.00	0.026667	0.06414331	0.01534
09.10.2009	750.00	3 461.00	1 043.00	0.00415	0.02700297	0.03988
08.10.2009	746.90	3 370.00	1 003.00	0.009324	0.00958658	0.007939
07.10.2009	740.00	3 338.00	995.10	0.006803	-0.0094955	0.00353
06.10.2009	735.00	3 370.00	991.60	0.043738	0.01720495	0.015359

05.10.2009	704.20	3 313.00	976.60	0.013092	-0.023578	0.001538
02.10.2009	695.10	3 393.00	975.10	-0.05493	-0.0266781	-0.01664
01.10.2009	735.50	3 486.00	991.60	-0.04666	0.01337209	0.007519
30.09.2009	771.50	3 440.00	984.20	0.025931	0	-0.00495
29.09.2009	752.00	3 440.00	989.10	0.033677	-0.0100719	0.019691
25.09.2009	727.50	3 475.00	970.00	-0.01676	-0.0211268	-0.01673
24.09.2009	739.90	3 550.00	986.50	-0.02143	0.00967008	0.015858
23.09.2009	756.10	3 516.00	971.10	0.002519	0.00773861	-0.00308
22.09.2009	754.20	3 489.00	974.10	0.024728	0.0083815	0.028074
21.09.2009	736.00	3 460.00	947.50	0.004093	-0.0253521	-0.00053
18.09.2009	733.00	3 550.00	948.00	-0.03806	0.02011494	-0.0094
17.09.2009	762.00	3 480.00	957.00	0.018989	0.004329	0.00843
16.09.2009	747.80	3 465.00	949.00	0.025789	0.00726744	-0.00732
15.09.2009	729.00	3 440.00	956.00	-0.00546	0.01594802	0.01164
14.09.2009	733.00	3 386.00	945.00	-0.0124	0.04184615	-0.00316
11.09.2009	742.20	3 250.00	948.00	-0.01303	-0.024024	0.003175
10.09.2009	752.00	3 330.00	945.00	-0.00792	-0.002994	0.025391
09.09.2009	758.00	3 340.00	921.60	-0.0025	-0.0118343	0.010526
08.09.2009	759.90	3 380.00	912.00	-0.00419	0.00745156	0.021162
07.09.2009	763.10	3 355.00	893.10	0.043912	0.01206637	0.012585
04.09.2009	731.00	3 315.00	882.00	0.026685	0.00882532	0.005701
03.09.2009	712.00	3 286.00	877.00	0.011364	0.0265542	-0.00578
02.09.2009	704.00	3 201.00	882.10	-0.06383	-0.0529586	-0.01287
01.09.2009	752.00	3 380.00	893.60	0.002399	-0.0029499	-0.00722
31.08.2009	750.20	3 390.00	900.10	0.093745	0.02727273	-0.02014
28.08.2009	685.90	3 300.00	918.60	-0.07436	-0.009009	0.009451
27.08.2009	741.00	3 330.00	910.00	-0.00497	-0.0118694	-0.0011
26.08.2009	744.70	3 370.00	911.00	-0.02971	-0.0324433	-0.00066
25.08.2009	767.50	3 483.00	911.60	-0.01413	-0.0048571	0.001758
24.08.2009	778.50	3 500.00	910.00	0.093399	0.01156069	0.010437
21.08.2009	712.00	3 460.00	900.60	0.017143	0.0002891	0.042844
20.08.2009	700.00	3 459.00	863.60	0.0279	-0.0060345	0.011123
19.08.2009	681.00	3 480.00	854.10	-0.02714	-0.0183357	-0.00985
18.08.2009	700.00	3 545.00	862.60	0.019665	0.01750861	-0.03792
17.08.2009	686.50	3 484.00	896.60	-0.04254	-0.056338	-0.03705
14.08.2009	717.00	3 692.00	931.10	0.000139	0.01178405	0.025441
13.08.2009	716.90	3 649.00	908.00	0.073204	0.07640118	0.010461
12.08.2009	668.00	3 390.00	898.60	-0.00477	0.01801802	0.001895
11.08.2009	671.20	3 330.00	896.90	-0.06126	-0.0485714	0.013446
10.08.2009	715.00	3 500.00	885.00	-0.00279	0.01156069	0.030748
07.08.2009	717.00	3 460.00	858.60	-0.0124	0.02518519	-0.02829
06.08.2009	726.00	3 375.00	883.60	0.062958	0.03179456	0.012606
05.08.2009	683.00	3 271.00	872.60	0.041159	0.0384127	0.001722
04.08.2009	656.00	3 150.00	871.10	-0.00606	0	0.012907
03.08.2009	660.00	3 150.00	860.00	0.047952	0.01711334	0.014749
31.07.2009	629.80	3 097.00	847.50	0.063851	0.05519591	-0.02023
30.07.2009	592.00	2 935.00	865.00	0.094068	0.02264808	0.008159
29.07.2009	541.10	2 870.00	858.00	-0.00166	0.00490196	0.03125
28.07.2009	542.00	2 856.00	832.00	-0.0243	-0.0013986	-0.01317
27.07.2009	555.50	2 860.00	843.10	0.01	0.01238938	0.036386

24.07.2009	550.00	2 825.00	813.50	0.040681	0.03026988	0.029356
23.07.2009	528.50	2 742.00	790.30	-0.00639	-0.0032715	-0.00353
22.07.2009	531.90	2 751.00	793.10	-0.00579	-0.0381119	-0.00564
21.07.2009	535.00	2 860.00	797.60	0.01518	0.003861	-0.01226
20.07.2009	527.00	2 849.00	807.50	0.02729	-0.0003509	0.031817
17.07.2009	513.00	2 850.00	782.60	-0.0163	-0.0041929	0.007078
16.07.2009	521.50	2 862.00	777.10	0.023753	-0.0131034	-0.01082
15.07.2009	509.40	2 900.00	785.60	0.038956	0.00694444	0.001913
14.07.2009	490.30	2 880.00	784.10	0.040093	0.03225806	0.012264
13.07.2009	471.40	2 790.00	774.60	0.036044	0.04104478	0.010568
10.07.2009	455.00	2 680.00	766.50	-0.00022	-0.0040877	-0.00854
09.07.2009	455.10	2 691.00	773.10	-0.00525	0.01508865	0.005462
08.07.2009	457.50	2 651.00	768.90	-0.03175	0.00378644	0.011178
07.07.2009	472.50	2 641.00	760.40	-0.01089	0.03976378	-0.01757
03.07.2009	477.70	2 540.00	774.00	-0.01708	-0.0147401	-0.02013
02.07.2009	486.00	2 578.00	789.90	-0.02213	-0.0065511	-0.01876
01.07.2009	497.00	2 595.00	805.00	-0.00996	0.01367188	0.021574
30.06.2009	502.00	2 560.00	788.00	0.030589	-0.0153846	0.049967
29.06.2009	487.10	2 600.00	750.50	0.020105	-0.0129081	0.013368
26.06.2009	477.50	2 634.00	740.60	-0.01343	0.01113244	0.003387
25.06.2009	484.00	2 605.00	738.10	0.009174	-0.0279851	0.030722
24.06.2009	479.60	2 680.00	716.10	0.045336	-0.0026051	-0.00403
23.06.2009	458.80	2 687.00	719.00	-0.01333	0.00074488	-0.03113
22.06.2009	465.00	2 685.00	742.10	-0.06439	-0.0324324	-0.05175
19.06.2009	497.00	2 775.00	782.60	0.006888	0.03428997	-0.00496
18.06.2009	493.60	2 683.00	786.50	0.011475	-0.0081331	0.001911
17.06.2009	488.00	2 705.00	785.00	-0.03194	-0.001845	-0.02302
16.06.2009	504.10	2 710.00	803.50	-0.03244	-0.0109489	0.00262
15.06.2009	521.00	2 740.00	801.40	-0.04034	-0.0043605	-0.00447
12.06.2009	542.90	2 752.00	805.00	-0.01021	-0.0241135	-0.00198
11.06.2009	548.50	2 820.00	806.60	-0.00814	-0.0174216	-0.00543
10.06.2009	553.00	2 870.00	811.00	0.010969	0.00701754	0.015019
09.06.2009	547.00	2 850.00	799.00	0.022621	0.00956429	0.033501
08.06.2009	534.90	2 823.00	773.10	-0.0041	-0.0094737	-0.02755
05.06.2009	537.10	2 850.00	795.00	0.035074	0.04014599	-0.0107
04.06.2009	518.90	2 740.00	803.60	0.021457	0.0254491	-0.00174
03.06.2009	508.00	2 672.00	805.00	0.007937	-0.0066914	0.009278
02.06.2009	504.00	2 690.00	797.60	0.020449	0.01893939	0.00962
01.06.2009	493.90	2 640.00	790.00	0.097556	0.10970996	0.019355
29.05.2009	450.00	2 379.00	775.00	-0.02808	-0.1172542	0.007147
28.05.2009	463.00	2 695.00	769.50	-0.01489	-0.013182	-0.0013
27.05.2009	470.00	2 731.00	770.50	-0.0017	-0.0383803	0.017162
26.05.2009	470.80	2 840.00	757.50	-0.02928	-0.0080335	0.001852
25.05.2009	485.00	2 863.00	756.10	-0.00615	0.02506266	-0.01267
22.05.2009	488.00	2 793.00	765.80	-0.00204	0.00976139	-0.01391
21.05.2009	489.00	2 766.00	776.60	-0.03015	-0.0117899	-0.0208
20.05.2009	504.20	2 799.00	793.10	0.06125	0.02452416	-0.01478
19.05.2009	475.10	2 732.00	805.00	0.041886	0.02169035	0.041936
18.05.2009	456.00	2 674.00	772.60	-0.00848	0.01673004	0.013911
15.05.2009	459.90	2 630.00	762.00	0.017478	0.02935421	0.022819

14.05.2009	452.00	2 555.00	745.00	-0.05833	-0.0096899	-0.02102
13.05.2009	480.00	2 580.00	761.00	-0.12727	-0.0618182	-0.06683
12.05.2009	550.00	2 750.00	815.50	0.018519	-0.0146901	-0.03274
11.05.2009	540.00	2 791.00	843.10	-0.02103	-0.0309028	0.087029
07.05.2009	551.60	2 880.00	775.60	0.040755	0.03299857	0.00142
06.05.2009	530.00	2 788.00	774.50	0.033541	-0.0196906	0.007807
05.05.2009	512.80	2 844.00	768.50	0.108278	0.01571429	-0.00788
04.05.2009	462.70	2 800.00	774.60	0.066621	0.02189781	-0.03429
30.04.2009	433.80	2 740.00	802.10	0.06454	0.04900459	0.028202
29.04.2009	407.50	2 612.00	780.10	-0.00049	0.0802316	0.048522
28.04.2009	407.70	2 418.00	744.00	-0.01164	0.00582363	-0.00932
27.04.2009	412.50	2 404.00	751.00	-0.01221	-0.0207739	0.034008
24.04.2009	417.60	2 455.00	726.30	0.005538	0.03542809	0.018511
23.04.2009	415.30	2 371.00	713.10	0.016149	-0.0025242	-0.00972
22.04.2009	408.70	2 377.00	720.10	0.04768	-0.003772	0.016373
21.04.2009	390.10	2 386.00	708.50	-0.04387	-0.0144568	-0.01924
20.04.2009	408.00	2 421.00	722.40	-0.02299	-0.0373757	-0.01041
17.04.2009	417.60	2 515.00	730.00	-0.02839	0.01207243	0.002472
16.04.2009	429.80	2 485.00	728.20	0.007501	-0.0134974	-0.00465
15.04.2009	426.60	2 519.00	731.60	-0.00906	-0.0067035	-0.01015
14.04.2009	430.50	2 536.00	739.10	0.052567	-0.0324304	0.005441
10.04.2009	409.00	2 621.00	735.10	0.020969	0.00537016	0.061363
09.04.2009	400.60	2 607.00	692.60	0.065426	0.03206651	0.03296
08.04.2009	376.00	2 526.00	670.50	0.041551	0.05823209	0.006757
07.04.2009	361.00	2 387.00	666.00	-0.04875	-0.0594957	-0.01929
06.04.2009	379.50	2 538.00	679.10	-0.05503	-0.0151339	-0.01949
03.04.2009	401.60	2 577.00	692.60	0.036655	0.08688317	0.053224
02.04.2009	387.40	2 371.00	657.60	0.134407	0.10587687	0.063906
01.04.2009	341.50	2 144.00	618.10	0.03141	0.04432538	0.11651
31.03.2009	331.10	2 053.00	553.60	-0.00121	0	-0.06565
30.03.2009	331.50	2 053.00	592.50	-0.12717	-0.0979789	-0.01904
27.03.2009	379.80	2 276.00	604.00	-0.06338	-0.020654	0.007338
26.03.2009	405.50	2 324.00	599.60	0.017566	0.00519031	-0.01544
25.03.2009	398.50	2 312.00	609.00	0.087312	0.0428507	0.091202
24.03.2009	366.50	2 217.00	558.10	0.052858	0.05621725	-0.01622
23.03.2009	348.10	2 099.00	567.30	0.147709	0.07201226	0.034275
20.03.2009	303.30	1 958.00	548.50	-0.11857	0.0118863	-0.03092
19.03.2009	344.10	1 935.00	566.00	0.186552	0.04821235	0.109804
18.03.2009	290.00	1 846.00	510.00	0.061493	0.00874317	0.058091
17.03.2009	273.20	1 830.00	482.00	0.052794	-0.0086674	-0.00823
16.03.2009	259.50	1 846.00	486.00	0.038831	0.01820188	0.034043
13.03.2009	249.80	1 813.00	470.00	0.025452	-0.0032985	-0.00106
12.03.2009	243.60	1 819.00	470.50	0.039249	-0.0038335	-0.01692
11.03.2009	234.40	1 826.00	478.60	0.066909	0.0032967	0.034811
10.03.2009	219.70	1 820.00	462.50	0.052203	0.06370544	0.01626
09.03.2009	208.80	1 711.00	455.10	0	0.02639472	-0.08907
06.03.2009	208.80	1 667.00	499.60	-0.02657	0.0302843	-0.01847
05.03.2009	214.50	1 618.00	509.00	-0.01379	0.00061843	-0.02584
04.03.2009	217.50	1 617.00	522.50	0.056851	0.02797203	0.029557
03.03.2009	205.80	1 573.00	507.50	-0.01766	-0.005689	0.036772

02.03.2009	209.50	1 582.00	489.50	-0.02874	-0.0504202	-0.02412
27.02.2009	215.70	1 666.00	501.60	0.010778	0.06794872	-0.04457
26.02.2009	213.40	1 560.00	525.00	0.032914	0.00970874	0.071429
25.02.2009	206.60	1 545.00	490.00	0.020247	-0.0361822	0.017442
24.02.2009	202.50	1 603.00	481.60	-0.0146	-0.0213675	-0.01311
23.02.2009	205.50	1 638.00	488.00	-0.01439	-0.0381679	0.001026
20.02.2009	208.50	1 703.00	487.50	-0.03383	-0.0517817	-0.05358
19.02.2009	215.80	1 796.00	515.10			

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očekávaná výnosnost

0.005594 0.00338395 0.002706
0.005594 0.00338395 0.002706

	výnosnosti rizika		váhy	
ERSTE	0.005594	0.0381847	0.35	0.3333333
KB	0.003384	0.0288195	0.35	0.3333333
VIG	0.002706	0.025578	0.3	0.3333333
výnosnost portfolia			0.0039542	0.0038948
riziko portfolia			0.0251952	0.0248166
riziko portfolia pro nekorelované			0.0184184	0.0180827

slední rok. Jak by se spočtené hodnoty změnily, kdyby se
né hodnoty změnily, pokud bychom předpokládali, že

rozptyl			kovariance		
ERSTE	KB	VIG	ERSTE	KB	VIG
2.45413E-05	5.3874E-05	2.34757E-05	0.00495391	0.00733991	0.004845
8.19411E-05	2.4967E-05	0.000592531	-0.0090521	0.00499669	-0.02434
0.000200274	3.1558E-05	0.000720896	0.0141518	0.00561769	0.02685
6.37892E-05	0.00085803	0.000329352	0.00798681	0.02929211	0.018148
0.000373035	0.00013839	3.5286E-07	0.01931411	-0.0117638	-0.00059
9.94146E-05	0.00050905	6.52936E-05	-0.0099707	-0.022562	0.00808
0.000552373	0.00108224	1.92601E-05	-0.0235026	-0.0328974	-0.00439
0.000487761	0.00068543	1.22612E-05	0.02208531	0.02618079	0.003502
0.000933992	0.00038333	8.15194E-06	0.03056129	0.0195788	0.002855
0.001091799	0.00028567	7.86511E-07	-0.0330424	0.01690176	-0.00089
0.000911819	0.00332855	0.001390056	-0.0301963	-0.0576936	-0.03728
0.00362218	0.00028821	1.05925E-05	-0.0601845	-0.0169767	-0.00325
4.84503E-05	3.3373E-05	0.000780868	-0.0069606	-0.0057769	-0.02794
0.00027358	0.00034489	0.000129782	-0.0165403	-0.0185712	0.011392
0.000236452	5.4544E-06	7.27297E-05	0.01537698	-0.0023355	-0.00853
0.000683031	3.2715E-06	0.000312603	-0.0261349	-0.0018087	-0.01768
0.000358256	1.0313E-06	4.39313E-06	-0.0189277	-0.0010155	0.002096
6.59547E-05	1.1451E-05	0.000360139	-0.0081212	-0.003384	-0.01898
6.58513E-05	0.00070332	0.001072153	-0.0081149	-0.0265202	-0.03274
0.000126967	3.1827E-06	0.000254855	0.01126795	0.00178401	0.015964
0.002531178	0.00111951	0.000577138	-0.0503108	-0.0334591	-0.02402
0.000543628	3.4621E-05	0.000247459	-0.0233158	-0.005884	-0.01573
0.000206705	1.7412E-05	1.1167E-05	-0.0143773	0.00417272	0.003342
4.68876E-05	3.3259E-05	0.000306337	-0.0068475	0.00576704	-0.0175
8.86344E-05	0.0009314	5.12685E-07	0.00941459	0.03051881	-0.00072
0.000277672	0.00107064	5.26211E-06	-0.0166635	-0.0327207	0.002294
0.001636875	0.00049095	0.000367179	0.04045831	-0.0221574	0.019162
1.08892E-05	4.5291E-05	0.000390364	0.00329988	0.00672983	0.019758
3.43366E-05	7.4188E-09	5.45496E-05	-0.0058597	-8.613E-05	-0.00739
0.000469685	0.00202683	7.7515E-05	0.02167221	0.0450203	-0.0088
2.11335E-05	0.0001935	6.98677E-05	0.00459712	-0.0139103	-0.00836
0.000225231	5.3521E-05	7.32282E-06	-0.0150077	-0.0073158	-0.00271
0.000394712	0.00022626	3.34066E-05	0.01986735	-0.015042	-0.00578
0.000427659	0.00030389	0.000225622	0.02067991	-0.0174325	0.015021
7.15309E-05	4.8264E-05	0.000235335	-0.0084576	-0.0069472	0.015341
0.00014052	0.00044664	0.00015065	-0.0118541	-0.021134	-0.01227
0.000171645	0.00028982	0.000124361	0.01310133	0.01702421	0.011152
2.16652E-05	2.091E-07	0.000134117	0.00465458	0.00045728	-0.01158
0.00033543	7.8401E-06	2.85201E-05	-0.0183148	0.00280002	-0.00534
4.28902E-05	4.229E-06	6.65671E-05	0.00654906	0.00205646	0.008159
2.36415E-05	6.1866E-07	0.000502145	-0.0048623	-0.0007865	0.022409
0.001066665	0.00018678	5.70504E-05	-0.0326598	-0.0136667	0.007553
0.000333155	3.1827E-06	0.0003851	-0.0182525	0.00178401	-0.01962

0.000595001	0.00022611	4.7855E-05	0.02439264	0.0150371	-0.00692
0.001022049	9.899E-05	0.000118083	-0.0319695	0.00994938	0.010867
0.000280627	2.0713E-06	0.000655041	-0.0167519	0.0014392	-0.02559
5.20522E-07	0.00031269	0.000246537	0.00072147	0.01768308	0.015702
5.54976E-06	0.00043502	0.000867115	-0.0023558	-0.0208571	0.029447
0.001706	0.00059715	0.00092834	-0.0413038	-0.0244366	-0.03047
0.000103827	0.00046104	2.83284E-05	-0.0101895	-0.0214718	-0.00532
0.000189648	0.00034786	0.000671835	-0.0137713	-0.0186511	-0.02592
7.53717E-05	0.00040214	2.87417E-05	0.00868169	0.02005355	-0.00536
0.000120818	0.00020661	1.05037E-06	0.01099172	0.0143738	0.001025
1.77261E-05	6.6328E-05	6.68723E-05	-0.0042102	0.0081442	0.008178
2.39629E-05	0.00047546	0.000187235	0.00489519	-0.021805	-0.01368
0.000277533	0.00043576	0.0013237	-0.0166593	0.02087481	-0.03638
0.000243114	1.1562E-05	0.001157532	0.01559212	0.00340031	0.034023
0.002525832	0.00054432	0.00251996	-0.0502577	-0.0233308	-0.0502
0.000515429	0.00078553	7.50107E-07	-0.0227031	-0.0280273	0.000866
5.74527E-05	9.6575E-05	0.000127841	-0.0075798	-0.0098272	-0.01131
7.9076E-05	0.00015185	1.95651E-05	-0.0088925	0.01232286	-0.00442
3.91064E-05	4.4404E-05	0.00012133	-0.0062535	0.00666364	0.011015
1.7156E-05	4.2442E-06	1.97857E-06	-0.004142	-0.0020601	0.001407
0.000731234	0.00025758	0.000691589	-0.0270413	0.01604925	-0.0263
0.000270831	4.6388E-07	2.90551E-05	-0.0164569	0.00068109	0.00539
0.000595511	0.00013107	0.00011291	-0.0244031	-0.0114485	0.010626
0.000120489	7.3712E-05	0.000471765	0.01097675	0.00858558	-0.02172
3.88286E-05	5.5471E-05	2.31774E-05	-0.0062313	-0.0074479	-0.00481
8.83868E-05	0.00021147	3.85327E-05	-0.0094014	0.01454214	-0.00621
0.000893132	0.00044941	7.97883E-05	0.02988531	0.02119926	0.008932
2.67824E-06	0.00053137	0.000461162	-0.0016365	-0.0230515	-0.02147
8.69551E-06	0.00226216	0.000238739	-0.0029488	0.04756219	-0.01545
0.000303099	1.1016E-06	0.000389976	0.01740974	-0.0010495	0.019748
0.00031069	0.00144642	0.000758176	-0.0176264	-0.0380318	-0.02754
0.000457267	0.00015861	1.48681E-06	-0.0213838	-0.0125941	0.001219
0.002351981	6.6309E-08	0.000329967	0.04849722	0.00025751	-0.01817
0.002312744	0.00058703	0.001191043	-0.048091	-0.0242287	-0.03451
0.00161682	0.00192811	0.000304594	-0.0402097	-0.0439103	-0.01745
0.000143131	4.6149E-05	4.43197E-09	-0.0119637	-0.0067933	6.66E-05
1.24808E-05	0.00246414	2.07124E-05	0.00353282	0.04964008	-0.00455
0.000104057	0.00080794	0.000100643	-0.0102008	-0.0284243	-0.01003
0.000296858	2.4969E-05	8.72753E-05	-0.0172296	-0.0049969	0.009342
1.052E-06	5.259E-06	0.000514741	0.00102567	0.00229326	-0.02269
6.12041E-05	0.00082256	0.000116946	0.00782331	-0.0286804	-0.01081
0.000331451	2.2088E-05	1.32515E-05	-0.0182058	-0.0046997	0.00364
3.12964E-05	7.8853E-05	0.0010242	-0.0055943	-0.0088799	0.032003
0.001073576	0.00122019	0.000337337	0.03276547	0.03493127	0.018367
0.000565305	1.7627E-05	0.00028461	-0.0237761	-0.0041985	-0.01687
0.000444044	0.0036917	0.000159625	0.02107235	0.06075936	0.012634
2.08464E-06	0.00055786	0.001381928	-0.0014438	0.02361902	0.037174
1.3913E-05	3.8473E-05	2.73825E-05	0.00373001	0.00620263	0.005233
1.46024E-06	0.00016588	6.78282E-07	0.0012084	-0.0128795	0.000824
0.001454908	0.00019102	0.000160107	0.03814326	0.013821	0.012653

5.62099E-05	0.00072694	1.36368E-06	0.00749732	-0.0269619	-0.00117
0.003663026	0.00090373	0.000374262	-0.0605229	-0.0300621	-0.01935
0.002730759	9.9763E-05	2.31623E-05	-0.0522567	0.00998814	0.004813
0.000413575	1.1451E-05	5.86767E-05	0.02033653	-0.003384	-0.00766
0.000788636	0.00018106	0.000288478	0.02808266	-0.0134559	0.016985
0.000499672	0.00060077	0.000377598	-0.0223533	-0.0245107	-0.01943
0.000730083	3.9515E-05	0.000172981	-0.0270201	0.00628613	0.013152
9.45619E-06	1.8963E-05	3.34759E-05	-0.0030751	0.00435466	-0.00579
0.000366108	2.4976E-05	0.000643526	0.01913394	0.00499755	0.025368
2.25465E-06	0.00082576	1.04555E-05	-0.0015015	-0.0287361	-0.00323
0.001905502	0.00027993	0.000146663	-0.0436521	0.01673099	-0.01211
0.000179418	8.9313E-07	3.27625E-05	0.01339472	0.00094505	0.005724
0.000407815	1.5082E-05	0.000100566	0.02019443	0.00388349	-0.01003
0.000122132	0.00015786	7.98189E-05	-0.0110513	0.01256407	0.008934
0.000323636	0.00147934	3.44643E-05	-0.0179899	0.0384622	-0.00587
0.000346937	0.0007512	2.19523E-07	-0.0186262	-0.027408	0.000469
0.000182517	4.0678E-05	0.000514589	-0.0135099	-0.006378	0.022685
6.55233E-05	0.0002316	6.11562E-05	-0.0080946	-0.0152183	0.00782
9.57998E-05	1.6545E-05	0.00034063	-0.0097877	0.00406761	0.018456
0.001468279	7.5384E-05	9.75939E-05	0.03831813	0.00868241	0.009879
0.000444833	2.9608E-05	8.97113E-06	0.02109108	0.00544137	0.002995
3.3285E-05	0.00053686	7.20415E-05	0.00576932	0.02317025	-0.00849
0.004819706	0.00317448	0.000242592	-0.0694241	-0.0563425	-0.01558
1.02078E-05	4.0117E-05	9.85551E-05	-0.003195	-0.0063338	-0.00993
0.007770621	0.00057067	0.000521913	0.08815113	0.02388878	-0.02285
0.006392529	0.00015359	4.5488E-05	-0.0799533	-0.012393	0.006744
0.000111572	0.00023267	1.44686E-05	-0.0105628	-0.0152534	-0.0038
0.001246172	0.00128359	1.13182E-05	-0.0353012	-0.0358272	-0.00336
0.000389038	6.7916E-05	8.98379E-07	-0.0197241	-0.0082411	-0.00095
0.007709641	6.6859E-05	5.97748E-05	0.08780456	0.00817674	0.007731
0.000133369	9.5781E-06	0.001611046	0.01154854	-0.0030948	0.040138
0.00049755	8.8707E-05	7.08417E-05	0.02230583	-0.0094184	0.008417
0.001071723	0.00047174	0.000157754	-0.0327372	-0.0217196	-0.01256
0.000197983	0.00019951	0.001650562	0.01407065	0.01412466	-0.04063
0.002316754	0.00356671	0.00158078	-0.0481327	-0.059722	-0.03976
2.97551E-05	7.0562E-05	0.000516856	-0.0054548	0.0084001	0.022734
0.004571014	0.00533152	6.01345E-05	0.06760928	0.07301723	0.007755
0.000107369	0.00021416	6.57158E-07	-0.0103619	0.01463407	-0.00081
0.004469331	0.00269936	0.000115353	-0.0668531	-0.0519554	0.01074
7.02867E-05	6.6859E-05	0.000786335	-0.0083837	0.00817674	0.028042
0.000323677	0.00047529	0.000960964	-0.017991	0.02180123	-0.031
0.003290539	0.00080716	9.80087E-05	0.05736322	0.02841061	0.0099
0.001264814	0.00122701	9.68471E-07	0.03556422	0.03502875	-0.00098
0.000135837	1.1451E-05	0.000104058	-0.0116549	-0.003384	0.010201
0.00179415	0.0001885	0.000145038	0.04235741	0.01372938	0.012043
0.003393882	0.00268448	0.000526119	0.05825703	0.05181196	-0.02294
0.007827529	0.00037111	2.97291E-05	0.08847332	0.01926413	0.005452
5.26326E-05	2.3044E-06	0.000814756	-0.0072548	0.00151801	0.028544
0.000893816	2.2873E-05	0.000251913	-0.0298967	-0.0047826	-0.01587
1.941E-05	8.1098E-05	0.001134337	0.00440568	0.00900543	0.03368

0.001231087	0.00072285	0.000710216	0.03508686	0.02688593	0.02665
0.000143676	4.4296E-05	3.88942E-05	-0.0119865	-0.0066555	-0.00624
0.000129703	0.0017219	6.9689E-05	-0.0113887	-0.0414958	-0.00835
9.18904E-05	2.2758E-07	0.000223985	0.00958595	0.00047705	-0.01497
0.000470722	1.3949E-05	0.000847447	0.02169613	-0.0037348	0.029111
0.000479323	5.7408E-05	1.91102E-05	-0.0218935	-0.0075768	0.004372
0.000329754	0.00027183	0.000182948	0.01815912	-0.0164874	-0.01353
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0.00108374	-0.00039526	-0.00049
0.000350006	-7.0511E-05	-9.8E-05
-2.3599E-05	1.53923E-05	-6.6E-05
0.000231079	0.000102711	0.000108
0.009777872	0.001531041	0.00177
0.004062136	-0.00014955	-0.00054
0.000339402	8.20322E-05	6.63E-05
0.00030461	-0.00010543	-0.0006
0.000398158	2.97974E-05	9.76E-06
-0.00025455	0.000180502	-0.00033
-4.8719E-05	0.000126911	-0.00011
0.000542331	0.000840291	0.000357
0.001176578	-0.00097335	-0.00037
0.000664369	0.00142373	0.000718
-0.00018784	-0.0001577	0.00015
0.000308619	0.000239011	0.000522

0.000835782	0.001517069	0.00031
0.008663215	0.009239074	0.004534
-0.00023359	-0.00045806	0.000641
0.000912852	-0.00224503	-0.00289
0.001041262	-4.5209E-05	-3.8E-05
-0.00064486	0.000142567	-0.00012
0.001266118	-0.0010865	-0.00013
0.001129831	-0.00225743	-0.00068
0.002689134	0.001502843	0.001163
-0.00046761	-0.00027878	0.003521
-4.2037E-05	0.000207233	-2.9E-05
0.000430178	-0.00055739	-0.00076
-1.7994E-06	-8.8747E-07	0.000506
-6.2357E-05	-0.00013116	7.34E-05
-0.00030116	0.000575167	-9.8E-05
0.000882528	0.001085673	0.000392
0.001165027	0.000374922	0.000535
-0.00029523	7.95877E-06	-2E-06
-3.219E-05	-1.4022E-05	0.000124
0.000147817	0.00018835	0.00013
-0.0016823	0.000128488	-9.8E-05
3.05364E-05	0.000901805	0.000117
0.001716112	0.001810158	0.000868
0.001972171	0.00014565	0.000222
0.003417046	0.001195338	0.001383
0.001122628	0.001345726	0.000411
0.002593511	0.001569097	0.004218
0.01320239	0.007883267	0.006273
0.001056949	0.00293798	0.004659
2.30141E-05	0.000464914	0.000231
0.013457594	0.002887115	0.002204
0.001657969	-0.00031949	-0.00011
2.16249E-05	-0.00021718	-3.3E-05
0.003225148	0.007231743	0.003493
0.002497116	-0.00089439	-0.001
0.009753058	0.004486436	0.002167
-0.00105569	0.004175006	-0.00029
0.008112031	0.019380149	0.004801
0.000299575	0.003095983	0.000297
-0.00056882	-0.0005162	0.000132
0.0004925	0.001041523	0.000464
-0.0001327	-7.4837E-05	2.52E-05
-0.0002429	-0.00066066	0.000142
-5.3496E-06	0.001968506	-2.8E-06
0.002811509	0.000631739	0.000818
-0.00012873	0.000513432	-0.00211
-0.00086532	0.000681109	-0.00057
5.36163E-05	0.000553383	7.89E-05
0.001260311	0.00137628	0.00066
0.000210995	-0.00079222	-0.00031

0.001847523	0.000921248	0.001444
0.000334676	-0.00024507	-0.00305
0.00017279	0.001877466	0.000435
-0.00057975	0.000215918	-0.00058
0.000499803	0.000319468	0.000392
0.000830323	3.35797E-05	6.98E-05
0.002174738	0.002218978	0.003105

kovariance

0.000644752	0.000435708	0.00022
0.000644752	0.000435708	0.00022

Vypočítejte očekávanou výnosnost a riziko portfolia, které je složeno z: akcií ECM, ORCO, PEGAS, PHILIP MORRIS a UNIPETROL v podílech 25%, 5%, 25%, 30% týdenní výnosnosti za poslední 3 měsíce. Jak by se spočtené hodnoty změnily, kdyby se podíly vyrovnaly, tj. každý by měl stejný podíl v portfoliu? Jak by se spočtené hodnoty změnily, pokud by výnosnosti daných akcií jsou navzájem nezávislé?

Datum	ECM	ORCO	PEGAS	PM	UNI	výnosnosti ECM
19.02.2010	292.10	197.80	440.00	10150.00	135.50	0.0072414
18.02.2010	292.80	188.09	431.50	10300.00	136.51	0.0288124
17.02.2010	299.20	183.32	445.00	10200.00	138.60	0.0324362
16.02.2010	293.50	184.90	445.00	9999.00	138.20	-0.005085
15.02.2010	287.00	180.11	445.00	9948.00	138.98	-0.007264
12.02.2010	290.00	181.00	437.60	9839.00	137.00	-0.015948
11.02.2010	284.60	181.00	430.00	9850.00	138.98	-0.064124
10.02.2010	289.80	181.50	432.10	9820.00	137.00	-0.047024
09.02.2010	295.00	171.00	434.00	9650.00	137.00	-0.031199
08.02.2010	289.10	171.00	423.00	9710.00	135.50	-0.05677
05.02.2010	294.70	165.50	435.50	9650.00	136.20	-0.040378
04.02.2010	304.10	168.50	451.00	9702.00	140.10	-0.011057
03.02.2010	304.10	171.84	457.00	9849.00	143.99	-0.014263
02.02.2010	304.50	168.65	455.00	9760.00	141.70	-0.000984
01.02.2010	306.50	168.00	455.90	9800.00	144.00	-0.012882
29.01.2010	307.10	166.00	449.00	9805.00	142.10	-0.009355
28.01.2010	307.50	167.70	442.00	10005.00	143.99	-0.008065
27.01.2010	308.50	164.65	445.00	10157.00	143.40	-0.0128
26.01.2010	304.80	161.70	443.00	10128.00	143.80	-0.017725
25.01.2010	310.50	164.51	443.00	10100.00	145.95	0.0077897
22.01.2010	310.00	166.51	438.00	9860.00	144.50	-0.005135
21.01.2010	310.00	171.25	444.50	10150.00	147.35	-0.004176
20.01.2010	312.50	169.41	448.00	9998.00	147.00	0
19.01.2010	310.30	169.16	445.00	9998.00	147.00	-0.00704
18.01.2010	308.10	170.95	442.00	9880.00	147.60	-0.018477
15.01.2010	311.60	170.35	444.00	9748.00	144.40	-0.008275
14.01.2010	311.30	171.70	445.00	9459.00	145.39	-0.011432
13.01.2010	312.50	184.69	440.00	9160.00	144.50	0.0016026
12.01.2010	312.50	177.51	438.10	9030.00	145.00	0.0041774
11.01.2010	313.90	179.00	440.00	9000.00	147.50	0.0158576
08.01.2010	314.20	178.00	439.00	8891.00	144.10	0.0217886
07.01.2010	314.90	178.50	435.00	8950.00	144.00	0.0092949
06.01.2010	312.00	178.50	445.00	9100.00	144.00	0.0331126
05.01.2010	311.20	175.26	437.00	8900.00	145.00	0.0100617
04.01.2010	309.00	168.24	440.00	8840.00	140.50	0.0517359
30.12.2009	307.50	170.34	444.50	8796.00	139.50	0.0280843
29.12.2009	312.00	168.27	443.00	8500.00	142.00	0.0162866
28.12.2009	302.00	158.26	438.90	8435.00	138.90	-0.023286
23.12.2009	308.10	155.01	430.00	8350.00	136.80	-0.00162
22.12.2009	293.80	158.10	430.00	8340.00	136.60	-0.05042
21.12.2009	299.10	163.50	430.00	8280.00	138.00	-0.036405

18.12.2009	307.00	168.00	442.80	8225.00	139.47	-0.024468
17.12.2009	309.20	166.35	435.00	8375.00	138.00	-0.024606
16.12.2009	308.60	171.00	424.00	8309.00	135.20	-0.019072
15.12.2009	309.40	174.55	430.00	8330.00	134.30	-0.020886
14.12.2009	310.40	178.00	430.00	8327.00	134.50	-0.012409
11.12.2009	314.70	178.00	424.00	8350.00	136.00	-0.007569
10.12.2009	317.00	181.60	415.80	8300.00	136.10	-0.01369
09.12.2009	314.60	184.50	413.10	8200.00	136.00	-0.014102
08.12.2009	316.00	188.00	420.00	8300.00	140.20	0.0015848
07.12.2009	314.30	187.65	432.00	8298.00	140.00	-0.008517
04.12.2009	317.10	186.50	431.00	8250.00	138.60	0.0196141
03.12.2009	321.40	189.75	429.00	8183.00	138.74	0.0193467
02.12.2009	319.10	190.90	424.50	8180.00	136.50	-0.007774
01.12.2009	315.50	191.10	416.00	8000.00	135.70	-0.035168
30.11.2009	317.00	186.00	427.50	7900.00	134.00	-0.024615
27.11.2009	311.00	190.51	426.00	8000.00	133.30	-0.041898
26.11.2009	315.30	194.26	423.60	8050.00	134.60	-0.014379
25.11.2009	321.60	200.30	423.70	8103.00	134.30	
24.11.2009	327.00	203.50	428.00	8073.00	135.00	
23.11.2009	325.00	210.90	435.00	8071.00	138.00	
20.11.2009	324.60	211.00	427.00	8249.00	136.49	
19.11.2009	319.90	193.50	424.00	8151.00	136.00	

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výnosnost **-0.008302**
-0.008302

	výnosnosti	rizika	váhy		kovarianční r ECM
ECM	-0.0083019	0.022633	0.25	0.2	0.0005123
ORCO	-0.0057961	0.058058	0.05	0.2	
PEGAS	0.00302798	0.024208	0.25	0.2	
PM	0.01962094	0.034332	0.3	0.2	
UNI	0.00133109	0.025376	0.15	0.2	
výnosnost portfolia			0.004478	0.0019764	
riziko portfolia			0.020461	0.02208513	
riziko portfolia pro nekorelované			0.014059	0.01586403	
					korelační ma ECM
					1
					ECM
					ORCO
					PEGAS
					PM
					UNI

% a 15%. Použijte
 akcií v portfoliu
 d bychom předpokládali,

ORCO	PEGAS	PM	UNI	rozptyl	ECM	ORCO	PEGAS
0.092818	0.005484461	0.031609	-0.01095	0.000242	0.009724671	6.03429E-06	
0.039171	0.003488372	0.045685	-0.01777	0.001377	0.002022062	2.1196E-07	
0.010028	0.0298542	0.038697	0.011679	0.00166	0.000250387	0.000719646	
0.081287	0.025345622	0.036166	0.008759	1.04E-05	0.007583383	0.000498077	
0.053275	0.052009456	0.024511	0.025683	1.08E-06	0.003489374	0.002399185	
0.093656	0.004822044	0.019585	0.005874	5.85E-05	0.009890632	3.21866E-06	
0.074184	-0.046563193	0.015255	-0.00799	0.003116	0.006396808	0.002459285	
0.056215	-0.054485777	-0.00294	-0.04855	0.001499	0.003845383	0.003307832	
0.013934	-0.046153846	-0.01127	-0.03317	0.000524	0.000389283	0.002418852	
0.017857	-0.072164948	-0.00918	-0.05903	0.002349	0.000559474	0.005653977	
-0.00301	-0.030066815	-0.01581	-0.04152	0.001029	7.75077E-06	0.001095266	
0.00477	0.020361991	-0.03028	-0.02702	7.59E-06	0.000111651	0.000300468	
0.043668	0.026966292	-0.03032	0.004114	3.55E-05	0.002446732	0.000573043	
0.042981	0.027088036	-0.03633	-0.0146	5.35E-05	0.002379186	0.000578886	
0.021215	0.029119639	-0.0297	-0.01336	2.1E-05	0.000729572	0.000680775	
-0.00306	0.025114155	-0.00558	-0.01661	1.11E-06	7.47033E-06	0.000487799	
-0.02073	-0.005624297	-0.01429	-0.0228	5.64E-08	0.00022302	7.48619E-05	
-0.0281	-0.006696429	0.015903	-0.02449	2.02E-05	0.000497354	9.45641E-05	
-0.0441	-0.004494382	0.013003	-0.02177	8.88E-05	0.001467211	5.6586E-05	
-0.03767	0.002262443	0.022267	-0.01118	0.000259	0.001016064	5.86048E-07	
-0.02254	-0.013513514	0.01149	0.000693	1E-05	0.00028042	0.000273621	
-0.00262	-0.001123596	0.073052	0.013481	1.7E-05	1.0082E-05	1.72356E-05	
-0.08273	0.018181818	0.091485	0.017301	6.89E-05	0.005919327	0.000229639	
-0.04704	0.015749829	0.107198	0.013793	1.59E-06	0.001701029	0.000161845	
-0.04497	0.004545455	0.097778	0.000678	0.000104	0.001534759	2.30272E-06	
-0.04298	0.011389522	0.09639	0.002082	7.27E-10	0.001382461	6.99154E-05	
-0.0381	0.022988506	0.056872	0.009653	9.8E-06	0.001043236	0.000398423	
0.034678	-0.011235955	0.006593	0.003472	9.81E-05	0.00163814	0.00020346	
0.012838	0.002517162	0.014607	0	0.000156	0.000347231	2.60936E-07	
0.063956	0	0.0181	0.049822	0.000584	0.004865386	9.16867E-06	
0.044969	-0.012373453	0.0108	0.032975	0.000905	0.002577081	0.000237204	
0.060795	-0.018058691	0.052941	0.014085	0.00031	0.004434391	0.000444648	
0.127891	0.013898382	0.078838	0.036717	0.001715	0.017872182	0.000118166	
0.130637	0.01627907	0.065868	0.059942	0.000337	0.01861391	0.000175591	
0.064137	0.023255814	0.059952	0.028551	0.003605	0.004890581	0.000409165	
0.041835	0.03372093	0.062319	0.01087	0.001324	0.002268706	0.000942057	
0.001607	0.000451671	0.033435	0.01814	0.000605	5.48075E-05	6.63737E-06	
-0.04863	0.008965517	0.007164	0.006522	0.000225	0.001834951	3.52543E-05	
-0.09351	0.014150943	0.004934	0.011834	4.46E-05	0.007693518	0.00012372	
-0.09424	0	0.0012	0.017126	0.001774	0.007822742	9.16867E-06	
-0.08146	0	-0.00564	0.026022	0.00079	0.005725132	9.16867E-06	

-0.05618	0.044339623	-0.01497	0.025515	0.000261	0.002538518	0.001706652
-0.08398	0.046176046	0.009036	0.01396	0.000266	0.006112066	0.001861755
-0.07317	0.026385863	0.013293	-0.00588	0.000116	0.004539345	0.000545591
-0.07154	0.023809524	0.003614	-0.04208	0.000158	0.0043226	0.000431873
-0.05143	-0.00462963	0.003495	-0.03929	1.69E-05	0.002082047	5.8639E-05
-0.04558	-0.016241299	0.012121	-0.01876	5.38E-07	0.001582475	0.000371305
-0.04295	-0.030769231	0.014298	-0.01903	2.9E-05	0.001380508	0.001142252
-0.03353	-0.026855124	0.002445	-0.00366	3.36E-05	0.000768916	0.000893
-0.01622	0.009615385	0.0375	0.033161	9.77E-05	0.000108697	4.33939E-05
0.008871	0.010526316	0.05038	0.044776	4.64E-08	0.000215122	5.6225E-05
-0.02105	0.011737089	0.03125	0.03976	0.000779	0.000232645	7.58486E-05
-0.02322	0.012747875	0.016522	0.030758	0.000764	0.000303465	9.44763E-05
-0.04693	0.001888128	0.009503	0.016381	2.79E-07	0.001691968	1.29926E-06
-0.06093	-0.028037383	-0.00904	0.005185	0.000722	0.003040154	0.000965057
-0.11807	-0.017241379	-0.02119	-0.02899	0.000266	0.01260441	0.000410847
-0.09711	-0.00234192	-0.03019	-0.02337	0.001129	0.008338052	2.88358E-05
0.003928	-0.000943396	-0.01239	-0.01029	3.69E-05	9.45507E-05	1.57718E-05

-0.0058 0.003027981 0.019621 0.001331
-0.0058 0.003027981 0.019621 0.001331

rozptyl
0.000512 0.003370743 0.000586011
0.000512 0.003370743 0.000586011

riziko
0.022633 0.058058098 0.024207659

matice

ORCO	PEGAS	PM	UNI
0.0005	0.000251022	0.000361	0.000296
0.003371	-2.95718E-05	0.000366	0.000323
	0.000586011	0.000177	0.000294
		0.001179	0.000413
			0.000644

matice

ORCO	PEGAS	PM	UNI
0.380786	0.458149703	0.463989	0.514649
1	-0.021040807	0.183573	0.219287
	1	0.213414	0.478599
		1	0.473758
			1

kovariance

PM	UNI	ECM	ORCO	PEGAS	PM	UNI
0.000144	0.000151	0.015543	0.098614	0.002456	0.011988	-0.01228
0.000679	0.000365	0.037114	0.044967	0.00046	0.026064	-0.0191
0.000364	0.000107	0.040738	0.015824	0.026826	0.019076	0.010348
0.000274	5.52E-05	0.003217	0.087083	0.022318	0.016545	0.007428
2.39E-05	0.000593	0.001038	0.059071	0.048981	0.00489	0.024352
1.26E-09	2.06E-05	-0.00765	0.099452	0.001794	-3.5E-05	0.004543
1.91E-05	8.7E-05	-0.05582	0.07998	-0.04959	-0.00437	-0.00933
0.000509	0.002488	-0.03872	0.062011	-0.05751	-0.02257	-0.04988
0.000954	0.00119	-0.0229	0.01973	-0.04918	-0.03089	-0.0345
0.00083	0.003643	-0.04847	0.023653	-0.07519	-0.0288	-0.06036
0.001255	0.001836	-0.03208	0.002784	-0.03309	-0.03543	-0.04285
0.002491	0.000804	-0.00275	0.010566	0.017334	-0.04991	-0.02835
0.002494	7.75E-06	-0.00596	0.049464	0.023938	-0.04994	0.002783
0.003131	0.000254	0.007318	0.048777	0.02406	-0.05596	-0.01593
0.002433	0.000216	-0.00458	0.027011	0.026092	-0.04932	-0.01469
0.000635	0.000322	-0.00105	0.002733	0.022086	-0.0252	-0.01794
0.00115	0.000582	0.000237	-0.01493	-0.00865	-0.03391	-0.02413
1.38E-05	0.000667	-0.0045	-0.0223	-0.00972	-0.00372	-0.02582
4.38E-05	0.000534	-0.00942	-0.0383	-0.00752	-0.00662	-0.0231
7E-06	0.000156	0.016092	-0.03188	-0.00077	0.002646	-0.01251
6.61E-05	4.08E-07	0.003167	-0.01675	-0.01654	-0.00813	-0.00064
0.002855	0.000148	0.004126	0.003175	-0.00415	0.053431	0.01215
0.005164	0.000255	0.008302	-0.07694	0.015154	0.071864	0.01597
0.00767	0.000155	0.001262	-0.04124	0.012722	0.087577	0.012462
0.006108	4.27E-07	-0.01018	-0.03918	0.001517	0.078157	-0.00065
0.005893	5.64E-07	2.7E-05	-0.03718	0.008362	0.076769	0.000751
0.001388	6.93E-05	-0.00313	-0.0323	0.019961	0.037251	0.008322
0.00017	4.58E-06	0.009905	0.040474	-0.01426	-0.01303	0.002141
2.51E-05	1.77E-06	0.012479	0.018634	-0.00051	-0.00501	-0.00133
2.31E-06	0.002351	0.02416	0.069752	-0.00303	-0.00152	0.048491
7.78E-05	0.001001	0.030091	0.050765	-0.0154	-0.00882	0.031644
0.00111	0.000163	0.017597	0.066591	-0.02109	0.03332	0.012753
0.003507	0.001252	0.041415	0.133687	0.01087	0.059217	0.035386
0.002139	0.003435	0.018364	0.136433	0.013251	0.046247	0.05861
0.001627	0.000741	0.060038	0.069933	0.020228	0.040331	0.027219
0.001823	9.1E-05	0.036386	0.047631	0.030693	0.042698	0.009538
0.000191	0.000283	0.024589	0.007403	-0.00258	0.013814	0.016809
0.000155	2.69E-05	-0.01498	-0.04284	0.005938	-0.01246	0.005191
0.000216	0.00011	0.006682	-0.08771	0.011123	-0.01469	0.010503
0.000339	0.000249	-0.04212	-0.08845	-0.00303	-0.01842	0.015795
0.000638	0.00061	-0.0281	-0.07566	-0.00303	-0.02527	0.024691

0.001197	0.000585	-0.01617	-0.05038	0.041312	-0.03459	0.024184
0.000112	0.000159	-0.0163	-0.07818	0.043148	-0.01058	0.012629
4E-05	5.2E-05	-0.01077	-0.06737	0.023358	-0.00633	-0.00721
0.000256	0.001885	-0.01258	-0.06575	0.020782	-0.01601	-0.04341
0.00026	0.00165	-0.00411	-0.04563	-0.00766	-0.01613	-0.04062
5.62E-05	0.000404	0.000733	-0.03978	-0.01927	-0.0075	-0.02009
2.83E-05	0.000415	-0.00539	-0.03716	-0.0338	-0.00532	-0.02036
0.000295	2.49E-05	-0.0058	-0.02773	-0.02988	-0.01718	-0.00499
0.00032	0.001013	0.009887	-0.01043	0.006587	0.017879	0.03183
0.000946	0.001887	-0.00022	0.014667	0.007498	0.030759	0.043445
0.000135	0.001477	0.027916	-0.01525	0.008709	0.011629	0.038429
9.61E-06	0.000866	0.027649	-0.01742	0.00972	-0.0031	0.029427
0.000102	0.000227	0.000528	-0.04113	-0.00114	-0.01012	0.01505
0.000822	1.49E-05	-0.02687	-0.05514	-0.03107	-0.02866	0.003854
0.001665	0.000919	-0.01631	-0.11227	-0.02027	-0.04081	-0.03032
0.002481	0.00061	-0.0336	-0.09131	-0.00537	-0.04981	-0.0247
0.001025	0.000135	-0.00608	0.009724	-0.00397	-0.03201	-0.01163

0.001179 0.000644
0.001179 0.000644

0.034332 0.025376

ECM/ORCO	ECM/PEGAS	ECM/PM	ECM/UNI	ORCO/PEGAS	ORCO/PM	ORCO/UNI	PEGAS/PM
0.00153279	3.81819E-05	0.00019	-0.00019	0.000242243	0.0011822	-0.001211	2.94482E-05
0.00166893	1.70871E-05	0.00097	-0.00071	2.07025E-05	0.001172	-0.000859	1.19998E-05
0.00064462	0.001092849	0.00078	0.000422	0.000424488	0.0003018	0.0001637	0.000511726
0.00028016	7.18003E-05	5.3E-05	2.39E-05	0.001943479	0.0014408	0.0006469	0.000369242
6.1317E-05	5.08439E-05	5.1E-06	2.53E-05	0.002893381	0.0002888	0.0014385	0.000239513
-0.0007605	-1.3718E-05	2.7E-07	-3.5E-05	0.000178422	-3.53E-06	0.0004518	-6.3604E-08
-0.0044646	0.002768264	0.00024	0.000521	-0.003966304	-0.000349	-0.0007458	0.000216533
-0.0024012	0.002227051	0.00087	0.001931	-0.003566494	-0.001399	-0.0030929	0.001297821
-0.0004518	0.001126104	0.00071	0.00079	-0.00097037	-0.000609	-0.0006807	0.001519297
-0.0011464	0.003644454	0.0014	0.002925	-0.001778554	-0.000681	-0.0014277	0.002165904
-8.93E-05	0.001061541	0.00114	0.001374	-9.21366E-05	-9.86E-05	-0.0001193	0.001172522
-2.911E-05	-4.7755E-05	0.00014	7.81E-05	0.00018316	-0.000527	-0.0002995	-0.00086507
-0.0002948	-0.00014269	0.0003	-1.7E-05	0.001184096	-0.00247	0.0001377	-0.0011956
0.00035693	0.000176064	-0.00041	-0.00012	0.001173575	-0.002729	-0.0007772	-0.0013463
-0.0001237	-0.00011951	0.00023	6.73E-05	0.000704751	-0.001332	-0.0003968	-0.00128694
-2.878E-06	-2.3254E-05	2.7E-05	1.89E-05	6.03657E-05	-6.89E-05	-4.903E-05	-0.00055655
-3.546E-06	-2.0543E-06	-8.1E-06	-5.7E-06	0.000129212	0.0005064	0.0003604	0.00029337
0.00010031	4.37409E-05	1.7E-05	0.000116	0.000216868	8.291E-05	0.0005758	3.61531E-05
0.00036093	7.0882E-05	6.2E-05	0.000218	0.000288138	0.0002535	0.0008848	4.97856E-05
-0.0005129	-1.2319E-05	4.3E-05	-0.0002	2.44021E-05	-8.44E-05	0.0003988	-2.0258E-06
-5.304E-05	-5.239E-05	-2.6E-05	-2E-06	0.000277	0.0001362	1.069E-05	0.000134506
1.3101E-05	-1.7129E-05	0.00022	5.01E-05	-1.31822E-05	0.0001697	3.858E-05	-0.00022182
-0.0006387	0.000125806	0.0006	0.000133	-0.001165893	-0.005529	-0.0012287	0.001089012
-5.205E-05	1.60543E-05	0.00011	1.57E-05	-0.000524694	-0.003612	-0.000514	0.001114145
0.00039863	-1.5441E-05	-0.0008	6.65E-06	-5.94485E-05	-0.003062	2.559E-05	0.000118601
-1.002E-06	2.25443E-07	2.1E-06	2.02E-08	-0.000310894	-0.002854	-2.792E-05	0.000641904
0.0001011	-6.2482E-05	-0.00012	-2.6E-05	-0.000644708	-0.001203	-0.0002688	0.000743541
0.00040087	-0.00014128	-0.00013	2.12E-05	-0.000577318	-0.000527	8.666E-05	0.000185824
0.00023254	-6.3747E-06	-6.3E-05	-1.7E-05	-9.51867E-06	-9.34E-05	-2.48E-05	2.56135E-06
0.00168518	-7.3155E-05	-3.7E-05	0.001172	-0.000211209	-0.000106	0.0033824	4.60676E-06
0.00152755	-0.00046344	-0.00027	0.000952	-0.000781853	-0.000448	0.0016064	0.00013585
0.00117179	-0.00037106	0.00059	0.000224	-0.001404187	0.0022188	0.0008493	-0.00070261
0.00553658	0.000450193	0.00245	0.001465	0.00145323	0.0079166	0.0047306	0.000643715
0.0025054	0.000243338	0.00085	0.001076	0.001807883	0.0063097	0.0079964	0.000612827
0.00419861	0.001214435	0.00242	0.001634	0.001414587	0.0028205	0.0019035	0.000815811
0.00173311	0.0011168	0.00155	0.000347	0.001461934	0.0020337	0.0004543	0.001310524
0.00018203	-6.3348E-05	0.00034	0.000413	-1.9073E-05	0.0001023	0.0001244	-3.5588E-05
0.00064186	-8.8968E-05	0.00019	-7.8E-05	-0.000254342	0.0005336	-0.0002223	-7.3962E-05
-0.0005861	7.43206E-05	-9.8E-05	7.02E-05	-0.000975625	0.0012882	-0.0009213	-0.00016336
0.0037252	0.000127533	0.00078	-0.00067	0.000267814	0.0016292	-0.001397	5.57768E-05
0.00212638	8.50944E-05	0.00071	-0.00069	0.000229111	0.0019117	-0.0018683	7.65027E-05

0.00081449	-0.00066784	0.00056	-0.00039	-0.002081434	0.0017428	-0.0012185	-0.00142901
0.00127462	-0.00070347	0.00017	-0.00021	-0.003373303	0.0008275	-0.0009873	-0.00045671
0.00072562	-0.00025156	6.8E-05	7.77E-05	-0.001573729	0.0004264	0.000486	-0.00014781
0.00082736	-0.00026152	0.0002	0.000546	-0.001366313	0.0010524	0.0028543	-0.00033264
0.00018738	3.14466E-05	6.6E-05	0.000167	0.000349413	0.0007358	0.0018533	0.000123488
-2.917E-05	-1.4131E-05	-5.5E-06	-1.5E-05	0.000766539	0.0002983	0.0007992	0.000144514
0.0002002	0.000182105	2.9E-05	0.00011	0.001255742	0.0001978	0.0007565	0.000179903
0.00016084	0.000173328	1E-04	2.9E-05	0.000828639	0.0004763	0.0001385	0.000513271
-0.0001031	6.51279E-05	0.00018	0.000315	-6.8679E-05	-0.000186	-0.0003319	0.000117777
-3.159E-06	-1.6152E-06	-6.6E-06	-9.4E-06	0.000109978	0.0004511	0.0006372	0.00023064
-0.0004258	0.000243124	0.00032	0.001073	-0.000132837	-0.000177	-0.0005861	0.000101279
-0.0004816	0.000268741	-8.6E-05	0.000814	-0.000169323	5.399E-05	-0.0005126	-3.0124E-05
-2.173E-05	-6.022E-07	-5.3E-06	7.95E-06	4.68862E-05	0.0004162	-0.0006191	1.15334E-05
0.00148134	0.00083461	0.00077	-0.0001	0.001712869	0.0015804	-0.0002125	0.00089044
0.0018315	0.000330663	0.00067	0.000495	0.002275628	0.0045815	0.0034036	0.00082715
0.00306773	0.000180406	0.00167	0.00083	0.000490341	0.004548	0.0022557	0.000267456
-5.91E-05	2.41362E-05	0.00019	7.07E-05	-3.86166E-05	-0.000311	-0.000113	0.000127132

0.00050037	0.000251022	0.00036	0.000296	-2.95718E-05	0.0003659	0.0003231	0.000177369
0.00050037	0.000251022	0.00036	0.000296	-2.95718E-05	0.0003659	0.0003231	0.000177369

PEGAS/UNI	PM/UNI
-3.01656E-05	-0.0001
-8.79504E-06	-0.0005
0.000277591	0.0002
0.000165776	0.00012
0.001192776	0.00012
8.14975E-06	-2E-07
0.000462457	4.1E-05
0.002868564	0.00113
0.001696761	0.00107
0.00453856	0.00174
0.00141815	0.00152
-0.000491365	0.00141
6.66268E-05	-0.0001
-0.00038339	0.00089
-0.000383334	0.00072
-0.000396228	0.00045
0.000208814	0.00082
0.000251093	9.6E-05
0.000173765	0.00015
9.57685E-06	-3E-05
1.05629E-05	5.2E-06
-5.04412E-05	0.00065
0.000242006	0.00115
0.00015854	0.00109
-9.91103E-07	-5E-05
6.2778E-06	5.8E-05
0.000166105	0.00031
-3.05409E-05	-3E-05
6.79948E-07	6.7E-06
-0.00014683	-7E-05
-0.00048736	-0.0003
-0.000268927	0.00042
0.00038466	0.0021
0.000776652	0.00271
0.00055059	0.0011
0.000292764	0.00041
-4.33052E-05	0.00023
3.08196E-05	-6E-05
0.000116827	-0.0002
-4.78262E-05	-0.0003
-7.47645E-05	-0.0006

0.000999065	-0.0008
0.000544927	-0.0001
-0.000168491	4.6E-05
-0.000902206	0.00069
0.000311028	0.00065
0.000387122	0.00015
0.000688094	0.00011
0.000149239	8.6E-05
0.000209679	0.00057
0.000325765	0.00134
0.000334681	0.00045
0.000286024	-9E-05
-1.7155E-05	-0.0002
-0.000119729	-0.0001
0.000614498	0.00124
0.000132651	0.00123
4.61681E-05	0.00037

0.000294004	0.00041
0.000294004	0.00041