

Ceny akcií (denní):

Datum	ABC	CEZ	KOBA
1	1,856.00	1,089.00	4,266.00
2	1,913.00	1,072.00	4,108.00
3	1,905.00	1,074.00	4,008.00
4	1,868.00	1,082.00	3,921.00
5	1,860.00	1,086.00	3,987.00
6	1,865.00	1,092.00	4,035.00
7	1,859.00	1,100.00	3,986.00
8	1,832.00	1,093.00	4,032.00
9	1,871.00	1,102.00	3,953.00
10	1,853.00	1,107.00	4,052.00
11	1,854.00	1,099.00	4,047.00
12	1,862.00	1,102.00	3,994.00
13	1,870.00	1,109.00	4,030.00
14	1,864.00	1,114.00	4,133.00
15	1,834.00	1,123.00	4,271.00
16	1,808.00	1,140.00	4,257.00
17	1,814.00	1,159.00	4,261.00
18	1,836.00	1,203.00	4,318.00
19	1,807.00	1,186.00	4,239.00
20	1,812.00	1,224.00	4,216.00
21	1,843.00	1,226.00	4,274.00
22	1,834.00	1,219.00	4,266.00
23	1,831.00	1,238.00	4,142.00
24	1,860.00	1,246.00	4,208.00
25	1,878.00	1,273.00	4,175.00
26	1,872.00	1,255.00	4,228.00
27	1,938.00	1,243.00	4,300.00
28	1,975.00	1,265.00	4,273.00
29	1,954.00	1,277.00	4,316.00
30	2,010.00	1,293.00	4,294.00
31	2,054.00	1,279.00	4,239.00
32	2,063.00	1,268.00	4,242.00
33	2,053.00	1,266.00	4,280.00
34	2,047.00	1,261.00	4,295.00
35	2,010.00	1,245.00	4,236.00
36	2,015.00	1,257.00	4,230.00
37	2,072.00	1,270.00	4,292.00
38	2,036.00	1,301.00	4,326.00
39	2,064.00	1,343.00	4,293.00
40	2,161.00	1,384.00	4,396.00
41	2,213.00	1,360.00	4,465.00
42	2,175.00	1,344.00	4,509.00
43	2,213.00	1,365.00	4,459.00
44	2,201.00	1,375.00	4,495.00
45	2,183.00	1,385.00	4,498.00
46	2,059.00	1,411.00	4,441.00
47	2,046.00	1,386.00	4,369.00
48	1,996.00	1,392.00	4,319.00
49	1,909.00	1,372.00	4,458.00
50	1,945.00	1,337.00	4,478.00
51	1,928.00	1,300.00	4,496.00
52	1,992.00	1,324.00	4,401.00
53	1,966.00	1,330.00	4,382.00
54	1,929.00	1,325.00	4,344.00

Výnosy akcií (30-denní):

ABC	CEZ	KOBA
0.1067	0.1745	-0.0063
0.0784	0.1828	0.0326
0.0777	0.1788	0.0679
0.0958	0.1654	0.0954
0.0806	0.1464	0.0625
0.0804	0.1511	0.0483
0.1146	0.1545	0.0768
0.1114	0.1903	0.0729
0.1032	0.2187	0.0860
0.1662	0.2502	0.0849
0.1936	0.2375	0.1033
0.1681	0.2196	0.1289
0.1834	0.2308	0.1065
0.1808	0.2343	0.0876
0.1903	0.2333	0.0531
0.1388	0.2377	0.0432
0.1279	0.1959	0.0253
0.0871	0.1571	0.0002
0.0564	0.1568	0.0517
0.0734	0.0923	0.0621
0.0461	0.0604	0.0519
0.0862	0.0861	0.0316
0.0737	0.0743	0.0579
0.0371	0.0634	0.0323
0.0202	0.0353	0.0271
0.0150	0.0637	0.0078
-0.0351	0.0684	-0.0121
-0.0420	0.0711	-0.0199
-0.0210	0.0807	-0.0280
-0.0493	0.0665	-0.0282
-0.0847	0.0602	-0.0130
-0.0722	0.0450	-0.0200
-0.0755	0.0506	-0.0262
-0.0669	0.0508	-0.0184
-0.0209	0.0602	0.0158
0.0094	0.0613	0.0338
-0.0193	0.0693	0.0084
0.0000	0.0792	0.0162
-0.0208	0.0558	0.0116
0.0563	0.1285	0.0362

Průměry:

ABC
CEZ
KOBA

55	1,916.00	1,318.00	4,288.00
56	1,900.00	1,335.00	4,261.00
57	1,870.00	1,328.00	4,248.00
58	1,892.00	1,355.00	4,188.00
59	1,913.00	1,380.00	4,195.00
60	1,911.00	1,379.00	4,173.00
61	1,880.00	1,356.00	4,184.00
62	1,914.00	1,325.00	4,157.00
63	1,898.00	1,330.00	4,168.00
64	1,910.00	1,325.00	4,216.00
65	1,968.00	1,320.00	4,303.00
66	2,034.00	1,334.00	4,373.00
67	2,032.00	1,358.00	4,328.00
68	2,036.00	1,404.00	4,396.00
69	2,021.00	1,418.00	4,343.00

Kovariance:

ABC	CEZ	KOBA
0.006654	0.005202	0.002879
0.005202	0.005083	0.002158
0.002879	0.002158	0.0018

Markowitzův model

Průměrné výnosy, tj. R_i :

0.0563	0.1285	0.0362
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Kovarianční matice, tj. S_{ij} :

	ABC	CEZ	KOBA
ABC	0.0067	0.0052	0.0029
CEZ	0.0052	0.0051	0.0022
KOBA	0.0029	0.0022	0.0018

Z_i :

0.0000	0.3663	0.6337	1.0000
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$Z_i * \text{Kov.mat.}$:

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$Z_i * Z_i * \text{Kov.mat.}$:

Rozptyl PF	
Riziko PF	0.049056

Výnos:

0.07

Zadaný výnos:

0.07

$$\hat{R}_{PF} = \sum \hat{R}_i Z_i \quad \sigma_{PF} = \sqrt{\sum_{i,j=1}^M \sigma_{ij} Z_i Z_j}$$

Sharpeho model

Průměrné výnosy, tj. R_i :

0.0563	0.1285	0.0362
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Kovarianční matice, tj. S_{ij} :

	ABC	CEZ	KOBA
ABC	0.0067	0.0052	0.0029
CEZ	0.0052	0.0051	0.0022
KOBA	0.0029	0.0022	0.0018

Z_i :

0.0000	0.9683	0.0317	suma: 1.0000
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$Z_i * \text{Kov.mat.}$:

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$Z_i * Z_i * \text{Kov.mat.}$:

Rozptyl PF

Riziko PF **0.07**

Zadané riziko:

0.07

Výnos: **0.125551**

$$\hat{R}_{PF} = \sum \hat{R}_i Z_i \quad \sigma_{PF} = \sqrt{\sum_{i,j=1}^M \sigma_{ij} Z_i Z_j}$$

Markowitzův model s bankovním účtem

Průměrné výnosy, tj. R_i :

0.0563	0.1285	0.0362	0.0020
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Kovarianční matice, tj. S_{ij} :

	ABC	CEZ	KOBA	Účet
ABC	0.0067	0.0052	0.0029	0.0000
CEZ	0.0052	0.0051	0.0022	0.0000
KOBA	0.0029	0.0022	0.0018	0.0000
Účet	0.0000	0.0000	0.0000	0.0000

suma:

Z_i :

0.0000	0.5377	0.0000	0.4623
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1

$Z_i * \text{Kov.mat.}$:

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$Z_i * Z_i * \text{Kov.mat.}$:

Rozptyl PF

Riziko PF

0.038331841

Výnos:

0.070000001

Zadaný výnos:

0.07

$$\hat{R}_{PF} = \sum \hat{R}_i Z_i \quad \sigma_{PF} = \sqrt{\sum_{i,j=1}^M \sigma_{ij} Z_i Z_j}$$

Sharpeho model s bankovním účtem

Průměrné výnosy, tj. Ri:

0.0563	0.1285	0.0362	0.0020
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Kovarianční matice, tj. Sij:

	ABC	CEZ	KOBA	Účet
ABC	0.0067	0.0052	0.0029	0.0000
CEZ	0.0052	0.0051	0.0022	0.0000
KOBA	0.0029	0.0022	0.0018	0.0000
Účet	0.0000	0.0000	0.0000	0.0000

suma:

Zi:

0.0000	0.9819	0.0000	0.0181
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1

Zi*Kov.mat.:

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Zi*Zi*Kov.mat.:

Rozptyl PF

Riziko PF

0.070000001

Zadané riziko:

0.07

Výnos:

0.126178752

$$\hat{R}_{PF} = \sum \hat{R}_i Z_i \quad \sigma_{PF} = \sqrt{\sum_{i,j=1}^M \sigma_{ij} Z_i Z_j}$$