

LAMPIRAN 1 : Harga-Harga Saham

Tabel 1. Harga-harga Saham

No	Kode Saham	MARET																		
		1	2	3	4	5	6	7	8	9	10	11	12	15	16	17	19	22	23	24
1	SMGR	9400	9975	10500	10400	10100	10000	9975	10000	10000	10000	9850	9850	9850	9900	10000	9900	9900	9900	9800
2	TINS	5025	5125	5225	5300	5325	5425	5350	5275	5350	5350	5475	5550	5550	5650	5975	5950	5950	5925	5625
3	INDF	4850	4825	4700	4800	4875	4900	4825	4600	4600	4600	4600	4600	4600	4825	4850	4950	5025	5025	5025
4	INKP	2150	2150	2150	2225	2200	2125	2100	2100	2100	2100	2100	2100	2100	2150	2275	2275	2300	2375	2325
5	TLKM	2775	2750	2875	2850	2775	2725	2700	2625	2725	2725	2700	2600	2600	2800	2875	2950	2900	2925	2850
6	ISAT	11900	11900	12100	12075	12175	12100	12100	12050	12200	12200	12150	11900	11900	11900	12075	12100	11800	11575	11575
7	AALI	2100	1950	1875	1900	1875	1900	1875	1875	1875	1875	1850	1775	1775	1700	1900	1875	1875	1900	1925
8	DGSA	4300	4225	4300	4375	4225	3800	3800	3775	3875	3875	3950	3900	4000	4000	4250	4275	4275	4175	4175
9	GGRM	12475	12600	12000	11800	11150	10500	10350	10700	10700	10700	10625	10625	10625	10975	11000	11575	11700	12100	12000
10	HMSP	6525	6450	6400	6375	6250	6475	6550	6350	6350	6350	6250	6250	6250	6250	6325	6450	6500	6575	6500

No	Kode Saham	MARET														APRIL					
		25	26	29	30	1	5	6	7	8	9	12	13	14	15	16	19	20			
1	SMGR	9900	9800	9850	9850	9850	9800	10000	10000	9975	10025	10975	11300	11000	11350	11500	14000	13000	13000	13000	
2	TINS	5650	2725	5825	5800	6275	6325	6600	7025	6900	6750	6950	6925	7000	6975	7600	8300	7875	7875	7875	
3	INDF	5050	5100	5125	5400	5450	5400	5450	5475	5475	6300	5900	5800	5925	5975	6250	6775	6250	6250	6250	
4	INKP	2375	2425	2400	2450	2400	2375	2400	2400	2350	2400	2375	2550	2725	3300	3500	3800	3600	3600	3600	
5	TLKM	2650	2900	2875	2825	2775	2775	2800	2800	2950	3150	3275	3350	3275	3225	3700	3575	3550	3550	3550	
6	ISAT	11725	11525	11550	11525	11575	11625	11625	11475	11900	13000	12625	13300	13100	13550	14500	16400	14700	14700	14700	
7	AALI	1950	1925	1900	1900	1875	1900	1925	1925	1900	2000	2175	2250	2175	2125	2275	2300	2200	2200	2200	
8	DGSA	4100	4100	3925	3975	3975	3950	4050	4100	4100	4350	4550	4800	5075	4800	4800	5400	4925	4925	4925	
9	GGRM	11925	11400	11475	11525	11650	11725	11600	11725	12050	12700	12700	12800	12900	12825	13700	15750	14975	14975	14975	
10	HMSP	6975	7075	7000	7100	7150	7250	7350	7325	7525	8375	8600	8975	8975	9525	10500	11400	10250	10250	10250	

No	Kode Saham	APRIL							
		21	22	23	26	27	28	29	30
1	SMGR	13000	12800	12600	12750	12800	12800	12700	12700
2	TINS	7850	7600	7600	7350	7000	7300	7250	7450
3	INDF	6100	5700	5575	5900	5950	5700	6000	6400
4	INKP	3600	3625	3600	3400	3350	3250	3375	3375
5	TLKM	3375	3300	3350	3400	3400	3500	3600	3600
6	ISAT	15000	15600	15750	15500	15775	16050	16000	15600
7	AALI	2200	2300	2350	2375	2300	2375	2575	2475
8	DGSA	4800	4800	4650	4575	4750	4725	4900	4875
9	GGRM	14900	14200	12500	12525	12850	13875	14400	14650
10	HMSP	9900	9900	9900	10000	9900	10850	11200	11200

LAMPIRAN 2 : Penghitungan Expected Return Saham

Tabel 2 - Expected Return Saham

No	Kode Saham	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	SMGR	0.0342	0.0526	-0.0095	-0.0288	-0.0099	-0.0025	0.0025	0.0000	-0.0150	0.0000	0.0051	0.0101	-0.0100	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0101
2	TINS	0.0199	0.0195	0.0144	0.0047	0.0188	-0.0138	-0.0140	0.0142	0.0234	0.0137	0.0541	0.0214	-0.0042	-0.0042	-0.0295	-0.0217	0.0044	0.0044	-0.5177
3	INDF	-0.0052	-0.0259	0.0213	0.0156	0.0051	-0.0153	-0.0486	0.0000	0.0000	0.0000	0.0489	0.0052	0.0206	0.0152	-0.0050	0.0050	0.0050	0.0050	0.0099
4	INKP	0.0000	0.0000	0.0349	-0.0112	-0.0341	0.0000	-0.0118	0.0000	-0.0119	0.0120	0.0238	0.0581	0.0000	0.0110	0.0326	-0.0211	0.0215	0.0215	0.0211
5	TLKM	-0.0090	0.0455	-0.0087	-0.0263	-0.0180	-0.0092	-0.0278	0.0381	-0.0092	-0.0370	0.0769	0.0268	0.0261	-0.0169	0.0086	-0.0256	0.0000	0.0000	0.0175
6	ISAT	0.0000	0.0168	-0.0021	0.0083	-0.0062	0.0000	-0.0041	0.0124	-0.0041	-0.0206	0.0000	0.0147	0.0021	-0.0248	-0.0191	0.0000	0.0130	0.0130	-0.0171
7	AALI	-0.0714	-0.0385	0.0133	-0.0132	0.0133	-0.0132	0.0000	0.0000	-0.0133	-0.0405	-0.0423	0.1176	-0.0132	0.0000	0.0133	0.0132	0.0132	0.0130	-0.0128
8	DGSA	-0.0174	0.0178	0.0174	-0.0343	-0.1006	0.0000	-0.0066	0.0265	0.0194	-0.0127	0.0256	0.0625	0.0059	0.0000	0.0000	-0.0234	-0.0180	0.0180	0.0000
9	GGRM	0.0100	-0.0476	-0.0167	-0.0551	-0.0090	-0.0407	-0.0236	0.0338	-0.0070	0.0000	0.0023	0.0023	0.0523	0.0108	0.0342	-0.0083	-0.0063	-0.0440	0.0000
10	HMSP	-0.0115	-0.0078	-0.0039	-0.0196	0.0360	0.0116	-0.0305	0.0000	-0.0157	0.0000	0.0000	0.0120	0.0198	0.0078	0.0115	-0.0114	0.0731	0.0731	0.0143

No	Kode Saham	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	SMGR	0.0051	0.0000	0.0000	-0.0051	0.0204	0.0000	0.0025	0.0050	0.0948	0.0296	-0.0285	0.0318	0.0132	0.2174	-0.0714	0.0000	-0.0308	0.0000
2	TINS	1.1376	-0.0043	0.0819	0.0080	0.0435	0.0644	-0.0178	-0.0217	0.0296	-0.0036	0.0108	-0.0036	0.0896	0.0921	-0.0512	-0.0032	-0.0318	0.0000
3	INDF	0.0049	0.0537	0.0093	-0.0092	0.0093	0.0046	0.0000	0.1507	-0.0794	0.0000	0.0216	0.0084	0.0460	0.0840	-0.0775	-0.0240	-0.0656	-0.0219
4	INKP	-0.0103	0.0208	-0.0102	-0.0103	-0.0104	0.0105	-0.0208	0.0213	-0.0104	0.0737	0.0686	0.2110	0.0606	0.0857	-0.0526	0.0000	0.0069	-0.0069
5	TLKM	-0.0086	-0.0174	-0.0177	0.0000	0.0090	0.0000	0.0536	0.0678	0.0397	0.0229	-0.0224	-0.0153	0.1473	-0.0338	-0.0070	-0.0493	-0.0222	0.0152
6	ISAT	0.0022	-0.0022	0.0043	0.0043	0.0000	-0.0129	0.0370	0.0924	-0.0288	0.0535	-0.0150	0.0344	0.0701	0.1310	-0.1037	0.0204	0.0400	0.0096
7	AALI	-0.0130	0.0000	-0.0132	0.0133	0.0132	0.0000	-0.0130	0.0526	0.0875	0.0345	-0.0333	-0.0230	0.0706	0.0110	-0.0435	0.0000	0.0455	0.0217
8	DGSA	-0.0427	0.0127	0.0000	-0.0063	0.0253	0.0123	0.0000	0.0610	0.0460	0.0549	0.0573	-0.0542	0.0000	0.1250	-0.1065	-0.0052	0.0000	-0.0313
9	GGRM	0.0066	0.0044	0.0108	0.0064	-0.0107	0.0108	0.0277	0.0539	0.0000	0.0079	0.0078	-0.0058	0.0682	0.1496	-0.0492	-0.0050	-0.0470	-0.1197
10	HMSP	-0.0106	0.0143	0.0070	0.0140	0.0138	-0.0034	0.0273	0.1130	0.0269	0.0486	0.0000	0.0613	0.1024	0.0857	-0.1009	-0.0341	0.0000	0.0000

No	Kode Saham	37	38	39	40	41	Sigma Ri	E(Ri)
1	SMGR	0.0119	0.0039	0.0000	-0.0078	0.0000	0.3346	0.0082
2	TINS	-0.0329	-0.0476	0.0429	-0.0068	0.0276	1.0066	-0.0246
3	INDF	0.0583	0.0065	-0.0420	0.0526	0.0667	0.3127	0.0076
4	INKP	-0.0556	-0.0147	-0.0299	0.0385	0.0000	0.4905	0.0120
5	TLKM	0.0149	0.0000	0.0294	0.0286	0.0000	0.2894	0.0070
6	ISAT	-0.0159	0.0177	0.0174	-0.0031	-0.0250	0.2872	0.0072
7	AALI	0.0106	-0.0316	0.0326	0.0842	-0.0388	0.1935	0.0047
8	DGSA	-0.0161	0.0383	-0.0053	0.0370	-0.0051	0.1595	0.0039
9	GGRM	0.0020	0.0259	0.0798	0.0378	0.0174	0.1978	0.0048
10	HMSP	0.0101	-0.0100	0.0960	0.0323	0.0000	0.5741	0.0140

LAMPIRAN 3 : Penghitungan Varian Saham

Tabel 3 - Selisih Ri dengan E(Ri)

No	Kode Saham	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	SMGR	0.0338	0.0445	-0.0177	-0.0370	-0.0181	-0.0107	-0.0057	-0.0082	-0.0232	-0.0082	-0.0031	0.0019	-0.0182	-0.0082	-0.0082	-0.0082	-0.0082	-0.0082	-0.0183
2	TINS	-0.0047	-0.0050	-0.0102	-0.0198	-0.0058	-0.0384	-0.0386	-0.0103	-0.0012	-0.0109	0.0295	-0.0032	-0.0287	-0.0288	-0.0541	-0.0463	-0.0201	-0.0201	-0.5423
3	INDF	-0.0128	-0.0335	0.0137	0.0080	-0.0025	-0.0229	-0.0543	-0.0076	-0.0076	-0.0076	0.0413	-0.0024	0.0130	0.0075	-0.0126	-0.0026	-0.0027	-0.0027	0.0023
4	INKP	-0.0120	-0.0120	0.0229	-0.0232	-0.0461	-0.0120	-0.0237	-0.0120	-0.0239	0.0001	0.0118	0.0462	-0.0120	-0.0010	0.0206	-0.0330	0.0095	0.0095	0.0091
5	TLKM	-0.0160	0.0365	-0.0157	-0.0333	-0.0250	-0.0162	-0.0348	0.0311	-0.0162	-0.0440	0.0699	0.0198	0.0191	-0.0239	0.0016	-0.0326	-0.0070	-0.0070	0.0106
6	ISAT	-0.0072	0.0096	-0.0093	0.0010	-0.0134	-0.0072	-0.0114	0.0052	-0.0113	-0.0278	-0.0072	0.0075	0.0075	-0.0320	-0.0263	-0.0072	0.0057	0.0057	-0.0243
7	AALI	-0.0761	-0.0432	0.0096	-0.0179	0.0086	-0.0179	-0.0047	-0.0047	-0.0181	-0.0453	-0.0470	0.1129	-0.0179	-0.0047	0.0086	0.0084	0.0083	0.0083	-0.0175
8	DGSA	-0.0213	0.0139	0.0136	-0.0382	-0.1045	-0.0039	-0.0105	0.0226	0.0155	-0.0165	0.0218	0.0586	0.0020	-0.0039	-0.0039	-0.0273	-0.0219	-0.0219	-0.0039
9	GGRM	0.0052	-0.0524	-0.0215	-0.0599	-0.0138	-0.0455	-0.0284	0.0290	-0.0116	-0.0048	0.0281	-0.0025	0.0474	0.0060	0.0294	-0.0131	-0.0111	-0.0111	-0.0489
10	HMSP	-0.0255	-0.0218	-0.0179	-0.0336	0.0220	-0.0024	-0.0445	-0.0140	-0.0288	-0.0140	-0.0140	-0.0020	0.0056	-0.0063	-0.0025	-0.0254	0.0591	0.0591	0.0003

No	Kode Saham	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
1	SMGR	-0.0031	-0.0082	-0.0082	-0.0132	0.0122	-0.0082	-0.0107	-0.0031	0.0856	0.0215	-0.0347	0.0237	0.0051	0.2092	-0.0796	-0.0082	-0.0082	-0.0082	-0.0082
2	TINS	1.1131	-0.0288	0.0573	-0.0166	0.0189	0.0398	-0.0423	-0.0463	0.0051	-0.0281	-0.0137	-0.0281	0.0651	0.0676	-0.0758	-0.0277	-0.0564	-0.0564	-0.0246
3	INDF	-0.0027	0.0460	0.0016	-0.0168	0.0016	-0.0030	-0.0076	0.1431	-0.0870	-0.0076	0.0139	0.0008	0.0384	0.0764	-0.0851	-0.0316	-0.0732	-0.0732	-0.0296
4	INKP	-0.0223	0.0089	-0.0222	-0.0223	-0.0224	-0.0014	-0.0328	0.0093	-0.0224	0.0617	0.0567	0.1990	0.0486	0.0737	-0.0646	-0.0120	-0.0050	-0.0189	-0.0189
5	TLKM	-0.0156	-0.0244	-0.0247	-0.0070	0.0020	-0.0070	0.0466	0.0608	0.0327	0.0159	-0.0284	-0.0223	0.1403	-0.0408	-0.0140	-0.0563	-0.0292	0.0062	0.0062
6	ISAT	-0.0051	-0.0094	-0.0029	-0.0029	-0.0072	-0.0020	0.0298	0.0852	-0.0361	0.0462	-0.0223	0.0271	0.0629	0.1238	-0.1109	0.0132	0.0328	0.0024	0.0024
7	AALI	-0.0177	-0.0047	-0.0179	0.0086	0.0084	-0.0047	-0.0177	0.0479	0.0828	0.0298	-0.0381	-0.0277	0.0659	0.0063	-0.0482	-0.0047	0.0407	0.0170	0.0170
8	DGSA	-0.0466	0.0088	-0.0039	-0.0102	0.0214	0.0085	-0.0039	0.0571	0.0421	0.0511	0.0534	-0.0581	-0.0039	0.1211	-0.1104	-0.0091	-0.0039	-0.0351	-0.0351
9	GGRM	0.0018	-0.0005	0.0060	0.0016	-0.0155	0.0060	0.0229	0.0491	-0.0048	0.0030	0.0030	-0.0106	0.0634	0.1448	-0.0540	-0.0098	-0.0518	-0.1245	-0.1245
10	HMSP	-0.0246	0.0003	-0.0070	0.0000	-0.0002	-0.0174	0.0133	0.0990	0.0129	0.0296	-0.0140	0.0473	0.0884	0.0717	-0.1149	-0.0481	-0.0140	-0.0140	-0.0140

No	Kode Saham	37	38	39	40	41
1	SMGR	0.0037	-0.0042	-0.0082	-0.0160	-0.0082
2	TINS	-0.0674	-0.0722	0.0183	-0.0314	0.0030
3	INDF	0.0507	0.0008	-0.0496	0.0450	0.0590
4	INKP	-0.0675	-0.0267	-0.0418	0.0265	-0.0120
5	TLKM	0.0079	-0.0070	0.0224	0.0216	-0.0070
6	ISAT	-0.0231	0.0105	0.0102	-0.0104	-0.0322
7	AALI	0.0059	-0.0363	0.0279	0.0795	-0.0436
8	DGSA	-0.0200	0.0344	-0.0092	0.0331	-0.0090
9	GGRM	-0.0028	0.0211	0.0749	0.0330	0.0125
10	HMSP	-0.0039	-0.0240	0.0820	0.0183	-0.0140



Tabel 4. - Kuadrat dari selisih Ri dengan E(Ri)

No	Kode Saham	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1	SMGR	0.0028	0.0020	0.0003	0.0014	0.0003	0.0001	0.0000	0.0001	0.0005	0.0001	0.0000	0.0000	0.0000	0.0003	0.0001	0.0001	0.0001	0.0001	0.0003
2	TINS	0.0000	0.0000	0.0001	0.0004	0.0000	0.0015	0.0015	0.0001	0.0000	0.0001	0.0009	0.0000	0.0000	0.0008	0.0029	0.0021	0.0004	0.0004	0.2940
3	INDF	0.0002	0.0011	0.0002	0.0001	0.0000	0.0005	0.0029	0.0001	0.0001	0.0001	0.0017	0.0000	0.0000	0.0001	0.0002	0.0000	0.0000	0.0000	0.0000
4	INKP	0.0001	0.0001	0.0005	0.0005	0.0021	0.0001	0.0006	0.0001	0.0006	0.0000	0.0001	0.0001	0.0001	0.0000	0.0004	0.0011	0.0001	0.0001	0.0000
5	TLKM	0.0003	0.0015	0.0002	0.0011	0.0006	0.0003	0.0012	0.0010	0.0003	0.0019	0.0049	0.0004	0.0001	0.0006	0.0000	0.0011	0.0000	0.0001	0.0001
6	ISAT	0.0001	0.0001	0.0001	0.0000	0.0002	0.0001	0.0001	0.0000	0.0001	0.0008	0.0001	0.0001	0.0001	0.0010	0.0007	0.0001	0.0000	0.0000	0.0006
7	AALI	0.0058	0.0019	0.0001	0.0003	0.0001	0.0003	0.0000	0.0000	0.0003	0.0020	0.0022	0.0128	0.0003	0.0000	0.0001	0.0001	0.0001	0.0000	0.0003
8	DGSA	0.0005	0.0002	0.0002	0.0015	0.0109	0.0000	0.0001	0.0005	0.0002	0.0003	0.0005	0.0034	0.0000	0.0000	0.0000	0.0007	0.0005	0.0000	0.0000
9	GGRM	0.0000	0.0028	0.0005	0.0036	0.0002	0.0021	0.0008	0.0008	0.0001	0.0000	0.0008	0.0000	0.0000	0.0000	0.0009	0.0002	0.0001	0.0000	0.0024
10	HMSP	0.0007	0.0005	0.0003	0.0011	0.0005	0.0000	0.0020	0.0002	0.0009	0.0002	0.0002	0.0000	0.0000	0.0000	0.0000	0.0006	0.0001	0.0000	0.0000

No	Kode Saham	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	SMGR	0.0000	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0000	0.0075	0.0005	0.0012	0.0006	0.0000	0.0436	0.0063	0.0001	0.0015	0.0001
2	TINS	1.2389	0.0008	0.0033	0.0003	0.0004	0.0016	0.0018	0.0021	0.0000	0.0008	0.0002	0.0008	0.0042	0.0046	0.0057	0.0008	0.0032	0.0008
3	INDF	0.0000	0.0021	0.0000	0.0003	0.0000	0.0000	0.0001	0.0205	0.0076	0.0001	0.0002	0.0000	0.0015	0.0058	0.0072	0.0010	0.0054	0.0009
4	INKP	0.0005	0.0001	0.0005	0.0005	0.0005	0.0000	0.0011	0.0001	0.0005	0.0038	0.0032	0.0396	0.0024	0.0054	0.0042	0.0001	0.0000	0.0004
5	TLKM	0.0002	0.0006	0.0006	0.0000	0.0000	0.0000	0.0022	0.0037	0.0011	0.0003	0.0009	0.0005	0.0197	0.0017	0.0002	0.0032	0.0009	0.0001
6	ISAT	0.0000	0.0001	0.0000	0.0000	0.0001	0.0004	0.0009	0.0073	0.0013	0.0021	0.0005	0.0007	0.0040	0.0153	0.0123	0.0002	0.0011	0.0000
7	AALI	0.0003	0.0000	0.0003	0.0001	0.0001	0.0000	0.0003	0.0023	0.0069	0.0039	0.0014	0.0008	0.0043	0.0000	0.0023	0.0000	0.0017	0.0003
8	DGSA	0.0022	0.0001	0.0000	0.0001	0.0005	0.0001	0.0000	0.0033	0.0018	0.0026	0.0029	0.0034	0.0000	0.0147	0.0122	0.0001	0.0000	0.0012
9	GGRM	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0005	0.0024	0.0000	0.0000	0.0000	0.0001	0.0040	0.0210	0.0029	0.0001	0.0027	0.0155
10	HMSP	0.0006	0.0000	0.0000	0.0000	0.0000	0.0003	0.0002	0.0098	0.0002	0.0009	0.0002	0.0022	0.0078	0.0051	0.0132	0.0023	0.0002	0.0002

No	Kode Saham	37	38	39	40	41	Jumlah	Varian	Std Dev
1	SMGR	0.0000	0.0000	0.0001	0.0003	0.0001	0.0711	0.0017	0.0417
2	TINS	0.0033	0.0052	0.0003	0.0010	0.0000	1.5857	0.0387	0.1987
3	INDF	0.0026	0.0000	0.0025	0.0020	0.0036	0.0704	0.0017	0.0414
4	INKP	0.0046	0.0007	0.0017	0.0007	0.0001	0.0797	0.0019	0.0441
5	TLKM	0.0001	0.0000	0.0005	0.0005	0.0000	0.0527	0.0013	0.0358
6	ISAT	0.0005	0.0001	0.0001	0.0001	0.0010	0.0522	0.0013	0.0357
7	AALI	0.0000	0.0013	0.0008	0.0063	0.0019	0.0591	0.0014	0.0380
8	DGSA	0.0004	0.0012	0.0001	0.0011	0.0001	0.0673	0.0016	0.0405
9	GGRM	0.0000	0.0004	0.0056	0.0011	0.0002	0.0745	0.0018	0.0426
10	HMSP	0.0000	0.0006	0.0067	0.0003	0.0002	0.0618	0.0015	0.0388

LAMPIRAN 4 : Penghitungan Kovarian Saham

Tabel 5 - Kovarian Saham Semen Gresik

SMGR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TINS	-0.0002	-0.0002	0.0002	0.0007	0.0001	0.0004	0.0002	0.0001	0.0000	0.0001	-0.0001	0.0000	0.0005	0.0002	0.0004	0.0004	0.0002	0.0000
INDF	-0.0007	-0.0015	-0.0002	-0.0003	0.0000	0.0002	0.0003	0.0001	0.0002	0.0001	-0.0001	0.0000	-0.0002	-0.0001	0.0001	0.0000	0.0000	0.0000
INKP	-0.0006	-0.0005	-0.0004	0.0009	0.0008	0.0001	0.0001	0.0001	0.0006	0.0000	0.0000	0.0001	0.0002	0.0000	-0.0002	0.0003	-0.0001	-0.0002
TLKM	-0.0008	0.0017	0.0003	0.0012	0.0005	0.0002	0.0002	-0.0003	0.0004	0.0004	-0.0002	0.0000	-0.0003	0.0002	0.0000	0.0003	0.0001	-0.0002
ISAT	-0.0004	0.0004	0.0002	0.0000	0.0002	0.0001	0.0001	0.0000	0.0003	0.0002	0.0000	0.0000	0.0001	0.0003	0.0002	0.0001	0.0000	0.0004
AALI	-0.0040	-0.0019	-0.0002	0.0007	-0.0002	0.0002	0.0000	0.0000	0.0004	0.0004	0.0001	0.0002	0.0003	0.0000	-0.0001	-0.0001	0.0000	0.0001
DGSA	-0.0011	0.0006	-0.0002	0.0014	0.0019	0.0000	0.0001	-0.0002	-0.0004	0.0001	-0.0001	0.0001	0.0000	0.0000	0.0000	0.0002	0.0002	0.0001
GGRM	0.0003	-0.0023	0.0004	0.0022	0.0002	0.0005	0.0002	-0.0002	0.0003	0.0000	-0.0001	0.0000	-0.0009	0.0000	-0.0002	0.0001	0.0001	0.0009
HMSP	-0.0014	-0.0010	0.0003	0.0012	-0.0004	0.0000	0.0003	0.0001	0.0007	0.0001	0.0000	0.0000	-0.0001	0.0001	0.0000	0.0002	-0.0005	0.0000

SMGR	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
TINS	-0.0034	0.0002	-0.0005	0.0002	0.0002	-0.0003	0.0005	0.0001	0.0004	-0.0006	0.0005	-0.0007	0.0003	0.0003	0.0141	0.0060	0.0022	0.0002
INDF	0.0000	-0.0004	0.0000	0.0002	0.0000	0.0000	0.0001	-0.0005	-0.0075	-0.0002	-0.0005	0.0000	0.0002	0.0160	0.0068	0.0003	0.0028	0.0002
INKP	0.0001	-0.0001	0.0002	0.0003	-0.0003	0.0000	0.0003	0.0000	-0.0019	0.0013	-0.0020	0.0047	0.0002	0.0154	0.0051	0.0001	0.0002	0.0002
TLKM	0.0000	0.0002	0.0002	0.0001	0.0000	0.0001	-0.0005	0.0002	0.0028	0.0003	0.0010	-0.0005	0.0007	-0.0085	0.0011	0.0005	0.0011	-0.0001
ISAT	0.0000	0.0001	0.0000	0.0000	-0.0001	0.0002	-0.0003	-0.0003	0.0031	0.0010	0.0008	0.0006	0.0003	0.0259	0.0088	-0.0001	-0.0013	0.0000
AALI	0.0001	0.0000	0.0001	-0.0001	0.0001	0.0000	0.0002	-0.0002	0.0072	0.0006	0.0013	-0.0007	0.0003	0.0013	0.0038	0.0000	-0.0016	-0.0001
DGSA	0.0001	-0.0001	0.0000	0.0001	0.0003	-0.0001	0.0000	-0.0002	0.0036	0.0011	-0.0019	-0.0014	0.0000	0.0253	0.0088	0.0001	0.0002	0.0003
GGRM	0.0000	0.0000	0.0000	0.0000	-0.0002	0.0000	-0.0002	-0.0002	-0.0004	0.0001	-0.0001	-0.0003	0.0003	0.0303	0.0043	0.0001	0.0020	0.0010
HMSP	0.0001	0.0000	0.0001	0.0000	0.0000	0.0001	-0.0001	-0.0003	0.0011	0.0006	0.0005	0.0011	0.0004	0.0150	0.0091	0.0004	0.0005	0.0001

SMGR	37	38	39	40	41	Jumlah	COV A-
TINS	-0.0002	0.0003	-0.0001	0.0005	0.0000	0.0332	0.0008
INDF	0.0002	0.0000	0.0004	-0.0007	-0.0005	0.0149	0.0004
INKP	-0.0003	0.0001	0.0003	-0.0004	0.0001	0.0250	0.0008
TLKM	0.0000	0.0000	-0.0002	-0.0003	0.0001	0.0015	0.0000
ISAT	-0.0001	0.0000	-0.0001	0.0002	0.0003	0.0348	0.0008
AALI	0.0000	0.0002	-0.0002	-0.0013	0.0004	0.0079	0.0002
DGSA	-0.0001	-0.0001	0.0001	-0.0005	0.0001	0.0386	0.0009
GGRM	0.0000	-0.0001	-0.0006	-0.0005	-0.0001	0.0366	0.0009
HMSP	0.0000	0.0001	-0.0007	-0.0003	0.0001	0.0278	0.0007

Tabel 6 - Kovarian Saham Tambang Timah

TINS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
INDF	0.0001	0.0002	-0.0001	-0.0002	0.0000	0.0009	0.0023	0.0001	0.0000	0.0001	0.0012	0.0000	-0.0004	-0.0002	0.0007	0.0001	0.0001	-0.0012
INKP	0.0001	0.0001	-0.0002	0.0005	0.0003	0.0005	0.0009	0.0001	0.0000	0.0000	0.0003	-0.0001	0.0003	0.0000	-0.0011	0.0015	-0.0002	-0.0049
TLKM	0.0001	-0.0002	0.0002	0.0007	0.0001	0.0006	0.0013	-0.0003	0.0000	0.0005	0.0021	-0.0001	-0.0005	0.0007	-0.0001	0.0015	0.0001	-0.0057
ISAT	0.0000	0.0000	0.0001	0.0000	0.0001	0.0003	0.0004	-0.0001	0.0000	0.0003	-0.0002	0.0000	0.0001	0.0009	0.0014	0.0003	-0.0001	0.0132
AALI	0.0004	0.0002	-0.0001	0.0004	0.0000	0.0007	0.0002	0.0000	0.0000	0.0005	-0.0014	-0.0004	0.0005	0.0001	-0.0005	-0.0004	-0.0002	0.0095
DGSA	0.0001	-0.0001	-0.0001	0.0008	0.0006	0.0004	0.0004	0.0002	0.0000	0.0002	0.0006	-0.0002	-0.0001	0.0001	0.0002	0.0013	0.0004	0.0021
GGRM	0.0000	0.0003	0.0002	0.0012	0.0001	0.0017	0.0011	-0.0003	0.0000	0.0001	0.0008	0.0000	-0.0014	-0.0002	-0.0016	0.0006	0.0002	0.0265
HMSP	0.0001	0.0001	0.0002	0.0007	-0.0001	0.0001	0.0017	0.0001	0.0000	0.0002	-0.0004	0.0000	-0.0002	0.0002	0.0001	0.0012	-0.0012	-0.0002

TINS	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
INDF	-0.0030	-0.0013	0.0001	0.0003	0.0000	-0.0001	0.0003	-0.0006	-0.0004	0.0002	-0.0002	0.0000	0.0025	0.0052	0.0064	0.0009	0.0041	0.0007
INKP	-0.0248	-0.0003	-0.0013	0.0004	-0.0004	-0.0001	0.0014	-0.0004	-0.0001	-0.0017	-0.0008	-0.0056	0.0032	0.0050	0.0049	0.0003	0.0003	0.0005
TLKM	-0.0174	0.0007	-0.0014	0.0001	0.0000	-0.0003	-0.0020	-0.0028	0.0002	-0.0004	0.0004	0.0008	0.0091	-0.0028	0.0011	0.0016	0.0016	-0.0002
ISAT	-0.0057	0.0003	-0.0002	0.0000	-0.0001	-0.0008	-0.0013	-0.0039	-0.0002	-0.0013	0.0003	-0.0008	0.0041	0.0084	0.0084	-0.0004	-0.0004	-0.0001
AALI	-0.0197	0.0001	-0.0010	-0.0001	0.0002	0.0002	0.0007	-0.0022	0.0004	-0.0008	0.0005	0.0008	0.0043	0.0004	0.0037	0.0001	-0.0023	-0.0004
DGSA	-0.0518	-0.0003	-0.0002	0.0002	0.0004	0.0003	0.0002	-0.0026	0.0002	-0.0014	-0.0007	0.0016	-0.0003	0.0082	0.0084	0.0003	0.0002	0.0009
GGRM	0.0020	0.0000	0.0003	0.0000	-0.0003	0.0002	-0.0010	-0.0023	0.0000	-0.0001	0.0000	0.0003	0.0041	0.0098	0.0041	0.0003	0.0029	0.0031
HMSP	-0.0274	0.0000	-0.0004	0.0000	0.0000	-0.0007	-0.0006	-0.0046	0.0001	-0.0008	0.0002	-0.0013	0.0057	0.0048	0.0087	0.0013	0.0008	0.0003

TINS	37	38	39	40	41	Jumlah	COV B-
INDF	-0.0029	-0.0001	-0.0009	-0.0014	0.0002	0.0073	0.0002
INKP	0.0039	0.0019	-0.0008	-0.0008	0.0006	-0.0174	-0.0004
TLKM	-0.0005	0.0005	0.0004	-0.0007	0.0000	-0.0111	-0.0003
ISAT	0.0013	-0.0008	0.0002	0.0003	-0.0001	0.0228	0.0006
AALI	-0.0003	0.0026	0.0005	-0.0025	-0.0001	-0.0059	-0.0001
DGSA	0.0011	-0.0025	-0.0002	-0.0010	0.0000	-0.0329	-0.0008
GGRM	0.0002	-0.0015	0.0014	-0.0010	0.0000	0.0518	0.0013
HMSP	0.0002	0.0017	0.0015	-0.0006	0.0000	-0.0083	-0.0002



Tabel 7 - Kovarian Saham Indofood

INDF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
INKP	0.0002	0.0004	0.0003	-0.0002	0.0001	0.0003	0.0013	0.0001	0.0002	0.0000	0.0005	-0.0001	-0.0002	0.0000	-0.0003	0.0001	0.0000	0.0000
TLKM	0.0002	-0.0013	-0.0002	-0.0003	0.0001	0.0004	0.0019	-0.0002	0.0001	0.0003	0.0029	0.0000	0.0002	-0.0002	0.0000	0.0001	0.0000	0.0000
ISAT	0.0001	-0.0003	-0.0001	0.0000	0.0000	0.0002	0.0006	0.0000	0.0001	0.0002	-0.0003	0.0000	-0.0001	-0.0002	0.0003	0.0000	0.0000	-0.0001
AALI	0.0010	0.0014	0.0001	-0.0001	0.0000	0.0004	0.0003	0.0000	0.0001	0.0003	-0.0019	-0.0003	-0.0002	0.0000	-0.0001	0.0000	0.0000	0.0000
DGSA	0.0003	-0.0005	0.0002	-0.0003	0.0003	0.0001	0.0006	-0.0002	-0.0001	0.0001	0.0009	-0.0001	0.0000	0.0000	0.0000	0.0001	0.0001	0.0000
GGRM	-0.0001	0.0018	-0.0003	-0.0005	0.0000	0.0010	0.0015	-0.0002	0.0001	0.0000	0.0012	0.0000	0.0006	0.0000	-0.0004	0.0000	0.0000	-0.0001
HMSP	0.0003	0.0007	-0.0002	-0.0003	-0.0001	0.0001	0.0024	0.0001	0.0002	0.0001	-0.0006	0.0000	0.0001	0.0000	0.0000	0.0001	-0.0002	0.0000

INDF	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
INKP	0.0001	0.0004	0.0000	0.0004	0.0000	0.0000	0.0003	0.0013	0.0019	-0.0005	0.0008	0.0002	0.0002	0.0019	0.0056	0.0004	0.0004	0.0006
TLKM	0.0000	-0.0011	0.0000	0.0000	0.0000	0.0000	-0.0004	0.0087	-0.0028	-0.0001	-0.0004	0.0000	0.0054	-0.0031	0.0012	0.0018	0.0021	-0.0002
ISAT	0.0000	-0.0004	0.0000	0.0000	0.0000	0.0001	-0.0002	0.0122	0.0031	-0.0004	-0.0003	0.0000	0.0024	0.0095	0.0094	-0.0004	-0.0024	-0.0001
AALI	0.0000	-0.0002	0.0000	-0.0001	0.0000	0.0000	0.0001	0.0069	-0.0072	-0.0002	-0.0005	0.0000	0.0025	0.0005	0.0041	0.0001	-0.0030	-0.0005
DGSA	0.0001	0.0004	0.0000	0.0002	0.0000	0.0000	0.0000	0.0082	-0.0037	-0.0004	0.0007	0.0000	0.0001	0.0092	0.0094	0.0003	0.0003	0.0010
GGRM	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0002	0.0070	0.0004	0.0000	0.0000	0.0000	0.0024	0.0111	0.0046	0.0003	0.0038	0.0037
HMSP	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	-0.0001	0.0142	-0.0011	-0.0002	-0.0002	0.0000	0.0003	0.0055	0.0098	0.0015	0.0010	0.0004

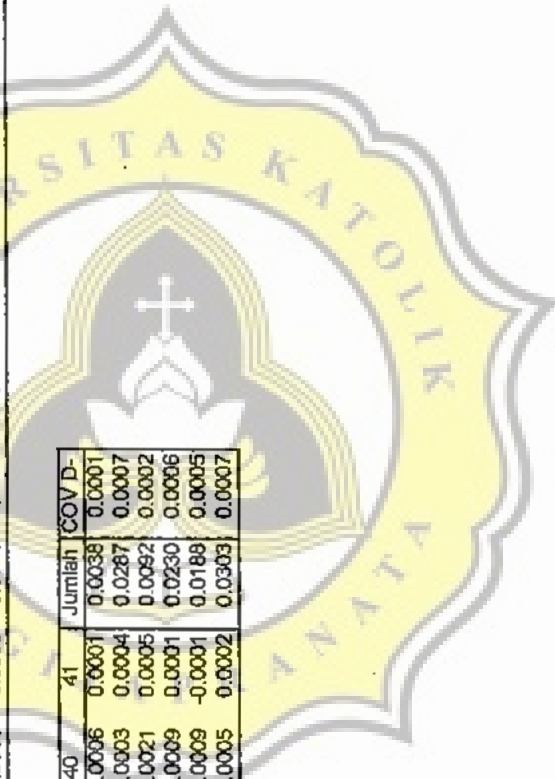
INDF	37	38	39	40	41	Jumlah	COV C-
INKP	-0.0034	0.0000	0.0021	0.0012	-0.0007	0.0209	0.0005
TLKM	0.0004	0.0000	-0.0011	0.0010	-0.0004	0.0149	0.0004
ISAT	-0.0012	0.0000	-0.0005	-0.0005	-0.0019	0.0289	0.0007
AALI	0.0003	0.0000	-0.0014	0.0036	-0.0028	0.0032	0.0001
DGSA	-0.0010	0.0000	0.0005	0.0015	-0.0005	0.0274	0.0007
GGRM	-0.0001	0.0000	-0.0037	0.0015	0.0007	0.0363	0.0009
HMSP	-0.0002	0.0000	-0.0041	0.0008	-0.0008	0.0328	0.0008

Tabel 8 - Kovarian Saham Indah Kiat

IN KP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TLKM	0.0002	-0.0005	-0.0004	0.0008	0.0012	0.0002	0.0008	-0.0004	0.0004	0.0000	0.0008	0.0009	-0.0002	0.0000	0.0000	0.0011	-0.0001	0.0001
ISAT	0.0001	-0.0001	-0.0002	0.0000	0.0006	0.0001	0.0003	-0.0001	0.0003	0.0000	-0.0001	0.0003	0.0001	0.0000	-0.0005	0.0002	0.0001	-0.0002
AALI	0.0009	0.0005	0.0002	0.0004	-0.0004	0.0002	0.0001	0.0001	0.0004	0.0000	-0.0006	0.0052	0.0002	0.0000	0.0002	-0.0003	0.0001	-0.0002
DGSA	0.0003	-0.0002	0.0003	0.0009	0.0048	0.0000	0.0002	-0.0003	-0.0004	0.0000	0.0003	0.0027	0.0009	0.0000	-0.0001	0.0009	-0.0002	0.0000
GGRM	-0.0001	0.0006	-0.0005	0.0014	0.0006	0.0005	0.0007	-0.0003	0.0003	0.0000	0.0003	-0.0001	-0.0006	0.0000	0.0006	0.0004	-0.0001	-0.0004
HMSP	0.0003	0.0003	-0.0004	0.0008	-0.0010	0.0000	0.0011	0.0002	0.0007	0.0000	-0.0002	-0.0001	-0.0001	0.0000	-0.0001	0.0008	0.0006	0.0000

IN KP	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
TLKM	0.0003	-0.0002	0.0005	0.0002	0.0000	0.0000	-0.0015	0.0006	-0.0007	0.0010	-0.0017	-0.0044	0.0068	-0.0030	0.0009	0.0007	0.0001	-0.0002
ISAT	0.0001	-0.0001	0.0001	0.0001	0.0002	0.0000	-0.0010	0.0008	0.0008	0.0028	-0.0013	0.0054	0.0031	0.0091	0.0072	-0.0002	-0.0002	0.0000
AALI	0.0004	0.0000	0.0004	-0.0002	-0.0002	0.0000	0.0006	0.0004	-0.0019	0.0018	-0.0022	-0.0055	0.0032	0.0005	0.0031	0.0001	-0.0002	-0.0003
DGSA	0.0010	0.0001	0.0001	0.0002	-0.0005	0.0000	0.0001	0.0005	-0.0009	0.0032	0.0030	-0.0116	-0.0002	0.0089	0.0071	0.0001	0.0000	0.0007
GGRM	0.0000	0.0000	-0.0001	0.0000	0.0003	0.0000	-0.0008	0.0005	0.0001	0.0002	0.0002	-0.0021	0.0031	0.0107	0.0035	0.0001	0.0003	0.0023
HMSP	0.0005	0.0000	0.0002	0.0000	0.0000	0.0000	-0.0004	0.0009	-0.0003	0.0018	-0.0008	0.0094	0.0043	0.0053	0.0074	0.0006	0.0001	0.0003

IN KP	37	38	39	40	41	Jumlah	COV D-
TLKM	-0.0005	0.0002	-0.0009	0.0006	0.0001	0.0038	0.0001
ISAT	0.0016	-0.0003	-0.0004	-0.0003	0.0004	0.0287	0.0007
AALI	-0.0004	0.0010	-0.0012	0.0021	0.0005	0.0092	0.0002
DGSA	0.0014	-0.0009	0.0004	0.0009	0.0001	0.0230	0.0006
GGRM	0.0002	-0.0006	-0.0031	0.0009	-0.0001	0.0188	0.0005
HMSP	0.0003	0.0006	-0.0034	0.0005	0.0002	0.0303	0.0007





Tabel 9 - Kovarian Saham Telkom

TLKM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
ISAT	0.0001	0.0004	0.0001	0.0000	0.0003	0.0001	0.0004	0.0002	0.0002	0.0012	-0.0005	0.0001	-0.0001	0.0008	0.0000	0.0002	0.0000	-0.0003
AALI	0.0012	-0.0017	-0.0001	0.0006	-0.0002	0.0003	0.0002	-0.0001	0.0003	0.0020	-0.0033	0.0022	-0.0003	0.0001	0.0000	-0.0003	-0.0001	-0.0002
DGSA	0.0003	0.0005	-0.0002	0.0013	0.0026	0.0001	0.0004	0.0007	-0.0002	0.0007	0.0015	0.0012	0.0000	0.0001	0.0000	0.0009	0.0002	0.0000
GGRM	-0.0001	-0.0020	0.0003	0.0020	0.0003	0.0007	0.0010	0.0009	0.0002	0.0002	-0.0020	0.0001	0.0009	-0.0001	0.0000	0.0004	0.0001	0.0005
HMSP	0.0004	-0.0008	0.0003	0.0011	-0.0006	0.0000	0.0015	-0.0004	0.0005	0.0006	-0.0010	0.0000	0.0001	0.0001	0.0000	0.0008	-0.0004	0.0000

TLKM	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
ISAT	0.0001	0.0002	0.0001	0.0000	0.0000	0.0001	0.0014	0.0052	-0.0012	0.0007	0.0007	-0.0005	0.0008	-0.0050	0.0016	-0.0007	-0.0010	0.0000
AALI	0.0003	0.0001	0.0004	-0.0001	0.0000	0.0000	-0.0008	0.0029	0.0027	0.0005	0.0011	0.0006	0.0092	-0.0003	0.0007	0.0003	-0.0012	0.0001
DGSA	0.0007	-0.0002	0.0001	0.0001	0.0000	-0.0001	-0.0002	0.0035	0.0014	0.0008	-0.0016	0.0013	-0.0005	-0.0049	0.0015	0.0005	0.0001	-0.0003
GGRM	0.0000	0.0000	-0.0001	0.0000	0.0000	0.0000	0.0011	0.0030	-0.0002	0.0000	-0.0001	0.0002	0.0089	-0.0059	0.0008	0.0015	-0.0010	0.0000
HMSP	0.0004	0.0000	0.0002	0.0000	0.0000	0.0001	0.0006	0.0060	0.0004	0.0005	0.0004	-0.0011	0.0124	-0.0029	0.0016	0.0027	0.0004	-0.0001

TLKM	37	38	39	40	41	Jumlah	COV E-
ISAT	-0.0002	-0.0001	0.0002	-0.0002	0.0002	0.0135	0.0003
AALI	0.0000	0.0003	0.0006	0.0017	0.0003	0.0203	0.0005
DGSA	-0.0002	-0.0002	-0.0002	0.0007	0.0001	0.0124	0.0003
GGRM	0.0000	-0.0001	0.0017	0.0007	-0.0001	0.0171	0.0004
HMSP	0.0000	0.0002	0.0018	0.0004	0.0001	0.0284	0.0006

Tabel 10 - Kovarian Saham Indosat

ISAT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AALI	0.0006	-0.0004	-0.0001	0.0000	-0.0001	0.0001	0.0001	0.0000	0.0002	0.0013	0.0003	0.0008	0.0001	0.0002	-0.0002	-0.0001	0.0000	0.0004
DGSA	0.0002	0.0001	-0.0001	0.0000	0.0014	0.0000	0.0001	0.0001	-0.0002	0.0005	-0.0002	0.0004	0.0000	0.0001	0.0001	0.0002	-0.0001	0.0001
GGRM	0.0000	-0.0005	0.0002	-0.0001	0.0002	0.0003	0.0003	0.0002	0.0001	0.0001	-0.0002	0.0000	-0.0002	-0.0002	-0.0008	0.0001	-0.0001	0.0012
HMSP	0.0002	-0.0002	0.0002	0.0000	-0.0003	0.0000	0.0005	-0.0001	0.0003	0.0004	0.0001	0.0000	0.0000	0.0002	-0.0001	0.0002	0.0003	0.0000

ISAT	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
AALI	0.0001	0.0000	0.0001	0.0000	-0.0001	0.0001	-0.0005	0.0041	-0.0030	0.0014	0.0008	-0.0008	0.0041	0.0008	0.0053	-0.0001	0.0013	0.0000
DGSA	0.0002	-0.0001	0.0000	0.0000	-0.0002	-0.0002	-0.0001	0.0049	-0.0015	0.0024	-0.0012	-0.0016	-0.0002	0.0150	0.0122	-0.0001	-0.0001	-0.0001
GGRM	0.0000	0.0000	0.0000	0.0000	0.0001	-0.0001	0.0007	0.0042	0.0002	0.0001	-0.0001	-0.0003	0.0040	0.0179	0.0060	-0.0001	-0.0017	-0.0003
HMSP	0.0001	0.0000	0.0000	0.0000	0.0000	0.0004	0.0004	0.0084	-0.0005	0.0014	0.0003	0.0013	0.0056	0.0089	0.0127	-0.0006	-0.0005	0.0000

ISAT	37	38	39	40	41	Jumlah	COV F-
AALI	-0.0001	-0.0004	0.0003	-0.0008	0.0014	0.0173	0.0004
DGSA	0.0005	0.0004	-0.0001	-0.0003	0.0003	0.0328	0.0008
GGRM	0.0001	0.0002	0.0008	-0.0003	-0.0004	0.0315	0.0008
HMSP	0.0001	-0.0003	0.0008	-0.0002	0.0005	0.0406	0.0010

Tabel 11 - Kovarian Saham Astra Agro

AALI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
DGSA	0.0016	-0.0006	0.0001	0.0007	-0.0009	0.0001	0.0000	-0.0001	-0.0003	0.0007	-0.0010	0.0066	0.0000	0.0000	0.0000	-0.0002	-0.0002	0.0001
GGRM	-0.0004	0.0023	-0.0002	0.0011	-0.0001	0.0008	0.0001	-0.0001	0.0002	0.0002	-0.0013	-0.0003	-0.0008	0.0000	0.0003	-0.0001	-0.0001	0.0009
HMSP	0.0019	0.0009	-0.0002	0.0006	0.0002	0.0000	0.0002	0.0001	0.0005	0.0006	0.0007	-0.0002	-0.0001	0.0000	0.0000	-0.0002	0.0005	0.0000

AALI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
DGSA	0.0008	0.0000	0.0001	-0.0001	0.0002	0.0000	0.0001	0.0027	0.0035	0.0015	-0.0020	0.0016	-0.0003	0.0008	0.0053	0.0000	-0.0002	-0.0006
GGRM	0.0000	0.0000	-0.0001	0.0000	-0.0001	0.0000	-0.0004	0.0024	-0.0004	0.0001	-0.0001	0.0003	0.0042	0.0009	0.0026	0.0000	-0.0021	-0.0021
HMSP	0.0004	0.0000	0.0001	0.0000	0.0000	0.0001	-0.0002	0.0047	0.0011	0.0009	0.0005	-0.0013	0.0058	0.0004	0.0055	0.0002	-0.0006	-0.0002

AALI	37	38	39	40	41	Jumlah	COV G-
DGSA	-0.0001	-0.0012	-0.0003	0.0026	0.0004	0.0214	0.0005
GGRM	0.0000	-0.0008	0.0021	0.0026	-0.0005	0.0107	0.0003
HMSP	0.0000	0.0009	0.0023	0.0015	0.0006	0.0283	0.0007

Tabel 12 - Kovarian Saham Daya Guna

DGSA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
GGRM	-0.0001	-0.0007	-0.0003	0.0023	0.0014	0.0002	0.0003	0.0007	-0.0002	0.0001	0.0006	-0.0001	0.0001	0.0000	-0.0001	0.0004	0.0002	0.0002
HMSP	0.0005	-0.0003	-0.0002	0.0013	-0.0023	0.0000	0.0005	-0.0003	-0.0005	0.0002	-0.0003	-0.0001	0.0000	0.0000	0.0000	0.0007	-0.0013	0.0000

DGSA	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
GGRM	-0.0001	0.0000	0.0000	0.0000	-0.0003	0.0001	-0.0001	0.0028	-0.0002	0.0002	0.0002	0.0006	-0.0002	0.0175	0.0060	0.0001	0.0002	0.0044
HMSP	0.0011	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0001	0.0056	0.0005	0.0015	-0.0007	-0.0027	-0.0003	0.0097	0.0127	0.0004	0.0001	0.0005

DGSA	37	38	39	40	41	Jumlah	COV H-
GGRM	0.0001	0.0007	-0.0007	0.0011	-0.0001	0.0369	0.0009
HMSP	0.0001	-0.0008	-0.0006	0.0006	0.0001	0.0244	0.0006

Tabel 13 - Kovarian Saham Gudang Garam

GGRM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
HMSP	-0.0001	0.0011	0.0004	0.0020	-0.0003	0.0001	0.0013	-0.0004	0.0004	0.0001	-0.0004	0.0000	0.0003	0.0000	-0.0001	0.0003	-0.0007	0.0000

GGRM	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
HMSP	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	0.0001	0.0003	0.0049	-0.0001	0.0001	0.0000	0.0005	0.0104	0.0062	0.0005	0.0007	0.0017

GGRM	37	38	39	40	41	Jumlah  COV
HMSP	0.0000	-0.0005	0.0061	0.0006	-0.0002	0.0396
						0.0010

Tabel 14 - Kovarian Antar Saham

No	Xi	SMGR	TINS	INDF	INKP	TLKM	ISAT	AAJI	DGSA	GGRM	HMSP
1	SMGR										
2	TINS	0.0008									
3	INDF	0.0004	0.0002								
4	INKP	0.0006	-0.0004	0.0005							
5	TLKM	0.0000	-0.0003	0.0004	0.0001						
6	ISAT	0.0008	0.0006	0.0007	0.0007	0.0003					
7	AAJI	0.0002	-0.0001	0.0001	0.0002	0.0005	0.0004				
8	DGSA	0.0009	-0.0008	0.0007	0.0006	0.0003	0.0008	0.0005			
9	GGRM	0.0009	0.0013	0.0009	0.0006	0.0004	0.0008	0.0003	0.0009		
10	HMSP	0.0007	-0.0002	0.0008	0.0007	0.0006	0.0010	0.0007	0.0006	0.0010	



LAMPIRAN 5 : Penghitungan Koefisien Korelasi Saham

Tabel 15 - Perkalian Standar Deviasi

No	Si	Si	SMGR	TINS	INDF	INKP	TLKM	ISAT	AALI	DGSA	GGRM	HMSP
1	SMGR											
2	TINS		0.0082									
3	INDF		0.0017	0.0081								
4	INKP		0.0018	0.0087	0.0018							
5	TLKM		0.0015	0.0070	0.0015	0.0016						
6	ISAT		0.0015	0.0070	0.0015	0.0016	0.0013					
7	AALI		0.0016	0.0075	0.0016	0.0017	0.0014	0.0014				
8	DGSA		0.0017	0.0080	0.0017	0.0018	0.0015	0.0014	0.0015			
9	GGRM		0.0018	0.0084	0.0018	0.0019	0.0015	0.0015	0.0016	0.0017		
10	HMSP		0.0016	0.0076	0.0016	0.0017	0.0014	0.0014	0.0015	0.0016	0.0017	

Tabel 16 - Daftar Korelasi Anlar Saham

No	Korelasi	SMGR	TINS	INDF	INKP	TLKM	ISAT	AALI	DGSA	GGRM	HMSP
1	SMGR	1.0000									
2	TINS	0.0988	1.0000								
3	INDF	0.2107	0.0217	1.0000							
4	INKP	0.3315	-0.0490	0.2786	1.0000						
5	TLKM	0.0240	-0.0384	0.2455	0.0579	1.0000					
6	ISAT	0.5719	0.0791	0.4769	0.4451	0.2583	1.0000				
7	AALI	0.1216	-0.0190	0.0503	0.1341	0.3631	0.3118	1.0000			
8	DGSA	0.5577	-0.1006	0.3986	0.3140	0.2082	0.5527	0.3395	1.0000		
9	GGRM	0.5034	0.1507	0.5015	0.2435	0.2731	0.5057	0.1618	0.5207	1.0000	
10	HMSP	0.4195	-0.0265	0.4970	0.4321	0.4633	0.7153	0.4689	0.3775	0.5837	1.0000

LAMPIRAN 6 : Penghitungan *Return* Portofolio

Tabel 17 - *Expected Return* portofolio

No	Zi	Jml Zi	$X_i$	$E(R_i)$	$X_i \cdot E(R_i)$
1	2.814	9.1970	0.3060	0.0082	0.0025
2	1.093	9.1970	0.1188	0.0246	0.0029
3	0.776	9.1970	0.0844	0.0076	0.0006
4	3.64	9.1970	0.3958	0.0120	0.0047
5	2.194	9.1970	0.2386	0.0070	0.0017
6	-7.811	9.1970	-0.8493	0.0072	-0.0062
7	-3.691	9.1970	-0.4013	0.0047	-0.0019
8	2.116	9.1970	0.2301	0.0039	0.0009
9	-7.58	9.1970	-0.8242	0.0048	-0.0040
10	15.646	9.1970	1.7012	0.0140	0.0238
Jml	9.197	Jumlah	1.0000	Jumlah	0.0251



LAMPIRAN 7 : Penghitungan Risiko Portofolio

Tabel 18 - Proporsi saham-i kuadrat dikalikan varian- i

No	$X_i$	$X_i^2$	Var i	$X_i^2 \cdot \text{Var i}$
1	0.3060	0.0936	0.0017	0.0002
2	0.1188	0.0141	0.0387	0.0005
3	0.0844	0.0071	0.0017	0.0000
4	0.3958	0.1566	0.0019	0.0003
5	0.2386	0.0569	0.0013	0.0001
6	-0.8493	0.7213	0.0013	0.0009
7	-0.4013	0.1611	0.0014	0.0002
8	0.2301	0.0529	0.0016	0.0001
9	-0.8242	0.6793	0.0018	0.0012
10	1.7012	2.8941	0.0015	0.0044
			Jumlah	0.0079

Tabel 19 - Proporsi saham-i dikalikan proporsi saham-j dikalikan dua

No	$X_i$	$X_j$	SMGR	TINS	INDF	INKP	TLKM	ISAT	AALI	DGSA	GGRM	HMSP
1	SMGR											
2	TINS		0.0727									
3	INDF		0.0516	0.0201								
4	INKP		0.2422	0.0941	0.0668							
5	TLKM		0.1460	0.0567	0.0403	0.1888						
6	ISAT		-0.5197	-0.2019	-0.1433	-0.6723	-0.4052					
7	AALI		-0.2456	-0.0954	-0.0677	-0.3177	-0.1915	0.6817				
8	DGSA		0.1408	0.0547	0.0388	0.1821	0.1098	-0.3908	-0.1847			
9	GGRM		-0.5043	-0.1959	-0.1391	-0.6524	-0.3932	1.4000	0.6615	-0.3792		
10	HMSP		1.0410	0.4044	0.2871	1.3466	0.8117	-2.8897	-1.3655	0.7828	-2.8042	

Tabel 20 - Kovarian Antar Saham

No	$X_i$	$X_j$	SMGR	TINS	INDF	INKP	TLKM	ISAT	AALI	DGSA	GGRM	HMSP
1	SMGR											
2	TINS		0.0008									
3	INDF		0.0004	0.0002								
4	INKP		0.0006	-0.0004	0.0005							
5	TLKM		0.0000	-0.0003	0.0004	0.0001						
6	ISAT		0.0008	0.0006	0.0007	0.0007	0.0003					
7	AALI		0.0002	-0.0001	0.0001	0.0002	0.0005	0.0004				
8	DGSA		0.0009	-0.0008	0.0007	0.0006	0.0003	0.0008	0.0005			
9	GGRM		0.0009	0.0013	0.0009	0.0005	0.0004	0.0008	0.0003	0.0009		
10	HMSP		0.0007	-0.0002	0.0008	0.0007	0.0006	0.0010	0.0007	0.0006	0.0010	

Tabel 21 - Penghitungan Proporsi Saham-i dikalikan Proporsi Saham-j dikalikan dua dikalikan kovarian-i dan j

No	$X_i$	$X_j$	SMGR	TINS	INDF	INKP	TLKM	ISAT	AALI	DGSA	GGRM	HMSP	Jml Total
1	SMGR												
2	TINS		0.0001										
3	INDF		0.0000	0.0000									
4	INKP		0.0001	0.0000	0.0000								
5	TLKM		0.0000	0.0000	0.0000	0.0000							
6	ISAT		-0.0004	-0.0001	-0.0001	-0.0005	-0.0001						
7	AALI		0.0000	0.0000	0.0000	-0.0001	-0.0001	0.0003					
8	DGSA		0.0001	0.0000	0.0000	0.0001	0.0000	-0.0003	-0.0001				
9	GGRM		-0.0005	-0.0002	-0.0001	-0.0003	-0.0002	0.0011	0.0002	-0.0003			
10	HMSP		0.0007	-0.0001	0.0002	0.0010	0.0005	-0.0029	-0.0009	0.0005	-0.0027		
	Jumlah		0.0001	-0.0005	0.0001	0.0003	0.0002	-0.0018	-0.0009	0.0001	-0.0014	0	-0.0038

Tabel 22 - Penghitungan Varian Portofolio

Sig ( $X_i^2 \cdot \text{Var-i}$ )	Sig ( $2X_i X_j \text{ cov (i, j)}$ )	Var portofolio
0.0079	-0.0038	0.0041



LAMPIRAN 8

50 Kapitalisasi Pasar Terbesar di BEJ  
bulan Maret-April 1999



## Biggest Market Capitalization

Listed Stocks	Number of Shares*	Market Capitalization		Foreign Ownership	
		(Million Rp)	% of Total	(Million Rp)	% of Total
Telekomunikasi Indonesia	9,333,333,000	26,366,666	15.76 %	5,796,111	3.47 %
Gudang Garam	1,924,088,000	22,175,114	13.26 %	2,889,578	1.73 %
Indosat Tbk	1,035,500,000	11,934,138	7.13 %	4,091,995	2.45 %
Indah Kiat Pulp & Paper	4,660,949,558	11,419,326	6.83 %	5,749,237	3.44 %
Indofood Sukses Makmur Tbk	1,831,200,000	9,888,480	5.91 %	5,407,025	3.23 %
Indocement Tunggal Prakasa Tbk	2,414,453,320	7,001,915	4.19 %	406,038	0.24 %
H M Sampoerna	900,000,000	6,390,000	3.82 %	2,689,932	1.61 %
Texmaco Perkasa Engineering Tbk	2,046,240,000	6,087,564	3.64 %	960,981	0.57 %
Semen Gresik (Persero) Tbk	593,152,000	5,842,547	3.49 %	2,914,065	1.74 %
Timah Tbk	503,302,000	2,919,152	1.75 %	971,901	0.58 %
Pabrik Kertas Tjiwi Kimia Tbk	1,329,891,674	2,560,041	1.53 %	916,094	0.55 %
Astra Agro Lestari Tbk	1,258,000,000	2,390,200	1.43 %	170,388	0.10 %
Unilever Indonesia Tbk	76,300,000	2,289,000	1.37 %	266,266	0.16 %
Bank Lippo Tbk	4,521,527,860	2,147,726	1.28 %	300,307	0.18 %
Indomobil Sukses International	996,502,680	1,993,005	1.19 %	127,518	0.08 %
Astra International Tbk	2,325,662,474	1,918,672	1.15 %	948,295	0.57 %
Sinar Mas Multiartha	1,424,665,180	1,887,681	1.13 %	1,067,089	0.64 %
Makindo Tbk	943,000,000	1,815,275	1.09 %	870,597	0.52 %
Aneka Tambang (Persero) Tbk	1,230,769,000	1,784,615	1.07 %	238,947	0.14 %
Polysindo Eka Perkasa Tbk	4,393,920,000	1,757,568	1.05 %	371,105	0.22 %
Daya Guna Samudra Tbk	439,399,916	1,746,615	1.04 %	516,754	0.31 %
Ramayana Lestari Sentosa Tbk	700,000,000	1,680,000	1.00 %	269,532	0.16 %
Texmaco Jaya Tbk	360,000,000	1,116,000	0.67 %	41,617	0.02 %
Bank Negara Indonesia Tbk	4,340,128,000	1,085,032	0.65 %	79,002	0.05 %
Surya Dumai Industri Tbk	500,000,000	1,075,000	0.64 %	156,280	0.09 %
Citra Tubindo	50,000,000	1,030,000	0.62 %	616,524	0.37 %
Bakrie Finance Corporation Tbk	1,926,000,000	818,550	0.49 %	0	0.00 %
Bank Pan Indonesia Tbk	1,604,812,330	722,166	0.43 %	353,861	0.21 %
Indonesia Prima Property Tbk	495,000,000	693,000	0.41 %	92,972	0.06 %
Indorama Syntetics	654,351,707	670,710	0.40 %	269,096	0.16 %
Cahaya Kalbar Tbk	297,500,000	624,750	0.37 %	77,212	0.05 %
Matahari Putra Prima Tbk	2,705,994,000	608,849	0.36 %	235,110	0.14 %
Bank International Indonesia	3,881,336,463	582,200	0.35 %	150,524	0.09 %
Plaza Indonesia Realty	345,000,000	577,875	0.35 %	169,161	0.10 %
Asuransi Lippo Life Tbk	1,504,273,680	564,103	0.34 %	182,240	0.11 %
Gajah Tunggal Tbk	3,168,000,000	554,400	0.33 %	78,826	0.05 %
PP London Sumatera Tbk	485,613,293	497,754	0.30 %	147,992	0.09 %
Jakarta Setiabudi Property Tbk	536,000,000	455,600	0.27 %	36,632	0.02 %
Citra Marga Nushapala Persada	2,000,000,000	450,000	0.27 %	92,115	0.06 %
Mulialand Tbk	982,800,000	442,260	0.26 %	48,052	0.03 %
Tri Polyta Indonesia	257,500,000	437,750	0.26 %	150,056	0.09 %
Berlian Laju Tanker	458,646,260	435,714	0.26 %	130,101	0.08 %
Mulia Industrindo	1,323,000,000	429,975	0.26 %	122,402	0.07 %
Budi Acid Jaya	262,500,000	426,563	0.26 %	142,043	0.08 %
Medco Energi Corporation Tbk	344,760,000	396,474	0.24 %	66,754	0.04 %
Barito Pacific Timber	1,400,000,000	350,000	0.21 %	59,141	0.04 %
SMART Corporation Tbk	252,000,000	346,500	0.21 %	180,299	0.11 %
Panin Insurance	686,654,299	343,327	0.21 %	97,508	0.06 %
Bimantara Citra	1,017,000,000	330,525	0.20 %	69,442	0.04 %
Unggul Indah Corp. Tbk	290,400,056	319,440	0.19 %	77,670	0.05 %
Total of The 50 Stocks	77,011,126,750	150,379,816		41,862,387	
of JSX (Total)	49.94%	89.90%		90.71%	
(Total)	154,220,062,887	167,267,001		46,147,717	

\*Number of shares after adjustment (when bonus and rights issues, share splits and consolidations are made).

## 50 Biggest Market Capitalization

No.	Listed Stocks	Number of Shares*	Market Capitalization		Foreign Ownership	
			(Million Rp)	% of Total	(Million Rp)	% of Total
1.	Bank Danamon	217,280,000,000	38,024,000	14.23 %	11,814,250	4.42 %
2.	Telekomunikasi Indonesia	9,333,333,000	33,599,999	12.58 %	7,466,201	2.79 %
3.	Gudang Garam	1,924,088,000	28,187,889	10.55 %	3,778,691	1.41 %
4.	Indosat Tbk	1,035,500,000	16,153,800	6.05 %	5,627,354	2.11 %
5.	Indah Kiat Pulp & Paper	4,661,622,322	15,732,975	5.89 %	7,952,062	2.98 %
6.	Indofood Sukses Makmur Tbk	1,831,200,000	11,719,680	4.39 %	6,930,507	2.59 %
7.	H M Sampoerna	900,000,000	10,080,000	3.77 %	4,325,991	1.62 %
8.	Bank International Indonesia	65,982,719,871	9,897,408	3.71 %	250,019	0.09 %
9.	Semen Gresik (Persero) Tbk	593,152,000	7,533,030	2.82 %	3,733,789	1.40 %
10.	Indocement Tunggal Prakasa Tbk	2,414,453,320	7,484,805	2.80 %	435,842	0.16 %
11.	Texmaco Perkasa Engineering Tbk	2,046,240,000	6,036,408	2.26 %	952,909	0.36 %
12.	Bank Tiara Asia	42,840,000,000	5,355,000	2.00 %	1,912,500	0.72 %
13.	Timah Tbk	503,302,000	3,749,600	1.40 %	1,276,518	0.48 %
14.	Pabrik Kertas Tjiwi Kimia Tbk	1,330,167,674	3,458,436	1.29 %	1,297,954	0.49 %
15.	Astra International Tbk	2,325,662,474	3,314,069	1.24 %	1,689,947	0.63 %
16.	Bintuni Minaraya Tbk	1,751,576,290	3,284,206	1.23 %	43,458	0.02 %
17.	Astra Agro Lestari Tbk	1,258,000,000	3,113,550	1.17 %	247,420	0.09 %
18.	Bank PDFCI	22,687,500,000	2,268,750	0.85 %	799,308	0.30 %
19.	Polysindo Eka Perkasa Tbk	4,393,920,000	2,196,960	0.82 %	465,043	0.17 %
20.	Daya Guna Samudra Tbk	439,399,916	2,142,075	0.80 %	662,788	0.25 %
21.	Ramayana Lestari Sentosa Tbk	700,000,000	2,135,000	0.80 %	361,480	0.14 %
22.	Sinar Mas Multiartha	1,424,655,180	1,923,298	0.72 %	1,087,665	0.41 %
23.	Indomobil Sukses International	996,502,680	1,918,268	0.72 %	122,723	0.05 %
24.	Aneka Tambang (Persero) Tbk	1,230,769,000	1,876,923	0.70 %	273,252	0.10 %
25.	Unilever Indonesia Tbk	76,300,000	1,869,350	0.70 %	217,365	0.08 %
26.	Makindo Tbk	943,000,000	1,838,850	0.69 %	881,363	0.33 %
27.	Bank Lippo Tbk	4,521,527,860	1,808,611	0.68 %	269,270	0.10 %
28.	Matahari Putra Prima Tbk	2,705,994,000	1,420,647	0.53 %	687,858	0.26 %
29.	Bank Negara Indonesia Tbk	4,340,128,000	1,410,542	0.53 %	115,755	0.04 %
30.	Bank Pan Indonesia Tbk	1,604,812,330	1,283,850	0.48 %	629,086	0.24 %
31.	Texmaco Jaya Tbk	360,000,000	1,107,000	0.41 %	41,288	0.02 %
32.	Surya Dumai Industri Tbk	500,000,000	1,100,000	0.41 %	159,903	0.06 %
33.	Citra Tubindo	50,000,000	1,040,000	0.39 %	622,413	0.23 %
34.	Gajah Tunggal Tbk	3,168,000,000	1,029,600	0.39 %	154,621	0.06 %
35.	Indorama Syntetics	654,351,707	932,451	0.35 %	385,001	0.14 %
36.	Bakrie Finance Corporation Tbk	1,926,000,000	818,550	0.31 %	0	0.00 %
37.	Tempo Scan Pacific	450,000,000	720,000	0.27 %	128,724	0.05 %
38.	Indonesia Prima Property Tbk	495,000,000	693,000	0.26 %	92,972	0.03 %
39.	Citra Marga Nushapala Persada	2,000,000,000	650,000	0.24 %	147,742	0.06 %
40.	Bimantara Citra	1,017,000,000	610,200	0.23 %	126,607	0.05 %
41.	PP London Sumatera Tbk	485,613,293	607,017	0.23 %	185,143	0.07 %
42.	Mulia Industrindo	1,323,000,000	595,350	0.22 %	183,604	0.07 %
43.	Cahaya Kalbar Tbk	297,500,000	595,000	0.22 %	73,526	0.03 %
44.	Bakrie & Brothers	1,937,520,000	581,256	0.22 %	169,713	0.06 %
45.	Plaza Indonesia Realty	345,000,000	577,875	0.22 %	169,161	0.06 %
46.	Asuransi Lippo Life Tbk	1,504,273,680	564,103	0.21 %	177,580	0.07 %
47.	Medco Energi Corporation Tbk	344,760,000	525,759	0.20 %	90,444	0.03 %
48.	Barito Pacific Timber	1,400,000,000	525,000	0.20 %	93,236	0.03 %
49.	GT Petrochem Industries Tbk	2,240,000,000	504,000	0.19 %	53,481	0.02 %
50.	SMART Corporation Tbk	252,000,000	472,500	0.18 %	246,691	0.09 %
Total of The 50 Stocks		424,825,554,597	245,066,638		69,610,218	
% of JSX (Total)		85.50%	91.74%		92.31%	
JSX (Total)		496,866,897,749	267,135,634		75,408,098	

\*) Number of shares after adjustment (when bonus and rights issues, share splits and consolidations are made).



LAMPIRAN 9

20 Saham teraktif di BEJ  
bulan Maret-April 1999 (Berdasarkan Volume  
dan Nilai Transaksi)



20 Most Active Stocks by Total Trading Volume

No.	Listed Stocks	Total Trading			Trading	
		Volume	%	Value (Rp)	Freq. (x)	Days
1.	Hanson Industri Utama Tbk	389,751,000	12.09	29,291,562,500	7,471	21
2.	Bank International Indonesia	235,328,700	7.30	40,694,478,000	2,467	21
3.	Suryainti Permata Tbk	159,031,500	4.93	36,866,750,000	7,575	21
4.	Telekomunikasi Indonesia	152,697,000	4.74	423,323,877,000	7,526	21
5.	Indah Kiat Pulp & Paper	134,007,577	4.16	305,512,610,475	5,876	21
6.	Bank Danamon	97,631,850	3.03	13,867,626,250	1,318	21
7.	Asuransi Lippo Life Tbk	97,267,020	3.02	35,273,820,000	1,136	21
8.	Bank Mashill Utama Tbk	90,655,100	2.81	6,364,465,000	1,757	10
9.	Mandiri Intifinance Tbk	75,348,000	2.34	9,290,687,500	2,574	21
10.	Pabrik Kertas Tjiwi Kimia Tbk	70,004,000	2.17	124,288,900,000	4,822	21
11.	Astra International Tbk	69,691,000	2.16	56,450,862,500	2,504	21
12.	Artha Graha Investama S. Tbk	63,252,500	1.96	34,213,900,000	5,862	21
13.	Mulia Industrindo	62,347,500	1.93	18,404,200,000	1,251	21
14.	Komatsu Indonesia	61,817,000	1.92	22,790,362,500	1,867	21
15.	Aneka Tambang (Persero) Tbk	53,614,000	1.66	78,418,077,500	2,931	21
16.	Lippo Securities	51,964,500	1.61	6,721,112,500	694	21
17.	Astra Agro Lestari Tbk	51,272,000	1.59	95,367,130,500	4,435	21
18.	Bank Bali Tbk	48,156,600	1.49	15,576,617,500	1,886	21
19.	Bank PDFCI	43,733,500	1.36	2,419,887,500	587	11
20.	Sumalindo Lestari Jaya Tbk	42,933,500	1.33	14,320,262,500	1,884	20
Total of the 20 stocks		2,050,503,847		1,369,457,189,725	66,423	
% of Total Trading		63.62%		46.43%	47.54%	
Total Trading		3,222,927,695		2,949,665,188,600	139,716	

20 Most Active Stocks by Total Trading Value

No.	Listed Stocks	Total Trading			Trading	
		Volume	Value (Rp)	%	Freq. (x)	Days
1.	Telekomunikasi Indonesia	152,697,000	423,323,877,000	14.4	7,526	21
2.	Indah Kiat Pulp & Paper	134,007,577	305,512,610,475	10.4	5,876	21
3.	Indosat Tbk	20,713,500	246,135,503,500	8.3	4,558	21
4.	Semen Gresik (Persero) Tbk	21,881,300	215,768,678,000	7.3	759	19
5.	H M Sampoerna	26,658,000	175,037,420,750	5.9	4,007	21
6.	Gudang Garam	14,329,000	161,796,836,500	5.5	2,955	21
7.	Pabrik Kertas Tjiwi Kimia Tbk	70,004,000	124,288,900,000	4.2	4,822	21
8.	Indofood Sukses Makmur Tbk	23,426,040	115,195,424,600	3.9	1,811	21
9.	Timah Tbk	20,599,242	114,770,174,750	3.9	3,678	21
10.	Astra Agro Lestari Tbk	51,272,000	95,367,130,500	3.2	4,435	21
11.	Daya Guna Samudra Tbk	22,582,040	90,644,327,500	3.1	5,057	21
12.	Aneka Tambang (Persero) Tbk	53,614,000	78,418,077,500	2.7	2,931	21
13.	Astra International Tbk	69,691,000	56,450,862,500	1.9	2,504	21
14.	INCO	10,255,600	48,787,831,500	1.7	5,333	21
15.	Ramayana Lestari Sentosa Tbk	23,840,500	48,669,976,000	1.7	1,620	21
16.	Bank International Indonesia	235,328,700	40,694,478,000	1.4	2,467	21
17.	Suryainti Permata Tbk	159,031,500	36,866,750,000	1.2	7,575	21
18.	PP London Sumatera Tbk	37,750,000	35,421,587,500	1.2	3,013	21
19.	Asuransi Lippo Life Tbk	97,267,020	35,273,820,000	1.2	1,136	21
20.	Artha Graha Investama S. Tbk	63,252,500	34,213,900,000	1.2	5,862	21
Total of the 20 stocks		1,308,200,519	2,482,638,166,575		77,925	
% of Total Trading		40.59%	84.17%		55.77%	
Total Trading		3,222,927,695	2,949,665,188,600		139,716	

20 Most Active Stocks by Total Trading Volume

No.	Listed Stocks	Total Trading			Trading Days	
		Volume	%	Value (Rp)		
1.	Bank International Indonesia	2,332,326,705	21.32	374,685,276,925	9,598	21
2.	Bank Lippo Tbk	1,188,151,500	10.86	402,769,400,000	11,796	21
3.	Matahari Putra Prima Tbk	491,905,898	4.50	201,411,190,400	5,279	21
4.	Astra International Tbk	340,162,500	3.11	420,757,489,500	13,544	21
5.	Suryainli Permata Tbk	302,699,500	2.77	66,564,395,000	6,833	21
6.	Bank Bali Tbk	299,073,018	2.73	148,204,829,000	6,342	21
7.	Indah Kiat Pulp & Paper	285,452,944	2.61	912,072,569,975	6,228	21
8.	Multipolar	278,678,500	2.55	36,188,325,000	2,437	21
9.	Telekomunikasi Indonesia	253,177,000	2.31	870,467,537,500	12,588	21
10.	Bank Century / Interinvest Corp.	224,741,000	2.05	17,307,712,500	4,066	21
11.	Bank Pan Indonesia Tbk	224,382,250	2.05	143,696,476,000	2,737	21
12.	Citra Marga Nushapala Persada	189,481,500	1.73	58,480,325,000	3,166	20
13.	Mandiri Intifinance Tbk	156,973,000	1.44	17,801,450,000	4,801	19
14.	Pabrik Kertas Tjiwi Kimia Tbk	151,945,201	1.39	357,124,098,375	8,382	21
15.	Hanson Industri Utama Tbk	151,922,000	1.39	12,045,037,500	3,996	21
16.	Bintuni Minaraya Tbk	151,510,000	1.39	292,440,925,000	8,713	11
17.	Tempo Scan Pacific	151,446,500	1.38	146,311,900,000	7,120	21
18.	Gajah Tunggal Tbk	132,502,000	1.21	36,743,975,000	2,141	21
19.	Asuransi Lippo Life Tbk	124,639,400	1.14	45,983,027,500	2,779	21
20.	Jakarta Int I Hotel & Dev.	123,155,750	1.13	25,669,412,500	2,394	20
<b>Total of the 20 stocks</b>		<b>7,554,326,166</b>		<b>4,586,725,352,675</b>	<b>124,940</b>	
<b>% of Total Trading</b>		<b>69.07%</b>		<b>52.33%</b>	<b>43.51%</b>	
<b>Total Trading</b>		<b>10,937,690,540</b>		<b>8,765,757,991,975</b>	<b>287,121</b>	

20 Most Active Stocks by Total Trading Value

No.	Listed Stocks	Total Trading			Trading Days	
		Volume	Value (Rp)	%		
1.	Indah Kiat Pulp & Paper	285,452,944	912,072,569,975	10.4	6,228	21
2.	Telekomunikasi Indonesia	253,177,000	870,467,537,500	9.9	12,588	21
3.	Indofood Sukses Makmur Tbk	119,148,214	701,010,303,200	8.0	2,902	21
4.	Gudang Garam	37,125,800	494,201,794,400	5.6	3,628	21
5.	Astra International Tbk	340,162,500	420,757,489,500	4.8	13,544	21
6.	Bank Lippo Tbk	1,188,151,500	402,769,400,000	4.6	11,796	21
7.	Bank International Indonesia	2,332,326,705	374,685,276,925	4.3	9,598	21
8.	H M Sampoerna	39,146,100	369,430,116,000	4.2	4,893	21
9.	Pabrik Kertas Tjiwi Kimia Tbk	151,945,201	357,124,098,375	4.1	8,382	21
10.	Indosat Tbk	23,276,500	332,567,346,500	3.8	4,004	21
11.	Bintuni Minaraya Tbk	151,510,000	292,440,925,000	3.3	8,713	11
12.	Semen Gresik (Persero) Tbk	19,087,215	229,606,370,275	2.6	1,686	21
13.	Matahari Putra Prima Tbk	491,905,898	201,411,190,400	2.3	5,279	21
14.	Daya Guna Samudra Tbk	37,794,560	180,168,647,200	2.1	5,224	21
15.	Aneka Tambang (Persero) Tbk	116,509,000	179,161,262,500	2.0	5,194	21
16.	Astra Agro Lestari Tbk	78,875,000	175,890,227,500	2.0	6,443	21
17.	Bank Bali Tbk	299,073,018	148,204,829,000	1.7	6,342	21
18.	Timah Tbk	20,188,348	146,755,565,000	1.7	2,667	20
19.	Tempo Scan Pacific	151,446,500	146,311,900,000	1.7	7,120	21
20.	Bank Pan Indonesia Tbk	224,382,250	143,696,476,000	1.6	2,737	21
<b>Total of the 20 stocks</b>		<b>6,360,684,253</b>	<b>7,078,733,325,250</b>		<b>128,968</b>	
<b>% of Total Trading</b>		<b>58.15%</b>	<b>80.75%</b>		<b>44.92%</b>	
<b>Total Trading</b>		<b>10,937,690,540</b>	<b>8,765,757,991,975</b>		<b>287,121</b>	

LAMPIRAN 10

20 Saham teraktif di BEJ  
bulan Maret-April 1999 (Berdasarkan  
Jumlah Transaksi)





## 20 Most Active Stocks by Total Trading Frequency

No.	Listed Stocks	Total Trading			Trading Days	
		Volume	Value (Rp)	Freq. (x)		
1.	Suryainti Permata Tbk	159,031,500	36,866,750,000	7,575	5.42	21
2.	Telekomunikasi Indonesia	152,697,000	423,323,877,000	7,526	5.39	21
3.	Hanson Industri Utama Tbk	389,751,000	29,291,562,500	7,471	5.35	21
4.	Indah Kiat Pulp & Paper	134,007,577	305,512,610,475	5,876	4.21	21
5.	Artha Graha Investama S. Tbk	63,252,500	34,213,900,000	5,862	4.20	21
6.	INCO	10,255,600	48,787,831,500	5,333	3.82	21
7.	Daya Guna Samudra Tbk	22,582,040	90,644,327,500	5,057	3.62	21
8.	Pabrik Kertas Tjiwi Kimia Tbk	70,004,000	124,288,900,000	4,822	3.45	21
9.	Indosal Tbk	20,713,500	246,135,503,500	4,558	3.26	21
10.	Astra Agro Lestari Tbk	51,272,000	95,367,130,500	4,435	3.17	21
11.	H M Sampoerna	26,658,000	175,037,420,750	4,007	2.87	21
12.	Timah Tbk	20,599,242	114,770,174,750	3,678	2.63	21
13.	Lautan Luas Tbk	17,993,000	9,604,175,000	3,337	2.39	21
14.	PP London Sumatera Tbk	37,750,000	35,421,587,500	3,013	2.16	21
15.	Gudang Garam	14,329,000	161,796,836,500	2,955	2.12	21
16.	Aneka Tambang (Persero) Tbk	53,614,000	78,418,077,500	2,931	2.10	21
17.	Mandiri Intifinance Tbk	75,348,000	9,290,687,500	2,574	1.84	21
18.	Astra International Tbk	69,691,000	56,450,862,500	2,504	1.79	21
19.	Bank Internasional Indonesia	235,328,700	40,694,478,000	2,467	1.77	21
20.	Medco Energi Corporation Tbk	15,418,500	16,974,850,000	2,412	1.73	21
<b>Total of the 20 stocks</b>		<b>1,640,296,159</b>	<b>2,132,891,542,975</b>	<b>88,393</b>		
<b>% of Total Trading</b>		<b>50.89%</b>	<b>72.31%</b>	<b>63.27%</b>		
<b>Total Trading</b>		<b>3,222,927,695</b>	<b>2,949,665,188,600</b>	<b>139,716</b>		

## Top 20 Gainers

o. Listed Stocks	Closing Price			
	Last Month	This Month	Change (Rp.)	%
1. Alumindo Light Metal Industry	325	375	50	15
2. Branta Mulia Tbk	150	175	25	17
3. Indah Kiat Pulp & Paper	2,100	2,450	350	17
4. Timah Tbk	4,950	5,800	850	17
5. Hexindo Adiperkasa	525	625	100	19
6. Pania Indonesia	125	150	25	20
7. Duta Pertiwi	125	150	25	20
8. Indosteel Tbk	2,000	2,475	475	24
9. Bank Bira Tbk	100	125	25	25
10. Bank Rama	300	375	75	25
11. Komatsu Indonesia	300	375	75	25
12. Ramayana Lestari Sentosa Tbk	1,900	2,400	500	26
13. Tempo Scan Pacific	425	550	125	29
14. Mulia Industri	250	325	75	30
15. Selamat Sempurna Tbk	725	975	250	34
16. Tancho Indonesia Tbk	925	1,250	325	35
17. Bank Mayapada Tbk	250	350	100	40
18. Pakuwon Jati	50	75	25	50
19. Mandiri Intifinance Tbk	75	125	50	67
20. Sumi Indo Kabel Tbk	375	775	400	107

## Top 20 Losers

No. Listed Stocks	Closing Price		
	Last Month	This Month	Change (Rp.)
1. Bank Mashill Utama Tbk	100	25	(75)
2. Bank PDFCI	175	50	(125)
3. Sekar Laut	175	50	(125)
4. Bank Global Internasional Tbk	950	300	(650)
5. BDN Capital Corporation Tbk	150	50	(100)
6. Sekar Bumi Tbk	150	50	(100)
7. Mullibreeder Adirama Indonesia	75	25	(50)
8. Hanson Industri Utama Tbk	125	50	(75)
9. Indo Citra Finance	175	75	(100)
10. Concord Benefit Enterprises	175	75	(100)
11. Suryainti Permata Tbk	325	150	(175)
12. Pool Asuransi Indonesia Tbk	375	175	(200)
13. Itamaraya Gold Industry	1,500	725	(775)
14. Dharmala Sakti Sejahtera	50	25	(25)
15. Asiana Mullikreasi Tbk	100	50	(50)
16. JAPFA	100	50	(50)
17. Duta Anggada Realty	100	50	(50)
18. Kabelindo Murni	100	50	(50)
19. Bukaka Teknik Utama	100	50	(50)
20. Suryamas Dutamakmur	150	75	(75)

20 Most Active Stocks by Total Trading Frequency

No.	Listed Stocks	Total Trading				Trading Days
		Volume	Value (Rp)	Freq. (x)	%	
1.	Astra International Tbk	340,162,500	420,757,489,500	13,544	4.72	21
2.	Telekomunikasi Indonesia	253,177,000	870,467,537,500	12,588	4.38	21
3.	Bank Lippo Tbk	1,188,151,500	402,769,400,000	11,796	4.11	21
4.	Bank International Indonesia	2,332,326,705	374,685,276,925	9,598	3.34	21
5.	Bintuni Minaraya Tbk	151,510,000	292,440,925,000	8,713	3.03	11
6.	Pabrik Kertas Tjiwi Kimia Tbk	151,945,201	357,124,098,375	8,382	2.92	21
7.	Tempo Scan Pacific	151,446,500	146,311,900,000	7,120	2.48	21
8.	Suryainti Permata Tbk	302,699,500	66,564,395,000	6,833	2.38	21
9.	Astra Agro Lestari Tbk	78,875,000	175,890,227,500	6,443	2.24	21
10.	Bank Bali Tbk	299,073,018	148,204,829,000	6,342	2.21	21
11.	Indah Kiat Pulp & Paper	285,452,944	912,072,569,975	6,228	2.17	21
12.	Berlian Laju Tanker	88,605,500	86,982,550,000	5,633	1.96	21
13.	Matahari Putra Prima Tbk	491,905,898	201,411,190,400	5,279	1.84	21
14.	Daya Guna Samudra Tbk	37,794,560	180,168,647,200	5,224	1.82	21
15.	Aneka Tambang (Persero) Tbk	116,509,000	179,161,262,500	5,194	1.81	21
16.	H M Sampoerna	39,146,100	369,430,116,000	4,893	1.70	21
17.	Mandiri Intifinance Tbk	156,973,000	17,801,450,000	4,801	1.67	19
18.	Kalbe Farma	103,287,000	47,423,437,500	4,592	1.60	21
19.	United Tractors	70,028,500	35,505,012,500	4,100	1.43	21
20.	Bank Century Interest Corp.	224,741,000	17,307,712,500	4,066	1.42	21
<b>Total of the 20 stocks</b>		<b>6,863,810,426</b>	<b>5,302,480,027,375</b>	<b>141,369</b>		
<b>% of Total Trading</b>		<b>62.75%</b>	<b>60.49%</b>	<b>49.24%</b>		
<b>Total Trading</b>		<b>10,937,690,540</b>	<b>8,765,757,991,975</b>	<b>287,121</b>		

Top 20 Gainers

No.	Listed Stocks	Closing Price			
		Last	This	Change	
		Month	Month	(Rp.)	%
1.	Tempo Scan Pacific	550	1,600	1,050	191
2.	Darya-Varia Laboratoria Tbk	200	525	325	163
3.	Hanson Industri Ulama Tbk	50	125	75	150
4.	Bakrie & Brothers	125	300	175	140
5.	Multipolar	75	175	100	133
6.	Matahari Putra Prima Tbk	225	525	300	133
7.	GT Petrochem Industries Tbk	100	225	125	125
8.	Ever Shine Textile Industry	200	450	250	125
9.	Mullibreeder Adirama Indonesia	25	50	25	100
10.	Dharmala Sakli Sejahtera	25	50	25	100
11.	Putra Surya Perkasa Tbk	25	50	25	100
12.	Bank PDFCI	50	100	50	100
13.	Asiana Multikreasi Tbk	50	100	50	100
14.	JAPFA	50	100	50	100
15.	Guta Anggada Realty	50	100	50	100
16.	Bukaka Teknik Utama	50	100	50	100
17.	Dharmala Intiland Tbk	50	100	50	100
18.	Suryamas Dulamakmur	75	150	75	100
19.	Alakasa Industrindo Tbk	75	150	75	100
20.	Humpuss Intermoda Transportasi	225	425	200	89

Top 20 Losers

No.	Listed Stocks	Closing Price			
		Last	This	Change	
		Month	Month	(Rp.)	%
1.	Ilamaraya Gold Industry	725	225	(500)	(69)
2.	Cipendawa Farm Enterprises	150	50	(100)	(67)
3.	Jakarta Kyoei Steel Works Tbk.	475	225	(250)	(53)
4.	Centris Multi Persada Pralama	900	525	(375)	(42)
5.	Perdana Bangun Pusaka	250	150	(100)	(40)
6.	Squibb Indonesia	7,300	4,500	(2,800)	(38)
7.	Indo Citra Finance	75	50	(25)	(33)
8.	Concord Benefit Enterprises	75	50	(25)	(33)
9.	Bumi Modern Tbk	75	50	(25)	(33)
10.	Merck Indonesia Tbk	13,000	9,150	(3,850)	(30)
11.	Panin Life	850	600	(250)	(29)
12.	BBL Dharmala Finance	1,000	725	(275)	(28)
13.	Fajar Surya Wisesa Tbk	275	200	(75)	(27)
14.	Panin Overseas Finance	100	75	(25)	(25)
15.	Lion Melal Works	350	275	(75)	(21)
16.	Mandiri Intifinance Tbk	125	100	(25)	(20)
17.	Berlina Tbk	250	200	(50)	(20)
18.	Unilever Indonesia Tbk	30,000	24,500	(5,500)	(18)
19.	Keramika Indonesia	150	125	(25)	(17)
20.	BAT Indonesia	18,000	15,000	(3,000)	(17)




YAYASAN SANDJOJO  
FAKULTAS EKONOMI  
UNIVERSITAS KATOLIK SOEGIJAPRANATA

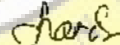
Jl. Pawiyatan Luhur IV / I Bendan Duwur  
Telp. (024) 316142 - 441555  
Semarang - 50234

## KARTU KONSULTASI

SKRIPSI

NAMA : COKRO HADISURYA  
NIM : 94.30.1810  
NIRM : 94.6.111.02016.50045  
TANDA TANGAN : 

IC60PD-SKRIPSI

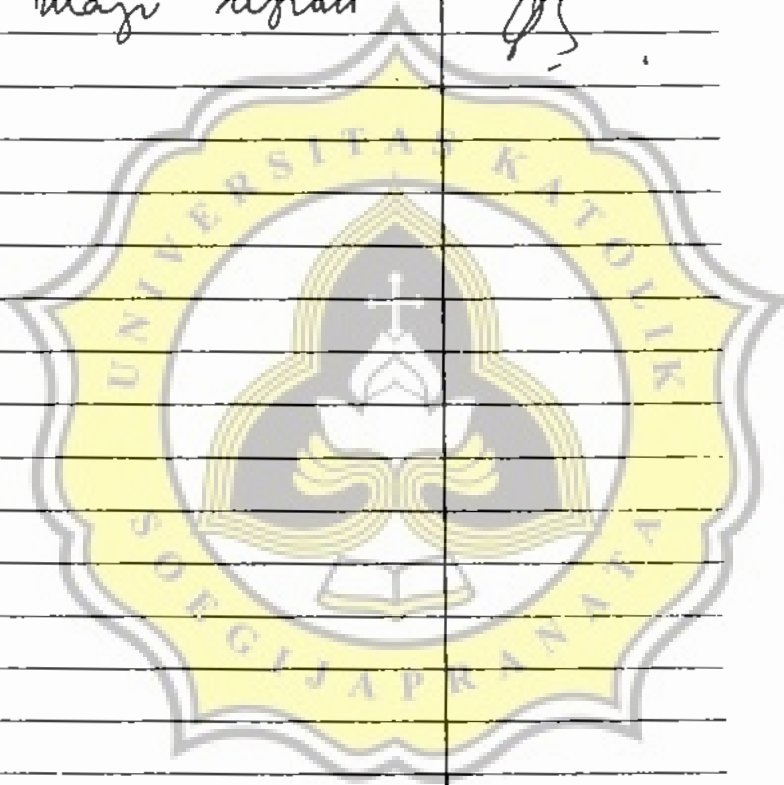


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Maret 98

Dosen Pembimbing : Kornela Inggawati, SE, 1977  
 Judul Skripsi : Maksimalisasi Excess Return dari Risiko untuk mengetahui proporsi dana masing-masing saham dalam portofolio

No.	Tanggal	Materi	Tanda tangan Dosen Pembimbing
	19/11-98	Re Pembimbing I ✓ persetujuan proposal	✓
	4/1-99	Def. operasional → kurang operasional	✓
		Pemilihan 10 dan dasarnya? apa?	✓
	8/1-99	Dalam pertemuan ke Pacb selanjutnya	✓
	2/7-99	Acc ✓ maju ujian	✓





Pembimbing : Dra. Lucia Hari P., Msi  
 Skripsi : Menganalisis extent return atas risiko untuk mengetahui preferensi dana raring-manny saham dalam portofolio

Tanggal	Materi	Tanda tangan Dosen Pembimbing
23/11/98	2 R → bulanan data rny untuk analisa	
15/12/98	perbaiki tujuan.	
6/1/99	df. operasional diungkapkan k. Terri diperbaiki	
9/1/99	Misal rny → rny dicatat secara khus. dan k. Terri	
11/1/99	Gambar umum ditrongkel df → kinerja dan triale perlu detail	
23/6/99	tujuan → perha Analisis → detail resume perbandingan portofolio.	
25/6/99	Tabel statistik, perhitungan analisis rny → hasil perhitungan	
29/6/99	kec. rny	