

Datum	CETV	denní	třídenní	ERSTE	denní	třídenní	PM	denní
3/10/2008	1,307.00	0.77%	-5.84%	902.7	-1.73%	-3.76%	6,751.00	-1.45%
3/7/2008	1,297.00	-5.40%	-6.69%	918.6	-0.85%	2.00%	6,850.00	-3.00%
3/6/2008	1,371.00	-1.22%	-8.96%	926.5	-1.23%	0.35%	7,062.00	-1.24%
3/5/2008	1,388.00	-0.14%	-13.30%	938	4.15%	-3.50%	7,151.00	-0.35%
3/4/2008	1,390.00	-7.70%	-14.72%	900.6	-2.46%	-9.20%	7,176.00	0.50%
3/3/2008	1,506.00	-5.93%	-6.23%	923.3	-5.01%	-7.31%	7,140.00	-0.92%
2/29/2008	1,601.00	-1.78%	-2.02%	972	-2.01%	-2.90%	7,206.00	-0.95%
2/28/2008	1,630.00	1.49%	1.94%	991.9	-0.42%	2.84%	7,275.00	0.34%
2/27/2008	1,606.00	-1.71%	2.62%	996.1	-0.49%	4.47%	7,250.00	1.47%
2/26/2008	1,634.00	2.19%	2.13%	1,001.00	3.78%	3.57%	7,145.00	-0.85%
2/25/2008	1,599.00	2.17%	-1.96%	964.5	1.15%	-0.92%	7,206.00	0.77%
2/22/2008	1,565.00	-2.19%	-5.55%	953.5	-1.35%	-3.93%	7,151.00	0.35%
2/21/2008	1,600.00	-1.90%	-4.82%	966.5	-0.72%	-0.10%	7,126.00	-0.34%
2/20/2008	1,631.00	-1.57%	-0.12%	973.5	-1.91%	2.74%	7,150.00	-0.91%
2/19/2008	1,657.00	-1.43%	-0.30%	992.5	2.58%	2.15%	7,216.00	0.56%
2/18/2008	1,681.00	2.94%	0.78%	967.5	2.11%	-0.69%	7,176.00	0.32%
2/15/2008	1,633.00	-1.74%	-1.98%	947.5	-2.48%	2.32%	7,153.00	-0.25%
2/14/2008	1,662.00	-0.36%	1.47%	971.6	-0.27%	8.92%	7,171.00	0.07%
2/13/2008	1,668.00	0.12%		974.2	5.21%		7,166.00	-0.28%
2/12/2008	1,666.00	1.71%		926	3.81%		7,186.00	-0.96%
2/11/2008	1,638.00			892			7,256.00	

očekávaný výnos	-1.08%	-3.53%		0.09%	-0.16%		-0.36%
riziko	2.79%	5.15%		2.70%	4.41%		0.98%

kovarianční matice

	CETV	ERSTE	PM	KB
CETV	0.0007777	0.0004781	0.0000537	0.0002782
ERSTE	0.0004781	0.0007290	0.0000368	0.0003094
PM	0.0000537	0.0000368	0.0000968	0.0000163
KB	0.0002782	0.0003094	0.0000163	0.0003935

korelační matice

	CETV	ERSTE	PM	KB
CETV	1.0000	0.6350	0.1956	0.5029
ERSTE	0.6350	1.0000	0.1387	0.5776
PM	0.1956	0.1387	1.0000	0.0837
KB	0.5029	0.5776	0.0837	1.0000

třídenní	KB	denní	třídenní	
-5.59%	3,786.00	-2.12%	-3.76%	1
-4.54%	3,868.00	-0.15%	0.36%	2
-1.09%	3,874.00	-1.53%	-4.06%	3
-0.76%	3,934.00	2.08%	-3.32%	4
-1.36%	3,854.00	-4.56%	-2.87%	5
-1.52%	4,038.00	-0.76%	2.33%	6
0.85%	4,069.00	2.55%	3.56%	7
0.96%	3,968.00	0.56%	0.79%	8
1.38%	3,946.00	0.43%	1.96%	9
0.27%	3,929.00	-0.20%	1.03%	10
0.78%	3,937.00	1.73%	1.89%	11
-0.90%	3,870.00	-0.49%	1.12%	12
-0.70%	3,889.00	0.65%	1.99%	13
-0.04%	3,864.00	0.97%	3.51%	14
0.63%	3,827.00	0.37%	-0.39%	15
0.14%	3,813.00	2.14%	-0.78%	16
-0.46%	3,733.00	-2.84%	1.30%	17
-1.17%	3,842.00	-0.03%	4.52%	18
	3,843.00	4.29%		19
	3,685.00	0.24%		20
	3,676.00			21

-0.73%	0.17%	0.51%
1.81%	1.98%	2.58%

## 2. Máme portfolio sestavené ze tří cenných papírů

	CP1	CP2	CP3
očekávaná výnosnost	-1.08%	0.09%	-0.36%
riziko očekávané výnosnosti	2.79%	2.70%	0.98%

Dále známe korelační matici:

	CP1	CP2	CP3
CP1	1	0.635	0.1956
CP2	0.635	1	0.1387
CP3	0.1956	0.1387	1

Vypočítejte výnosnost portfolia a riziko výnosnosti portfolia, pokud váhy cenných papírů v portfoliu jsou následující: CP1 30%, CP2 50% a CP3 20%.

výnos portfolia -0.35%  
riziko portfolia 2.03%

bezrizikové aktivum 3.5%

nové portfolio podíly 0.5 0.5  
výnos portfolia 1.57%  
riziko portfolia 1.02%

CP1	CP2	CP3
0.3	0.5	0.2

foliu jsou

	CP1	CP2	CP3	CP4
očekávaná výnosnost	-1.08%	0.09%	-0.36%	0.17%
riziko očekávané výnosnosti	2.79%	2.70%	0.98%	1.98%

a kovarianční matice

	CP1	CP2	CP3	CP4
CP1	0.0007777	0.0004781	0.0000537	0.0002782
CP2	0.0004781	0.000729	0.0000368	0.0003094
CP3	0.0000537	0.0000368	0.0000968	0.0000163
CP4	0.0002782	0.0003094	0.0000163	0.0003935

0.0007777	0.0004781	0.0000537	0.0002782
0.0004781	0.000729	0.0000368	0.0003094
0.0000537	0.0000368	0.0000968	0.0000163
0.0002782	0.0003094	0.0000163	0.0003935

matice A

0.0015554	0.0009562	0.0001074	0.0005564
0.0009562	0.001458	0.0000736	0.0006188
0.0001074	0.0000736	0.0001936	0.0000326
0.0005564	0.0006188	0.0000326	0.000787
1	1	1	1
- 0.01080	0.00090	- 0.00360	0.00170

inverzní matice

210.4910971	-77.29264109	-484.7744529	351.5759969
-77.29264109	1064.542231	21.60834504	-1008.857935
-484.7744529	21.60834504	1140.074337	-676.908229
351.5759969	-1008.857935	-676.908229	1334.190167
-0.203269205	0.107327716	0.783962808	0.31197868
-74.65059881	41.29761155	-18.85011399	52.20310125

řešení

podíly

CP1	-95%
CP2	52%
CP3	60%
CP4	83%
	-0.000344023
	-0.073684561

riziko

0.12%

-0.00066649

0.05%

2.32%

1 - 0.01080	
1 0.00090	
1 - 0.00360	
1 0.00170	
0	0
0	0

matice pravých stran

0
0
0
0
1
0.01

-0.203269	-74.6505988	1	0	0
0.107328	41.29761155	0	1	0
0.783963	-18.850114	0	0	1
0.311979	52.20310125	0	0	0
-0.0002	-0.01441243	0	0	0
-0.014412	-5.92721262	0	0	0

výpočet podílů pro minimální riziko

1150.682087	-597.417636	-247.3656763	-305.8987754
-597.417636	1352.281651	-109.7290533	-645.1349618
-247.365676	-109.729053	1200.022717	-842.9279877
-305.898775	-645.134962	-842.9279877	1793.961725
-0.02175102	0.006909669	0.829798186	0.185043168

-2%  
1%  
83%  
19%  
- 0.00

0.01%  
1.89726E-06  
0.01%  
riziko 0.90%  
výnos -0.24%



0	0	0
0	0	0
0	0	0
1	0	0
0	1	0
0	0	1

-0.021751023  
0.006909669  
0.829798186  
0.185043168  
-0.000164854