Market	Security	r_i	risk	$\rho_{A,B}$
I	A	0.22	0.3	0.15
	B	0.31	0.32	
II	A	0.26	0.29	-0.06
	B	0.34	0.33	
III	A	0.18	0.2	0.09
	B	0.41	0.38	

Market	rp
I	0.261589
II	0.295149
III	0.224674

Market I.

Covar_M

0.09	0.0144	0.09	0.0144
0.0144	0.1024	0.0144	0.1024

Systém of Matrix

0.18	0.0288	1	0
0.0288	0.2048	1	0
1	1	0	1

Inversion M

3.056235	-3.05623	0.537897	w1	0.537897
-3.05623	3.056235	0.462103	w2	0.462103
0.537897	0.462103	-0.11013	lambda	-0.11013
			Proof	1

Proof	1	0	0
	0	1	0
	0	0	1

Market II.

Covar_M

0.0841	-0.00574	9.340571	-5.02427
-0.00574	0.1089	-5.02427	0.289334

Systém of Matrix

0.1682	-0.01148	1	0
-0.01148	0.2178	1	0
1	1	0	1

Inversion M

2.445179	-2.44518	0.56064	w1	0.56064
-2.44518	2.445179	0.43936	w2	0.43936
0.56064	0.43936	-0.08925	lambda	-0.08925
			Proof	1

Proof	1	0	0
	0	1	0
	0	0	1

Market III.

Covar_M

0.04	0.00684	0.314318	0
0.00684	0.1444	0	0

Systém of Matrix					VRS
	0.08	0.01368	1		0
	0.01368	0.2888	1		0
	1	1	0		1

Inversion M					wi
	2.928772	-2.92877	0.805764	w1	0.805764
	-2.92877	2.928772	0.194236	w2	0.194236
	0.805764	0.194236	-0.06712	lambda	-0.06712
				Proof	1
Proof	1	0	0		
	0	1	0		
	0	0	1		

sigmap

0.234659	1.114761	0.897053
0.211251	1.397146	0.715745
0.183192	1.226445	0.815365

0.18	0.0288	1
0.0288	0.2048	1
1	1	0

3.056235	-3.05623	0.537897
-3.05623	3.056235	0.462103
0.537897	0.462103	-0.11013

Rp	0.261589	VarP	0.055065
		SigmaP	0.234659

18.68114	-10.0485	1
-10.0485	0.578667	1
1	1	0

0.025409	-0.02541	0.270021
-0.02541	0.025409	0.729979
0.270021	0.729979	2.290906

Rp	0.295149	VarP	0.044627
		SigmaP	0.211251

0.628635	0	1
0	0	1
1	1	0

	1.590747	-1.59075	0
	-1.59075	1.590747	1
	0	1	0

Rp	0.224674	VarP	0.033559
		SigmaP	0.183192

	Company 1	Company 2	Company 3		Correlation	
μ	0.8	0.3	0.6		σ1.2	-0.1
σ	1.2	0.8	1.1		σ1.3	-0.5
					σ2.3	0.3

Χοωαρ_Μ

1.44	-0.096	-0.66
-0.096	0.64	0.264
-0.66	0.264	1.21

2.88	-0.192	-1.32	1
-0.192	1.28	0.528	1
-1.32	0.528	2.42	1
1	1	1	0

Inversion M

0.222691	-0.25436	0.031669	0.351616
-0.25436	0.668746	-0.41439	0.313964
0.031669	-0.41439	0.382718	0.33442
0.351616	0.313964	0.33442	-0.51094

2.88	-0.192	-1.32	1
-0.192	1.28	0.528	1
-1.32	0.528	2.42	1
1	1	1	0
0.8	0.3	0.6	0

Inversion M

0.076093	0.050729	-0.12682	-0.34729
0.050729	0.033819	-0.08455	1.768474
-0.12682	-0.08455	0.21137	-0.42118
-0.34729	1.768474	-0.42118	-3.84297
1.213095	-2.5246	1.311509	5.783435

						0.351616	0.313964	0.33442
						0.178032	-0.0106	-0.07761
	VRS					-0.0106	0.063087	0.027719
		0				-0.07761	0.027719	0.135323
		0						
		0						
		1						
	wi		Rp	0.576134	var-p	0.255469		
w1	0.351616				sigma-p	0.505439		
w2	0.313964							
w3	0.33442							
lambda	-0.51094							
proof	1							
		VRS				1.472353	-2.01843	1.546079
0.8		0						
0.3		0				3.121665	0.285297	-1.50241
0.6		0				0.285297	2.607402	-0.82385
0		1				-1.50241	-0.82385	2.892335
0		1.5						
		wi	Rp	1.5	var-p	4.539477		
1.213095	w1	1.472353			sigma-p	2.130605		
-2.5246	w2	-2.01843						
1.311509	w3	1.546079						
5.783435	lambda1	4.832182						
-10.0384	lambda2	-9.27409						
	proof	1						

0.178032	-0.0106	-0.07761
-0.0106	0.063087	0.027719
-0.07761	0.027719	0.135323

	Sec_1	Sec_2	Sec_3	Sec_4	Sec_5	Sec_6	Sec_7	r_i (%)
Sec_1	80.5	82.7	85.3	85.1	123.9	22	3.5	1.9
Sec_2	82.7	184.7	131.5	69.4	49.5	58	-9.9	6.1
Sec_3	85.3	131.5	374.2	384.5	366.5	103.8	343.5	2.9
Sec_4	85.1	69.4	384.5	684.8	599.1	51.6	502.7	4
Sec_5	123.9	49.5	366.5	599.1	871.4	-21.2	520.4	5.7
Sec_6	22	58	103.8	51.6	-21.2	89.7	74.4	3.4
Sec_7	3.5	-9.9	343.5	502.7	520.4	74.4	574.6	4.9

161	165.4	170.6	170.2	247.8	44	7	1
165.4	369.4	263	138.8	99	116	-19.8	1
170.6	263	748.4	769	733	207.6	687	1
170.2	138.8	769	1369.6	1198.2	103.2	1005.4	1
247.8	99	733	1198.2	1742.8	-42.4	1040.8	1
44	116	207.6	103.2	-42.4	179.4	148.8	1
7	-19.8	687	1005.4	1040.8	148.8	1149.2	1
1	1	1	1	1	1	1	0

InvM

0.077542	-0.00619	0.008788	-0.00971	-0.03769	-0.07775	0.045002	2.1372
-0.00619	0.007803	-0.00362	0.000167	0.001056	-0.00048	0.001254	0.044435
0.008788	-0.00362	0.007544	-0.00229	-0.00426	-0.00879	0.002623	-0.29067
-0.00971	0.000167	-0.00229	0.004278	0.004072	0.01066	-0.00718	-0.23027
-0.03769	0.001056	-0.00426	0.004072	0.02058	0.040175	-0.02394	-0.77333
-0.07775	-0.00048	-0.00879	0.01066	0.040175	0.086382	-0.0502	-1.1224
0.045002	0.001254	0.002623	-0.00718	-0.02394	-0.0502	0.032436	1.235036
2.1372	0.044435	-0.29067	-0.23027	-0.77333	-1.1224	1.235036	-30.2875

2nd opt - E(rp)=5%

161	165.4	170.6	170.2	247.8	44	7	1
165.4	369.4	263	138.8	99	116	-19.8	1
170.6	263	748.4	769	733	207.6	687	1
170.2	138.8	769	1369.6	1198.2	103.2	1005.4	1
247.8	99	733	1198.2	1742.8	-42.4	1040.8	1
44	116	207.6	103.2	-42.4	179.4	148.8	1
7	-19.8	687	1005.4	1040.8	148.8	1149.2	1
1	1	1	1	1	1	1	0
1.9	6.1	2.9	4	5.7	3.4	4.9	0

InvMatrix

0.016039	0.007661	-0.00407	-0.00315	-0.00914	-0.02351	0.016171	2.286871
0.007661	0.004685	-0.00072	-0.00131	-0.00537	-0.01269	0.007746	0.010736
-0.00407	-0.00072	0.004856	-0.00092	0.001708	0.002544	-0.0034	-0.25938
-0.00315	-0.00131	-0.00092	0.003579	0.001028	0.004877	-0.00411	-0.24623
-0.00914	-0.00537	0.001708	0.001028	0.00733	0.015	-0.01055	-0.8428
-0.02351	-0.01269	0.002544	0.004877	0.015	0.038551	-0.02477	-1.2544
0.016171	0.007746	-0.0034	-0.00411	-0.01055	-0.02477	0.01892	1.305199

2.286871	0.010736	-0.25938	-0.24623	-0.8428	-1.2544	1.305199	-30.6517
-0.37867	0.085259	-0.07916	0.040381	0.175762	0.333946	-0.17751	0.921531

					2.1372	0.044435	-0.29067
					367.6936	7.853678	-52.9898
					7.853678	0.36468	-1.69843
					-52.9898	-1.69843	31.61554
					-41.881	-0.71011	25.73579
	VRS				-204.776	-1.70094	82.38249
	0				-52.7736	-2.89267	33.86451
	0				9.238319	-0.5433	-123.312
	0						
	0						
	0						
	0						
	0						
	1						
	wi		Rp	0.39525	VarP	15.14374	
	2.1372				SigmaP	3.891496	
	0.044435						
	-0.29067						
	-0.23027						
	-0.77333						
	-1.1224						
	1.235036						
	-30.2875						
proof	1						
		VRS					
1.9		0					
6.1		0		0.3935	0.43703	-0.65518	-0.04433
2.9		0					
4		0		12.46483	14.22203	-21.9915	-1.48441
5.7		0		14.22203	35.27677	-37.6528	-1.34447
3.4		0		-21.9915	-37.6528	160.6291	11.167
4.9		0		-1.48441	-1.34447	11.167	1.345623
0		1		1.755887	0.779106	-8.64797	-0.95644
0		5		3.595548	10.52776	-28.2459	-0.95001
				0.57518	-1.80691	-93.9892	-9.30635
		wi					
-0.37867		0.3935	Rp	5	VarP	39.86213	
0.085259		0.43703			SigmaP	6.313646	
-0.07916		-0.65518					
0.040381		-0.04433					
0.175762		0.036015					
0.333946		0.415334					
-0.17751		0.417629					

0.921531		-26.0441
-2.33151		-10.736
	proof	1

-0.23027	-0.77333	-1.1224	1.235036

-41.881	-204.776	-52.7736	9.238319
-0.71011	-1.70094	-2.89267	-0.5433
25.73579	82.38249	33.86451	-123.312
36.31192	106.6853	13.33649	-142.966
106.6853	521.1259	-18.4013	-497.027
13.33649	-18.4013	113.0031	-103.134
-142.966	-497.027	-103.134	876.446

0.036015	0.415334	0.417629

1.755887	3.595548	0.57518
0.779106	10.52776	-1.80691
-8.64797	-28.2459	-93.9892
-0.95644	-0.95001	-9.30635
1.130259	-0.31711	7.827232
-0.31711	15.47344	12.90509
7.827232	12.90509	100.2183

Risky portfolio	A	B	C	D
$\bar{r}_p$	6.20%	4%	7.50%	8.40%
σ_p	14.50%	9.70%	17%	20%

rf 0.035

	1	2	3	4	5
r_f	0.2	0.4	0.5	0.6	0.8
Portfolio	0.8	0.6	0.5	0.4	0.2

Rp					
A	0.0566	0.0512	0.0485	0.0458	0.0404
B	0.039	0.038	0.0375	0.037	0.036
C	0.067	0.059	0.055	0.051	0.043
D	0.0742	0.0644	0.0595	0.0546	0.0448

SigmaP					
A	0.116	0.087	0.0725	0.058	0.029
B	0.0776	0.0582	0.0485	0.0388	0.0194
C	0.136	0.102	0.085	0.068	0.034
D	0.16	0.12	0.1	0.08	0.04