

Kurzy akcií pro hypotetické kurzovní lístky			
Obchodní den na burze	Kurzy akcií jednotlivých firem		
	F1	F2	F3
1.	100	200	1000
2.	110	210	1050
3.	121	205	1080
4.	95	150	1020
5.	98	210	950

jednodenní	
0.1	0.05
0.1	-0.02381
-0.214876	-0.26829
0.0315789	0.4
výnos	0.0041757 0.039474
	0.0041757 0.039474

Vypočítejte jednodenní a dvoudenní výnosnosti jednotlivých akcií a riziko jejich změ

rozptyl	0.0223664	0.076272
	0.0223664	0.076272
riziko	0.149554	0.276173
	0.149554	0.276173

dvoudenní

jednodenní (Xi-M)^2

0.05	0.21	0.025	0.08	0.009182	0.000111	0.00377
0.028571	-0.136364	-0.28571	-0.02857	0.009182	0.004005	0.001598
-0.05556	-0.190083	0.02439	-0.12037	0.047984	0.094721	0.001949
-0.06863				0.000751	0.129979	0.003275
-0.0114	-0.038815	-0.07877	-0.02298			
-0.0114	-0.038815	-0.07877	-0.02298			
n						
0.003531	0.0471533	0.032118	0.010061			
0.003531	0.0471533	0.032118	0.010061			
0.05942	0.217148	0.179215	0.100302			
0.05942	0.217148	0.179215	0.100302			

dvoudenní $(X_i - M)^2$

0.061909 0.010769 0.010605

0.009516 0.042824 3.13E-05

0.022882 0.010643 0.009485

Emise	R o k							
	2007				2008			
	I.	II.	III.	IV.	I.	II.	III.	IV.
A	1010	1055	1100	1031	988	1065	918	1060
B	2650	3000	3848	3228	3638	4205	3979	4731
C	1505	2030	2190	2325	2250	2443	1700	1796
D	178	300	325	396	351	370	335	327
E	281	372	358	494	460	539	443	468
F	2645	3125	3400	3330	3400	3425	3475	4100
G	547	800	803	1070	975	952	997	944

Vypočítejte výnosnosti jednotlivých akcií za jednotlivá čtvrtletí, riziko změny výnosnosti a střech riziko změny jejich výnosností za dva roky. Vypočítejte kovarianční a korelační matici.

A	0.044554	0.04265403	-0.06273	-0.04171	0.077935	-0.13803	0.154684
B	0.132075	0.28266667	-0.16112	0.127014	0.155855	-0.05375	0.188992
C	0.348837	0.07881773	0.061644	-0.03226	0.085778	-0.30413	0.056471
D	0.685393	0.08333333	0.218462	-0.11364	0.054131	-0.09459	-0.02388
E	0.323843	-0.0376344	0.379888	-0.06883	0.171739	-0.17811	0.056433
F	0.181474	0.088	-0.02059	0.021021	0.007353	0.014599	0.179856
G	0.462523	0.00375	0.332503	-0.08879	-0.02359	0.047269	-0.05316

A	0.001122	0.00099868	0.005443	0.002784	0.004473	0.022225	0.02063
B	0.001304	0.0348586	0.066093	0.000964	0.003587	0.022412	0.008655
C	0.094048	0.00134342	0.000379	0.005539	0.001902	0.119923	0.000205
D	0.324663	0.00104121	0.01058	0.05255	0.003779	0.044182	0.019455
E	0.053531	0.01692888	0.082605	0.026019	0.006283	0.073216	0.001299
F	0.013016	0.00042486	0.000424	0.000442	5.41E-05	0.000213	0.032348
G	0.133449	0.00873586	0.05536	0.034596	0.014594	0.002495	0.022613

kovariance

	A	B	C	D	E	F	G
A	0.009613	0.01068763	0.011753	0.004961	0.005235	0.00557	-0.00342
B	0.010688	0.02297894	0.011064	-0.0007	-0.00882	0.007319	-0.01404
C	0.011753	0.01106435	0.037223	0.043456	0.030072	0.009125	0.022818
D	0.004961	-0.0006999	0.043456	0.076042	0.043267	0.010837	0.052817
E	0.005235	-0.008822	0.030072	0.043267	0.043313	0.001897	0.033945
F	0.00557	0.00731937	0.009125	0.010837	0.001897	0.007062	0.003442
G	-0.00342	-0.014045	0.022818	0.052817	0.033945	0.003442	0.045307

korelace

	A	B	C	D	E	F	G
A	1	0.71910571	0.621341	0.183491	0.256538	0.67603	-0.16367
B	0.719106	1	0.378315	-0.01674	-0.27963	0.574584	-0.43528

C	0.621341	0.37831538	1	0.8168	0.748935	0.562835	0.555625
D	0.183491	-0.0167425	0.8168	1	0.753904	0.467639	0.899845
E	0.256538	-0.2796346	0.748935	0.753904	1	0.108443	0.766257
F	0.67603	0.57458403	0.562835	0.467639	0.108443	1	0.192425
G	-0.16367	-0.4352835	0.555625	0.899845	0.766257	0.192425	1

ední hodnotu a

výnos	
0.011052	0.011052
0.095962	0.095962
0.042165	0.042165
0.115601	0.115601
0.092477	0.092477
0.067388	0.067388
0.097216	0.097216

rozptyl		riziko	
0.009613	0.009613	0.098045	0.098045
0.022979	0.022979	0.151588	0.151588
0.037223	0.037223	0.192933	0.192933
0.076042	0.076042	0.275757	0.275757
0.043313	0.043313	0.208119	0.208119
0.00782	0.007062	0.088432	0.084034
0.045307	0.045307	0.212855	0.212855

- 0.098045
- 0.151588
- 0.192933
- 0.275757
- 0.208119
- 0.088432
- 0.212855

Pro jednodenní výnosnosti a měsíční výnosnosti spočítejte:

1. střední hodnotu, rozptyl a směrodatnou odchylku pro pět největ
2. střední hodnotu, výběrový rozptyl a výběrovou směrodatnou od
3. kovarianční i korelační matici pro vybrané akcie (vstupní hodno

datum	Exxon Mobil	Goldman S.	Apple Inc.		
2/19/2016	82.5	146.91	96.04		
2/18/2016	82.45	147.73	96.26		
2/17/2016	82	150.94	98.12		
2/16/2016	81.22	149.02	96.64		
2/12/2016	81.03	146.13	93.99		
2/11/2016	79.6	140.69	93.7		
2/10/2016	79.35	147.23	94.27		
2/9/2016	80.08	148.25	94.99		
2/8/2016	81.16	149.25	95.01		
2/5/2016	80.08	156.47	94.02		
2/4/2016	79.83	156.49	96.6		
2/3/2016	78.48	152.68	96.35		
2/2/2016	74.59	151.7	94.48		
2/1/2016	76.29	159.65	96.43		
1/29/2016	77.85	161.56	97.34		
1/28/2016	76.99	157.06	94.09		
1/27/2016	75.29	153.72	93.42		
1/26/2016	76.7	154.45	99.99		
1/25/2016	73.98	151.12	99.44		
1/22/2016	76.57	156.86	101.42		
1/21/2016	74.1	151.65	96.3		
1/20/2016	73.18	153.75	96.79		
1/19/2016	76.4	156.82	96.66		
1/15/2016	77.58	155.61	97.13		
1/14/2016	79.12	161.39	99.52		
1/13/2016	75.65	158.99	97.39		
1/12/2016	75.2	165.71	99.96		
1/11/2016	73.69	165.73	98.53		
1/8/2016	74.69	163.94	96.96		
1/7/2016	76.23	164.62	96.45		
1/6/2016	77.47	169.84	100.7		
1/5/2016	78.12	174.09	102.71		
1/4/2016	77.46	177.14	105.35		
12/31/2015	77.95	180.23	105.26		
12/30/2015	78.11	182.01	107.32		
12/29/2015	79.16	183.53	108.74		
12/28/2015	78.74	181.62	106.82		
12/24/2015	79.33	182.47	108.03		
12/23/2015	80.19	182.95	108.61		
12/22/2015	77.65	180.05	107.23		
12/21/2015	77.26	177.75	107.33		
12/18/2015	77.28	175.49	106.03		

12/17/2015	77.96	182.61	108.98		
12/16/2015	79.15	186.21	111.34		
12/15/2015	79.43	182.01	110.49		
12/14/2015	76.03	176.4	112.48		
12/11/2015	74.34	176.56	113.18		
12/10/2015	75.69	182.11	116.17		
12/9/2015	75.63	180.71	115.62		
12/8/2015	74.63	182.92	118.23		
12/7/2015	76.8	185.49	118.28		
12/4/2015	78.86	189.99	119.03		
12/3/2015	78.41	185.2	115.2		
12/2/2015	79.55	190.26	116.28		
12/1/2015	81.89	193.07	117.34		
11/30/2015	81.66	190.02	118.3		
11/27/2015	81.23	190.47	117.81		
11/25/2015	81.25	189.15	118.03		
11/24/2015	81.88	188.67	118.88		
11/23/2015	80.28	189.19	117.75		
11/20/2015	79.79	191.47	119.3		
11/19/2015	80.3	193.03	118.78		
11/18/2015	80.74	193.66	117.29		
11/17/2015	79.96	190.57	113.69		
11/16/2015	80.9	192.16	114.175		
11/13/2015	78.1	190.39	112.34		
11/12/2015	79.41	192.77	115.72		
11/11/2015	81.62	197.39	116.11		
11/10/2015	82.35	197.81	116.77		
11/9/2015	81.95	196.76	120.57		
11/6/2015	84.47	199.17	121.06		
11/5/2015	84.81	192.02	120.92		
11/4/2015	85.98	191.65	122		
11/3/2015	86.85	190.69	122.57		
11/2/2015	85.28	189.68	121.18		
10/30/2015	82.74	187.5	119.5		
10/29/2015	82.23	189.89	120.53		
10/28/2015	82.28	191.32	119.27		
10/27/2015	81.09	186.31	114.55		
10/26/2015	81.22	187.01	115.28		
10/23/2015	82.98	185.5	119.08		
10/22/2015	82.89	183.56	115.5		
10/21/2015	80.21	179.7	113.76		
10/20/2015	80.83	185.51	113.77		
10/19/2015	80.99	185.74	111.73		
10/16/2015	82.48	185.18	111.04		
10/15/2015	81.48	184.96	111.86		
10/14/2015	80.16	179.51	110.21		
10/13/2015	79.16	180.97	111.79		

10/12/2015	79.3	180.23	111.6		
10/9/2015	79.26	179.19	112.12		
10/8/2015	80.03	181.07	109.5		
10/7/2015	79.2	182.23	110.78		
10/6/2015	77.89	180.32	111.31		
10/5/2015	76.81	180.7	110.78		
10/2/2015	75.88	177.01	110.38		
10/1/2015	74.06	176.02	109.58		
9/30/2015	74.35	173.76	110.3		
9/29/2015	72.97	171.86	109.06		
9/28/2015	72.6	173.02	112.44		
9/25/2015	73.23	179.83	114.71		
9/24/2015	72.73	176.91	115		
9/23/2015	72.3	179.41	114.32		
9/22/2015	72.74	179.72	113.4		
9/21/2015	73.39	183.35	115.21		
9/18/2015	72.68	180.94	113.45		
9/17/2015	74.46	186.45	113.92		
9/16/2015	74.3	188.64	116.41		
9/15/2015	72.86	187.45	116.28		
9/14/2015	72.49	183.94	115.31		
9/11/2015	72.69	185.27	114.21		
9/10/2015	72.52	185.91	112.57		
9/9/2015	72	185.68	110.15		
9/8/2015	73.5	185.88	112.31		
9/4/2015	72.46	180.38	109.27		
9/3/2015	73.79	185.06	110.37		
9/2/2015	73.23	184.51	112.34		
9/1/2015	72.08	182.12	107.72		
8/31/2015	75.24	188.6	112.76		
8/28/2015	75.07	187.75	113.29		
8/27/2015	74.85	189.21	112.92		
8/26/2015	72.5	184.4	109.69		
8/25/2015	68.71	178.22	103.74		
8/24/2015	68.72	179.46	103.12		
8/21/2015	72.13	187.74	105.76		
8/20/2015	74.57	196.75	112.65		
8/19/2015	76.23	200.95	115.01		
8/18/2015	77.9	201.18	116.5		
8/17/2015	78.77	202.57	117.16		
8/14/2015	78.36	202.02	115.96		
8/13/2015	78.65	200.74	115.15		
8/12/2015	78.79	201.13	115.24		
8/11/2015	77.49	201.7	113.49		
8/10/2015	78.75	205.97	119.72		
8/7/2015	76.83	203.44	115.52		
8/6/2015	78.09	205.09	115.13		

8/5/2015	77.17	205.7	115.4		
8/4/2015	77.17	205.17	114.64		
8/3/2015	78.06	204.69	118.44		
7/31/2015	79.21	205.07	121.3		
7/30/2015	83.01	207.2	122.37		
7/29/2015	83.14	206.84	122.99		
7/28/2015	82.48	206.24	123.38		
7/27/2015	79.26	205.02	122.77		
7/24/2015	79.94	207.35	124.5		
7/23/2015	81.14	211.05	125.16		
7/22/2015	81.79	213.25	125.22		
7/21/2015	81.66	211.5	130.75		
7/20/2015	81.76	212.39	132.07		
7/17/2015	82.61	212.46	129.62		
7/16/2015	82.91	211.18	128.51		
7/15/2015	82.76	212.96	126.82		
7/14/2015	83.11	212.16	125.61		
7/13/2015	82.42	210.12	125.66		
7/10/2015	82.22	207.19	123.28		
7/9/2015	81.6	204.81	120.07		
7/8/2015	81.97	204.06	122.57		
7/7/2015	82.87	208.21	125.69		
7/6/2015	82.53	208.04	126		
7/2/2015	83.14	209.2	126.44		
7/1/2015	82.37	209.94	126.6		
6/30/2015	83.2	208.79	125.425		
6/29/2015	82.82	207.65	124.53		
6/26/2015	83.86	213.17	126.75		
6/25/2015	83.93	212.82	127.5		
6/24/2015	84.68	214.43	128.11		
6/23/2015	85.07	218.4	127.03		
6/22/2015	85.17	216.51	127.61		
6/19/2015	85.21	213.19	126.6		
6/18/2015	85.48	214.6	127.88		
6/17/2015	84.73	212.93	127.3		
6/16/2015	84.68	213.56	127.6		
6/15/2015	83.72	211.76	126.92		
6/12/2015	84.02	213.06	127.17		
6/11/2015	85.09	213.94	128.59		
6/10/2015	85.21	213.13	128.88		
6/9/2015	84.58	209.02	127.42		
6/8/2015	84.85	209.79	127.8		
6/5/2015	84.28	210.45	128.65		
6/4/2015	84.22	208.87	129.36		
6/3/2015	84.95	208.29	130.12		
6/2/2015	85.14	206.43	129.96		
6/1/2015	85.13	207.81	130.535		

5/29/2015	85.2	206.19	130.28		
5/28/2015	85.11	208.48	131.78		
5/27/2015	85.11	209.06	132.045		
5/26/2015	85.35	206.38	129.62		
5/22/2015	86.52	207.8	132.54		
5/21/2015	87.21	204.95	131.39		
5/20/2015	87.13	205.08	130.06		
5/19/2015	86.99	205.4	130.07		
5/18/2015	86.85	204.66	130.19		
5/15/2015	87.35	202.97	128.77		
5/14/2015	86.97	202.62	128.95		
5/13/2015	86.56	201.43	126.01		
5/12/2015	87.02	200.53	125.865		
5/11/2015	86.78	201.73	126.32		
5/8/2015	88.99	200.5	127.62		
5/7/2015	87.6	197.39	125.26		
5/6/2015	88.19	196.25	125.01		
5/5/2015	88.61	197.29	125.8		
5/4/2015	89.11	199.3	128.7		
5/1/2015	88.85	197.53	128.95		
4/30/2015	87.37	196.42	125.15		
4/29/2015	87.87	198.56	128.64		
4/28/2015	87.8	197.49	130.56		
4/27/2015	87.01	196.52	132.65		
4/24/2015	86.97	197.99	130.28		
4/23/2015	87.54	199.31	129.67		
4/22/2015	87.46	198.32	128.62		
4/21/2015	86.88	196.84	126.91		
4/20/2015	87.24	198.1	127.6		
4/17/2015	86.93	197.35	124.75		
4/16/2015	87.73	200.21	126.17		
4/15/2015	88.08	201.1	126.78		
4/14/2015	86.63	197.72	126.3		
4/13/2015	85.34	195.58	126.85		
4/10/2015	85.56	195.64	127.1		
4/9/2015	84.65	194.89	126.56		
4/8/2015	84.06	192.56	125.6		
4/7/2015	85.75	192.39	126.01		
4/6/2015	85.13	192.05	127.35		
4/2/2015	84.3	191.55	125.32		
4/1/2015	84.46	192.23	124.25		
3/31/2015	85	187.97	124.43		
3/30/2015	85.63	191.02	126.37		
3/27/2015	83.58	188.06	123.25		
3/26/2015	84.32	187.24	124.24		
3/25/2015	84.86	187.35	123.38		
3/24/2015	84.52	191.28	126.69		

3/23/2015	85.43	191.96	127.21		
3/20/2015	84.54	193.13	125.9		
3/19/2015	84.41	189.97	127.495		
3/18/2015	86.07	192.32	128.47		
3/17/2015	84.08	190.57	127.04		
3/16/2015	84.76	191.9	124.95		
3/13/2015	83.87	189.34	123.59		
3/12/2015	84.22	189.95	124.45		
3/11/2015	84.02	184.18	122.24		
3/10/2015	84.26	182.71	124.51		
3/9/2015	85.16	187.93	127.14		
3/6/2015	85.63	186.91	126.6		
3/5/2015	86.74	190.08	126.41		
3/4/2015	87.18	189.67	128.54		
3/3/2015	87.62	191.27	129.36		
3/2/2015	88.04	191.79	129.09		
2/27/2015	88.54	189.79	128.46		
2/26/2015	88.65	192.2	130.415		
2/25/2015	89.6	191.72	128.79		
2/24/2015	89.42	192.22	132.17		
2/23/2015	89.01	190.31	133		
2/20/2015	89.92	191.51	129.495		
2/19/2015	89.44	189.11	128.45		
2/18/2015	91.01	188.67	128.715		
2/17/2015	93.05	190.02	127.83		
2/13/2015	93.37	189	127.08		
2/12/2015	92.37	189.78	126.46		
2/11/2015	90.6	187.65	124.88		
2/10/2015	91.01	184.56	122.02		
2/9/2015	91.56	182.22	119.72		
2/6/2015	91.5	183.43	118.93		
2/5/2015	92.36	180.77	119.94		
2/4/2015	91.46	178.78	119.56		
2/3/2015	92.25	180.24	118.65		
2/2/2015	89.58	175.49	118.63		
1/30/2015	87.42	172.41	117.16		
1/29/2015	87.58	175.99	118.9		
1/28/2015	87.95	173.05	115.31		
1/27/2015	90.95	176.49	109.14		
1/26/2015	91.76	180.42	113.1		
1/23/2015	90.89	180.49	112.98		
22.1.2015	92.87	182.04	112.4		

2.

	očekávaná výnosnost		
	Exxon Mobil	Goldman S.	Apple Inc.
	0.004510647	0.00146092	0.0055668
rozptyl	1.56087E-05	0.00034389	0.000423359
riziko	0.00395079	0.01854431	0.020575681

3.

	kovariance		
	Exxon Mobil	Goldman S.	Apple Inc.
Exxon Mobil	0.000238547	0.00013679	0.000116827
Goldman S.	0.000136786	0.00024294	0.000146975
Apple Inc.	0.000116827	0.00014697	0.000305386

	korelace		
	Exxon Mobil	Goldman S.	Apple Inc.
Exxon Mobil	1	0.56820961	0.43284277
Goldman S.	0.568209609	1	0.539600247
Apple Inc.	0.43284277	0.53960025	1

tších akcií dle obchodovaného množství (viz PSE).
 lchylku za poslední týden (pondělí až pátek) pro dané akcie.
 ty jsou za poslední rok).

denní vynosnosti	Exxon Mobil	Goldman S.	Apple Inc.
	0.000606428	-0.005550667	-0.00229
	0.005487805	-0.021266729	-0.01896
	0.009603546	0.012884177	0.015315
	0.002344811	0.019776911	0.028194
	0.017964824	0.038666572	0.003095
	0.003150599	-0.044420295	-0.00605
	-0.009115884	-0.00688027	-0.00758
	-0.013307048	-0.006700168	-0.00021
	0.013486513	-0.046143031	0.01053
	0.003131655	-0.000127804	-0.02671
	0.017201835	0.024954152	0.002595
	0.052151763	0.006460119	0.019793
	-0.022283392	-0.04979643	-0.02022
	-0.020038536	-0.011822233	-0.00935
	0.011170282	0.028651471	0.034541
	0.02257936	0.021727817	0.007172
	-0.018383312	-0.004726449	-0.06571
	0.036766694	0.022035469	0.005531
	-0.033825258	-0.03659314	-0.01952
	0.033333333	0.034355424	0.053167
	0.012571741	-0.013658537	-0.00506
	-0.042146597	-0.019576585	0.001345
	-0.015210106	0.00777585	-0.00484
	-0.019464105	-0.035813867	-0.02402
	0.045869134	0.015095289	0.021871
	0.005984043	-0.040552773	-0.02571
	0.020491247	-0.000120678	0.014513
	-0.013388673	0.010918629	0.016192
	-0.02020202	-0.004130725	0.005288
	-0.016006196	-0.030734809	-0.0422
	-0.008320533	-0.02441266	-0.01957
	0.008520527	-0.01721802	-0.02506
	-0.006286081	-0.017144759	0.000855
	-0.002048393	-0.009779682	-0.01919
	-0.013264275	-0.008282025	-0.01306
	0.005334011	0.010516463	0.017974
	-0.007437287	-0.0046583	-0.0112
	-0.010724529	-0.002623668	-0.00534
	0.032710882	0.016106637	0.01287
	0.00504789	0.012939522	-0.00093
	-0.000258799	0.012878227	0.012261
	-0.008722422	-0.038990198	-0.02707

-0.015034744	-0.019333011	-0.0212
-0.003525116	0.023075655	0.007693
0.04471919	0.031802721	-0.01769
0.022733387	-0.000906208	-0.00618
-0.01783591	-0.030476086	-0.02574
0.000793336	0.007747219	0.004757
0.013399437	-0.012081784	-0.02208
-0.028255208	-0.013855194	-0.00042
-0.026122242	-0.023685457	-0.0063
0.005739064	0.025863931	0.033247
-0.01433061	-0.026595186	-0.00929
-0.028574918	-0.014554307	-0.00903
0.002816556	0.016050942	-0.00811
0.005293611	-0.002362577	0.004159
-0.000246154	0.006978588	-0.00186
-0.007694187	0.002544125	-0.00715
0.019930244	-0.00274856	0.009597
0.00614112	-0.011907871	-0.01299
-0.006351183	-0.008081645	0.004378
-0.005449591	-0.003253124	0.012704
0.009754877	0.016214514	0.031665
-0.011619283	-0.008274355	-0.00425
0.035851472	0.009296707	0.016334
-0.016496663	-0.012346319	-0.02921
-0.027076697	-0.023405441	-0.00336
-0.008864602	-0.00212325	-0.00565
0.004881025	0.00533645	-0.03152
-0.029833077	-0.012100216	-0.00405
-0.004008961	0.037235705	0.001158
-0.013607816	0.001930603	-0.00885
-0.010017271	0.005034349	-0.00465
0.018409944	0.005324757	0.011471
0.030698574	0.011626667	0.014059
0.006202116	-0.012586234	-0.00855
-0.000607681	-0.007474388	0.010564
0.014675052	0.026890666	0.041205
-0.001600591	-0.003743115	-0.00633
-0.02120993	0.008140162	-0.03191
0.001085776	0.010568751	0.030996
0.033412293	0.021480245	0.015295
-0.007670419	-0.031319066	-8.8E-05
-0.001975553	-0.00123829	0.018258
-0.018064985	0.003024085	0.006214
0.01227295	0.001189446	-0.00733
0.016467066	0.030360426	0.014971
0.012632643	-0.008067636	-0.01413
-0.001765448	0.004105865	0.001703

0.000504668	0.005803895	-0.00464
-0.009621392	-0.010382725	0.023927
0.010479798	-0.006365582	-0.01155
0.01681859	0.01059228	-0.00476
0.014060669	-0.002102933	0.004784
0.012256194	0.02084628	0.003624
0.024574669	0.005624361	0.007301
-0.003900471	0.013006446	-0.00653
0.018911882	0.01105551	0.01137
0.005096419	-0.006704427	-0.03006
-0.008603032	-0.037869099	-0.01979
0.006874742	0.016505568	-0.00252
0.005947441	-0.013934563	0.005948
-0.006048941	-0.001724905	0.008113
-0.008856792	-0.0197982	-0.01571
0.00976885	0.013319332	0.015513
-0.023905453	-0.029552159	-0.00413
0.002153432	-0.011609415	-0.02139
0.019763931	0.00634836	0.001118
0.005104152	0.019082309	0.008412
-0.00275141	-0.007178712	0.009631
0.002344181	-0.003442526	0.014569
0.007222222	0.00123869	0.02197
-0.020408163	-0.001075963	-0.01923
0.014352746	0.030491185	0.027821
-0.018024123	-0.025289095	-0.00997
0.007647139	0.002980868	-0.01754
0.015954495	0.013123215	0.042889
-0.041998937	-0.034358431	-0.0447
0.002264553	0.004527297	-0.00468
0.002939212	-0.007716294	0.003277
0.032413793	0.026084599	0.029447
0.055159365	0.034676243	0.057355
-0.000145518	-0.006909618	0.006012
-0.047275752	-0.044103547	-0.02496
-0.032720933	-0.045794155	-0.06116
-0.021776204	-0.020900722	-0.02052
-0.021437741	-0.001143255	-0.01279
-0.011044814	-0.006861826	-0.00563
0.005232261	0.002722503	0.010348
-0.003687222	0.006376407	0.007034
-0.001776875	-0.001939044	-0.00078
0.016776358	-0.002825979	0.01542
-0.016	-0.020731174	-0.05204
0.024990238	0.012436099	0.036357
-0.016135229	-0.008045248	0.003387
0.011921731	-0.002965484	-0.00234

0	0.002583224	0.006629
-0.011401486	0.00234501	-0.03208
-0.014518369	-0.001853026	-0.02358
-0.045777617	-0.010279923	-0.00874
-0.001563628	0.001740476	-0.00504
0.00800194	0.002909232	-0.00316
0.040625789	0.005950639	0.004969
-0.00850638	-0.011237039	-0.0139
-0.014789253	-0.017531391	-0.00527
-0.007947182	-0.01031653	-0.00048
0.001591967	0.008274232	-0.04229
-0.001223092	-0.004190404	-0.00999
-0.010289311	-0.000329474	0.018901
-0.003618381	0.00606118	0.008637
0.00181247	-0.008358377	0.013326
-0.004211286	0.003770739	0.009633
0.008371754	0.009708738	-0.0004
0.002432498	0.014141609	0.019306
0.007598039	0.011620526	0.026734
-0.004513847	0.00367539	-0.0204
-0.010860384	-0.0199318	-0.02482
0.004119714	0.000817151	-0.00246
-0.007337022	-0.005544933	-0.00348
0.009348064	-0.003524817	-0.00126
-0.009975962	0.005507927	0.009368
0.004588264	0.005490007	0.007187
-0.012401622	-0.025894826	-0.01751
-0.000834028	0.001644582	-0.00588
-0.008856873	-0.007508278	-0.00476
-0.00458446	-0.018177656	0.008502
-0.001174122	0.008729389	-0.00455
-0.000469428	0.015572963	0.007978
-0.003158634	-0.006570363	-0.01001
0.008851646	0.007842953	0.004556
0.000590458	-0.002949991	-0.00235
0.011466794	0.008500189	0.005358
-0.003570578	-0.006101568	-0.00197
-0.012574921	-0.004113303	-0.01104
-0.001408285	0.003800497	-0.00225
0.007448569	0.01966319	0.011458
-0.003182086	-0.003670337	-0.00297
0.00676317	-0.003136137	-0.00661
0.00071242	0.007564514	-0.00549
-0.00859329	0.002784579	-0.00584
-0.002231619	0.009010318	0.001231
0.000117467	-0.006640681	-0.0044
-0.000821596	0.007856831	0.001957

0.001057455	-0.010984267	-0.01138
0	-0.002774323	-0.00201
-0.002811951	0.012985754	0.018709
-0.013522885	-0.006833494	-0.02203
-0.007911937	0.013905831	0.008753
0.000918168	-0.000633899	0.010226
0.00160938	-0.001557936	-7.7E-05
0.001611975	0.003615753	-0.00092
-0.005724098	0.008326354	0.011027
0.004369323	0.001727371	-0.0014
0.004736599	0.00590776	0.023331
-0.005286141	0.004488107	0.001152
0.002765614	-0.005948545	-0.0036
-0.024834251	0.006134663	-0.01019
0.01586758	0.015755611	0.018841
-0.006690101	0.005808917	0.002
-0.004739871	-0.005271428	-0.00628
-0.005611043	-0.010085299	-0.02253
0.00292628	0.008960664	-0.00194
0.016939453	0.005651156	0.030364
-0.005690224	-0.010777599	-0.02713
0.000797267	0.005417996	-0.01471
0.009079416	0.004935884	-0.01576
0.000459929	-0.007424617	0.018192
-0.006511309	-0.006622849	0.004704
0.000914704	0.004991932	0.008164
0.006675875	0.007518797	0.013474
-0.004126547	-0.006360424	-0.00541
0.003566088	0.003800355	0.022846
-0.009118887	-0.014285001	-0.01125
-0.00397366	-0.004425659	-0.00481
0.016737851	0.017094882	0.0038
0.015116007	0.010941814	-0.00434
-0.002571295	-0.000306686	-0.00197
0.010750148	0.003848325	0.004267
0.007018796	0.012100125	0.007643
-0.019708455	0.000883622	-0.00325
0.007282979	0.001770372	-0.01052
0.009845789	0.002610285	0.016199
-0.001894388	-0.003537429	0.008612
-0.006352941	0.022663191	-0.00145
-0.007357235	-0.015966914	-0.01535
0.024527399	0.015739658	0.025314
-0.008776091	0.004379406	-0.00797
-0.006363422	-0.000587136	0.00697
0.004022717	-0.020545797	-0.02613
-0.010651996	-0.003542405	-0.00409

0.010527561	-0.006058096	0.010405
0.001540102	0.016634205	-0.01251
-0.019286627	-0.012219218	-0.00759
0.023667935	0.009182977	0.011256
-0.008022652	-0.006930693	0.016727
0.010611661	0.013520651	0.011004
-0.004155782	-0.003211371	-0.00691
0.002380386	0.031328049	0.018079
-0.002848327	0.008045537	-0.01823
-0.010568342	-0.0277763	-0.02069
-0.005488731	0.005457172	0.004265
-0.012796864	-0.016677189	0.001503
-0.005047029	0.002161649	-0.01657
-0.005021685	-0.008365138	-0.00634
-0.004770559	-0.002711299	0.002092
-0.005647165	0.010537963	0.004904
-0.001240835	-0.012539022	-0.01499
-0.010602679	0.002503651	0.012617
0.002012972	-0.002601186	-0.02557
0.004606224	0.010036257	-0.00624
-0.010120107	-0.006265991	0.027067
0.005366726	0.012691026	0.008135
-0.017250852	0.002332114	-0.00206
-0.021923697	-0.007104515	0.006923
-0.003427225	0.005396825	0.005902
0.010826026	-0.004110022	0.004903
0.019536424	0.011350919	0.012652
-0.004504999	0.016742523	0.023439
-0.00600699	0.01284162	0.019211
0.000655738	-0.006596522	0.006643
-0.00931139	0.014714831	-0.00842
0.009840367	0.011130999	0.003178
-0.008563686	-0.008100311	0.00767
0.02980576	0.027067069	0.000169
0.024708305	0.017864393	0.012547
-0.001826901	-0.020342065	-0.01463
-0.004206936	0.016989309	0.031133
-0.032985157	-0.019491189	0.056533
-0.008827376	-0.021782507	-0.03501
0.00957201	-0.000387833	0.001062
-0.021320125	-0.008514612	0.00516

1.

očekávaná výnosnost	-0.000317856	-0.000668706	-0.00043
rozptyl	0.000238547	0.000242936	0.000305
riziko	0.015444974	0.015586403	0.017475