Lampiran 1 Data Matriks Jarak Euclidean

	BBRI	PGAS	TLKM	BMRI	INDF	BBCA	ASII	INTP	SMGR
BBRI	0,00	254101,37	240713,17	97920,34	171961,70	112107,05	159568,30	456104,94	193492,64
PGAS	254101,37	0,00	184230,39	238962,98	170225,00	306299,93	186365,22	664975,62	363805,54
TLKM	240713,17	184230,39	0,00	246493,41	212474,85	310006,98	206529,90	609841,47	330035,92
BMRI	97920,34	238962,98	246493,41	0,00	111041,32	99816,97	94235,96	481821,19	189261,89
INDF	171961,70	170225,00	212474,85	111041,32	0,00	198556,44	44782,62	585641,11	281203,92
BBCA	112107,05	306299,93	310006,98	99816,97	198556,44	0,00	184014,82	422448,82	171285,54
ASII	159568,30	186365,22	206529,90	94235,96	44782,62	184014,82	0,00	560882,98	257448,16
INTP	456104,94	664975,62	609841,47	481821,19	585641,11	422448,82	560882,98	0,00	320899,97
SMGR	193492,64	363805,54	330035,92	189261,89	281203,92	171285,54	257448,16	320899,97	0,00
UNVR	870049,63	1093156,61	1056572,19	895919,24	1000798,08	810338,93	982456,21	526594,00	784282,67
HMSP	2087536,34	2267267,32	2231520,19	2103152,18	2199511,38	2034303,34	2178706,33	1694341,44	1956225,65
GGRM	1803388,34	2017703,64	1949374,12	1827585,30	1930585,47	1754367,37	1903630,13	1386086,68	1687432,28
BBNI	234067,78	162263,76	234300,25	180020,61	79374,64	264151,82	104872,71	656727,28	350603,40

	UNVR	HMSP	GGRM	BBNI
BBRI	870049,63	2087536,34	1803388,34	234067,78
PGAS	1093156,61	2267267,32	2017703,64	162263,76
TLKM	1056572,19	2231520,19	1949374,12	234300,25
BMRI	895919,24	2103152,18	1827585,30	180020,61
INDF	1000798,08	2199511,38	1930585,47	79374,64
BBCA	810338,93	2034303,34	1754367,37	264151,82
ASII	982456,21	2178706,33	1903630,13	104872,71

	UNVR	HMSP	GGRM	BBNI
INTP	526594,00	1694341,44	1386086,68	656727,28
SMGR	784282,67	1956225,65	1687432,28	350603,40
UNVR	0,00	1419658,13	1053941,92	1068163,23
HMSP	1419658,13	0,00	1168129,64	2258406,58
GGRM	1053941,92	1168129,64	0,00	2000767,18
BBNI	1068163,23	2258406,58	2000767,18	0,00

Lampiran 2 Data Matriks Korelasi

	BBRI	PGAS	TLKM	BMRI	INDF	BBCA	ASII	INTP	SMGR	UNVR	HMSP	GGRM	BBNI
BBRI	1	0,675	0,667	0,951	0,938	0,943	0,199	0,935	0,899	0,906	0,731	0,886	0,934
PGAS	0,675	1,000	0,713	0,599	0,618	0,595	0,129	0,626	0,653	0,502	0,469	0,511	0,587
TLKM	0,667	0,713	1,000	0,584	0,606	0,537	0,136	0,643	0,652	0,463	0,409	0,563	0,547
BMRI	0,951	0,599	0,584	1,000	0,989	0,982	0,211	0,975	0,954	0,957	0,811	0,955	0,991
INDF	0,938	0,618	0,606	0,989	1,000	0,969	0,212	0,970	0,955	0,941	0,787	0,955	0,978
BBCA	0,943	0,595	0,537	0,982	0,969	1,000	1,894	0,935	0,909	0,976	0,804	0,933	0,980
ASII	0,199	0,129	0,136	0,211	0,212	1,894	1,000	2,490	0,207	0,197	0,170	0,210	0,209
INTP	0,935	0,626	0,643	0,975	0,970	0,935	2,490	1,000	0,986	0,901	0,835	0,939	0,961
SMGR	0,899	0,653	0,652	0,954	0,955	0,909	0,207	0,986	1,000	0,864	0,832	0,908	0,938
UNVR	0,906	0,502	0,463	0,957	0,941	0,976	0,197	0,901	0,864	1,000	0,803	0,915	0,952
HMSP	0,731	0,469	0,409	0,811	0,787	0,804	0,170	0,835	0,832	0,803	1,000	0,770	0,815
GGRM	0,886	0,511	0,563	0,955	0,955	0,933	0,210	0,939	0,908	0,915	0,770	1,000	0,952
BBNI	0,934	0,587	0,547	0,991	0,978	0,980	0,209	0,961	0,938	0,952	0,815	0,952	1,000

Lampiran 3 Data Matriks Jarak Histogram

	BBRI	PGAS	TLKM	BMRI	INDF	BBCA	ASII	INTP	SMGR	UNVR	HMSP	GGRM	BBNI
BBRI	0,000	1,453	0,105	0,030	0,149	0,123	0,124	0,617	0,156	1,011	1,470	1,377	0,333
PGAS	1,453	0,000	1,449	1,397	1,266	1,588	1,254	1,939	1,631	2,559	2,949	2,785	1,370
TLKM	0,105	1,449	0,000	0,047	0,233	0,085	0,226	0,792	0,220	1,039	1,508	1,482	0,383
BMRI	0,030	1,397	0,047	0,000	0,153	0,069	0,127	0,605	0,123	1,002	1,480	1,381	0,344
INDF	0,149	1,266	0,233	0,153	0,000	0,389	0,008	0,850	0,431	1,355	1,711	1,566	0,079
BBCA	0,123	1,588	0,085	0,069	0,389	0,000	0,348	0,467	0,046	0,775	1,343	1,264	0,611
ASII	0,124	1,254	0,226	0,127	0,008	0,348	0,000	0,765	0,373	1,324	1,704	1,542	0,133
INTP	0,617	1,939	0,792	0,605	0,850	0,467	0,765	0,000	0,261	0,451	1,098	0,817	1,114
SMGR	0,156	1,631	0,220	0,123	0,431	0,046	0,373	0,261	0,000	0,681	1,279	1,130	0,682
UNVR	1,011	2,559	1,039	1,002	1,355	0,775	1,324	0,451	0,681	0,000	0,441	0,294	1,490
HMSP	1,470	2,949	1,508	1,480	1,711	1,343	1,704	1,098	1,279	0,441	0,000	0,111	1,770
GGRM	1,377	2,785	1,482	1,381	1,566	1,264	1,542	0,817	1,130	0,294	0,111	0,000	1,659
BBNI	0,333	1,370	0,383	0,344	0,079	0,611	0,133	1,114	0,682	1,490	1,770	1,659	0,000

Lampiran 4 Sintak analisis pada R

Memasukkan data matrisks jarak euclidean seperti pada lampiran 1 ke dalam R.

```
> jstock<-read.csv("E:/dokument/euclidean.csv")
```

Menggubah data menjadi matriks

```
> jstock<-rbind(jstock$BBRI,jstock$PGAS,jstock$TLKM,jstock$BMRI,
+ jstock$INDF,jstock$BBCA,jstock$ASII,jstock$INTP,jstock$SMGR,
+ jstock$UNVR,jstock$HMSP,jstock$GGRM,jstock$BBNI)
> rownames(jstock)<-c("A","B","C","D","E","F","G","H","I",
+ "J","K","L","M")
> colnames(jstock)<-c("A","B","C","D","E","F","G","H","I",
+ "J","K","L","M")
> jstock
```

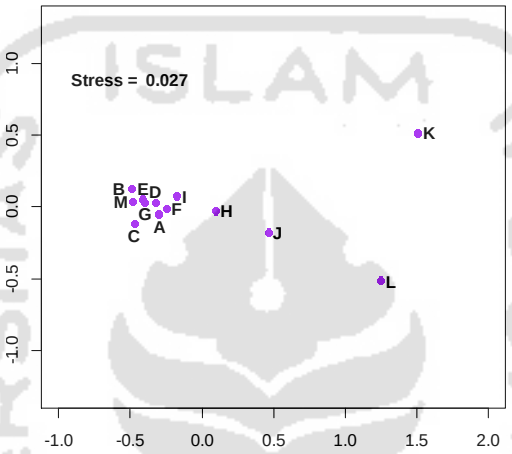
	A	B	C	D	E	F	G	H	I	J	K	L	M
A	0.00	254101.4	240713.2	97920.34	171961.70	112107.05	159568.30	456104.9	193492.6	870049.6	2087536	1803388	234067.78
B	254101.37	0.0	184230.4	238962.98	170225.00	306299.93	186365.22	664975.6	363805.5	1093156.6	2267267	2017704	162263.76
C	240713.17	184230.4	0.0	246493.41	212474.85	310006.98	206529.90	609841.5	330035.9	1056572.2	2231520	1949374	234300.25
D	97920.34	238963.0	246493.4	0.00	111041.32	99816.97	94235.96	481821.2	189261.9	895919.2	2103152	1827585	180020.61
E	171961.70	170225.0	212474.9	111041.32	0.00	198556.44	44782.62	585641.1	281203.9	1000798.1	2199511	1930585	79374.64
F	112107.05	306299.9	310007.0	99816.97	198556.44	0.00	184014.82	422448.8	171285.5	810338.9	2034303	1754367	264151.82
G	159568.30	186365.2	206529.9	94235.96	44782.62	184014.82	0.00	560883.0	257448.2	982456.2	2178706	1903630	104872.71
H	456104.94	664975.6	609841.5	481821.19	585641.11	422448.82	560882.98	0.0	320900.0	526594.0	1694341	1386087	656727.28
I	193492.64	363805.5	330035.9	189261.89	281203.92	171285.54	257448.16	320900.0	0.0	784282.7	1956226	1687432	350603.40
J	870049.63	1093156.6	1056572.2	895919.24	1000798.08	810338.93	982456.21	526594.0	784282.7	0.0	1419658	1053942	1068163.23
K	2087536.34	2267267.3	2231520.2	2103152.18	2199511.38	2034303.34	2178706.33	1694341.4	1956225.6	1419658.1	0	1168130	2258406.58
L	1803388.34	2017703.6	1949374.1	1827585.30	1930585.47	1754367.37	1903630.13	1386086.7	1687432.3	1053941.9	1168130	0	2000767.18
M	234067.78	162263.8	234300.2	180020.61	79374.64	264151.82	104872.71	656727.3	350603.4	1068163.2	2258407	2000767	0.00

Sintaks untuk analisis MDS Metrik:

```
> library(smacof)
> smacof_metric_result<-smacofSym(delta=jstock, ndim=2,
+ weightmat=NULL, type="ratio", itmax=1000, eps=0.000001)
> smacof_metric_result
Call:
smacofSym(delta = jstock, ndim = 2, type = "ratio", weightmat = NULL,
    itmax = 1000, eps = 1e-06)

Model: Symmetric SMACOF
Number of objects: 13
Stress-1 value: 0.027
Number of iterations: 26
> conf<-smacof_metric_result$conf
> conf
           D1           D2
A -0.30524526 -0.049303034
B -0.49521025  0.129550994
C -0.47008739 -0.113454779
D -0.32148003  0.033428006
E -0.41556461  0.053661378
F -0.25014834 -0.009996121
G -0.39716819  0.034930048
H  0.09312914 -0.025400642
I -0.17575157  0.073843037
J  0.46222904 -0.174072945
K  1.51098285  0.517116458
L  1.24938247 -0.514092210
M -0.48506784  0.043789811
```

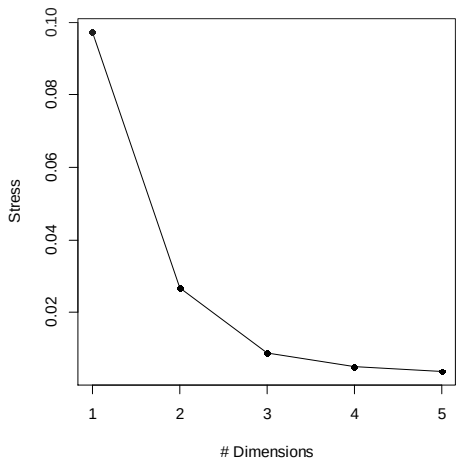
Sintaks untuk memdapatkan plot peta posisi:

```
> plot(conf[,1],conf[,2], main="SMACOF (Matric) Solution",
+ xlab="", ylab="", xlim=c(-1,2), ylim=c(-1,1), asp=1, type="n")
> points(conf[,1], conf[,2], pch=16, col="purple")
> text(-0.5,0.9, paste("Stress = ",
round(smacof_metric_result$stress,3)), font=2)
> text(conf[,1], conf[,2], rownames(jstock),
pos=c(1,2,1,3,3,4,1,4,4,4,4,4,2),
+ nrow(jstock), offset=00.25, col="black", font=2)
```



Sintaks untuk mendapatkan plot stress:

```
> stressPlot<-function(obj, maxdim=5){
+     s<-NULL
+     for(i in 1:maxdim){
+     s<-c(s, update(obj, ndim=i)$stress)
+     }
+     plot(1:maxdim, s, type="o", pch=16,xlab="#
> Dimensions",ylab="Stress")
> }
> stressPlot(smacof_metric_result)
```



Memasukkan data matrisks jarak korelasi seperti pada lampiran 2 ke dalam R.

```
> kor<-read.csv("E:/dokument/korelasi.csv")
```

Menggubah data menjadi matriks

```
> kor.saham<-rbind(kor$BBRI,kor$PGAS,kor$TLKM,kor$BMRI,
+ kor$INDF,kor$BBCA,kor$ASII, kor$INTP,kor$SMGR,
+ kor$UNVR,kor$HMSP,kor$GGRM,kor$BBNI)
> rownames(kor.saham)<-c("BBRI","PGAS","TLKM","BMRI","INDF",
+ "BBCA","ASII", "INTP","SMGR","UNVR","HMSP","GGRM","BBNI")
> colnames(kor.saham)<-c("BBRI","PGAS","TLKM","BMRI","INDF",
+ "BBCA","ASII","INTP","SMGR","UNVR","HMSP","GGRM","BBNI")
> kor.saham
```

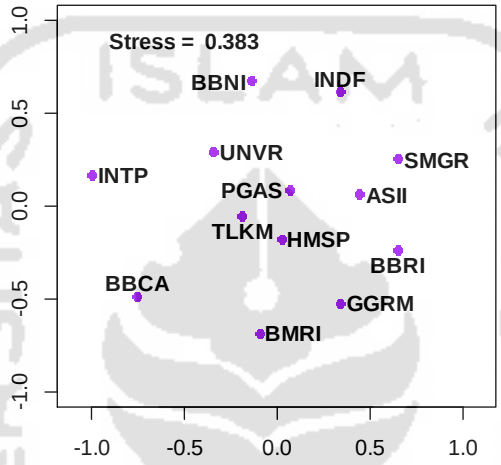
	BBRI	PGAS	TLKM	BMRI	INDF	BBCA	ASII	INTP	SMGR	UNVR	HMSP	GGRM	BBNI
BBRI	1.000	0.675	0.667	0.951	0.938	0.943	0.199	0.935	0.899	0.906	0.731	0.886	0.934
PGAS	0.675	1.000	0.713	0.599	0.618	0.595	0.129	0.626	0.653	0.502	0.469	0.511	0.587
TLKM	0.667	0.713	1.000	0.584	0.606	0.537	0.136	0.643	0.652	0.463	0.409	0.563	0.547
BMRI	0.951	0.599	0.584	1.000	0.989	0.982	0.211	0.975	0.954	0.957	0.811	0.955	0.991
INDF	0.938	0.618	0.606	0.989	1.000	0.969	0.212	0.970	0.955	0.941	0.787	0.955	0.978
BBCA	0.943	0.595	0.537	0.982	0.969	1.000	1.894	0.935	0.909	0.976	0.804	0.933	0.980
ASII	0.199	0.129	0.136	0.211	0.212	1.894	1.000	2.490	0.207	0.197	0.170	0.210	0.209
INTP	0.935	0.626	0.643	0.975	0.970	0.935	2.490	1.000	0.986	0.901	0.835	0.939	0.961
SMGR	0.899	0.653	0.652	0.954	0.955	0.909	0.207	0.986	1.000	0.864	0.832	0.908	0.938
UNVR	0.906	0.502	0.463	0.957	0.941	0.976	0.197	0.901	0.864	1.000	0.803	0.915	0.952
HMSP	0.731	0.469	0.409	0.811	0.787	0.804	0.170	0.835	0.832	0.803	1.000	0.770	0.815
GGRM	0.886	0.511	0.563	0.955	0.955	0.933	0.210	0.939	0.908	0.915	0.770	1.000	0.952
BBNI	0.934	0.587	0.547	0.991	0.978	0.980	0.209	0.961	0.938	0.952	0.815	0.952	1.000

Sintaks untuk analisis MDS Metrik:

```
> smacof_metric_result3<-smacofSym(delta=kor.saham, ndim=2,
+ weightmat=NULL, type="ratio", itmax=1000, eps=0.000001)
> smacof_metric_result3

Call:
smacofSym(delta = kor.saham, ndim = 2, type = "ratio", weightmat = NULL,
    itmax = 1000, eps = 1e-06)

Model: Symmetric SMACOF
Number of objects: 13
Stress-1 value: 0.383
Number of iterations: 90

> conf3<-smacof_metric_result3$conf
> conf3
              D1          D2
BBRI   0.64964307 -0.23545207
PGAS   0.06932113  0.08843382
TLKM -0.18776208 -0.05053424
BMRI -0.09597336 -0.68673494
INDF   0.33766782  0.61496893
BBCA -0.75550694 -0.48441421
ASII   0.44670559  0.06203790
INTP -0.99635409  0.17154556
SMGR   0.64883460  0.25357586
UNVR -0.34594657  0.29543000
HMSP   0.02201885 -0.17937792
GGRM   0.34138315 -0.52392300
BBNI -0.13403119  0.67444430
```

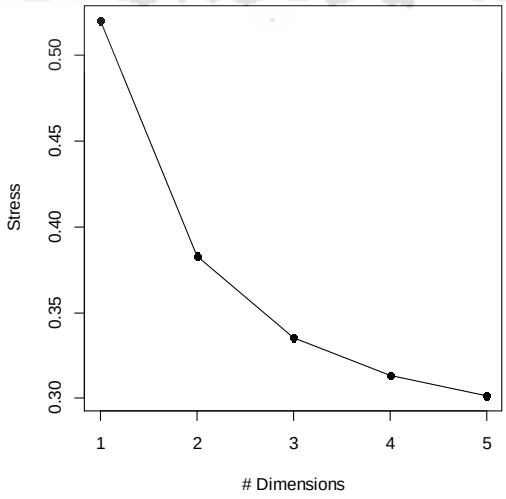
Sintaks untuk memdapatkan plot peta posisi:

```
> plot(conf3[,1],conf3[,2], main="SMACOF (Matric) Solution",
+ xlab="", ylab="", xlim=c(-1,1), ylim=c(-1,1), asp=1, type="n")
> points(conf3[,1], conf3[,2], pch=16, col="purple")
> text(-0.5,0.9, paste("Stress = ",
+ round(smacof_metric_result3$stress,3)), font=2)
> text(conf3[,1], conf3[,2], rownames(kor.saham),
+ pos=c(1,2,1,4,3,3,4,4,4,4,4,4,2), nrow(kor.saham), offset=00.25,
+ col="black", font=2)
```



Sintaks untuk mendapatkan plot stress:

```
> stressPlot<-function(obj, maxdim=5){
+     s<-NULL
+     for(i in 1:maxdim){
+     s<-c(s, update(obj, ndim=i)$stress)
+     }
+     plot(1:maxdim, s, type="o", pch=16,
+     xlab="# Dimensions",ylab="Stress")
+ }
> stressPlot(smacof_metric_result3)
```



Memasukkan data matrisks jarak histogram seperti pada lampiran 3 ke dalam R.

```
> hist<-read.csv("E:/dokument/histogram.csv")
```

Menggubah data menjadi matriks

```
> jhis1.saham<-rbind(hist$BBRI,hist$PGAS,hist$TLKM,hist$BMRI,
+ hist$INDF,hist$BBCA,hist$ASII, hist$INTP,hist$SMGR,
+ hist$UNVR,hist$HMSP,hist$GGRM,hist$BBNI)
> rownames(jhis1.saham)<-c("A","B","C","D","E","F","G","H","I",
+ "J","K","L","M")
> colnames(jhis1.saham)<-c("A","B","C","D","E","F","G","H","I",
+ "J","K","L","M")
> jhis1.saham
```

	A	B	C	D	E	F	G	H	I	J	K	L	M
A	0.000	1.453	0.105	0.030	0.149	0.123	0.124	0.617	0.156	1.011	1.470	1.377	0.333
B	1.453	0.000	1.449	1.397	1.266	1.588	1.254	1.939	1.631	2.559	2.949	2.785	1.370
C	0.105	1.449	0.000	0.047	0.233	0.085	0.226	0.792	0.220	1.039	1.508	1.482	0.383
D	0.030	1.397	0.047	0.000	0.153	0.069	0.127	0.605	0.123	1.002	1.480	1.381	0.344
E	0.149	1.266	0.233	0.153	0.000	0.389	0.008	0.850	0.431	1.355	1.711	1.566	0.079
F	0.123	1.588	0.085	0.069	0.389	0.000	0.348	0.467	0.046	0.775	1.343	1.264	0.611
G	0.124	1.254	0.226	0.127	0.008	0.348	0.000	0.765	0.373	1.324	1.704	1.542	0.133
H	0.617	1.939	0.792	0.605	0.850	0.467	0.765	0.000	0.261	0.451	1.098	0.817	1.114
I	0.156	1.631	0.220	0.123	0.431	0.046	0.373	0.261	0.000	0.681	1.279	1.130	0.682
J	1.011	2.559	1.039	1.002	1.355	0.775	1.324	0.451	0.681	0.000	0.441	0.294	1.490
K	1.470	2.949	1.508	1.480	1.711	1.343	1.704	1.098	1.279	0.441	0.000	0.111	1.770
L	1.377	2.785	1.482	1.381	1.566	1.264	1.542	0.817	1.130	0.294	0.111	0.000	1.659
M	0.333	1.370	0.383	0.344	0.079	0.611	0.133	1.114	0.682	1.490	1.770	1.659	0.000

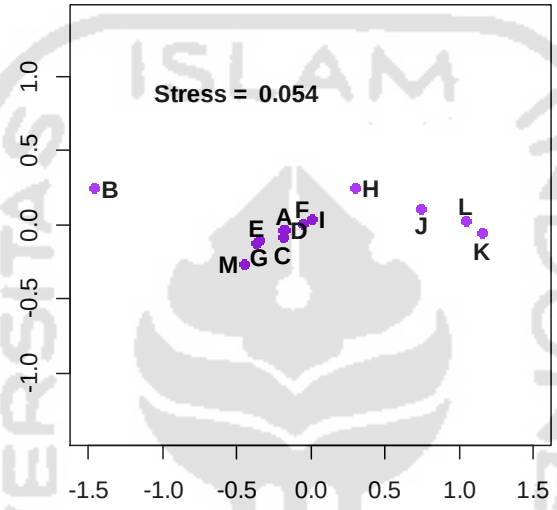
Sintaks untuk analisis MDS Metrik:

```
> smacof_metric_result2<-smacofSym(delta=jhis1.saham, ndim=2,
+ weightmat=NULL, type="ratio", itmax=1000, eps=0.000001)
> smacof_metric_result2
Call:
smacofSym(delta = jhis1.saham, ndim = 2, type = "ratio", weightmat = NULL,
    itmax = 1000, eps = 1e-06)

Model: Symmetric SMACOF
Number of objects: 13
Stress-1 value: 0.054
Number of iterations: 28
> conf2<-smacof_metric_result2$conf
> conf2
```

	D1	D2
A	-0.189211996	-0.034817319
B	-1.458539522	0.247500230
C	-0.188973451	-0.084273023
D	-0.181716672	-0.031895848
E	-0.368009317	-0.125115213
F	-0.054786862	0.009076472
G	-0.349407019	-0.098070141
H	0.297468095	0.251973813
I	0.007437967	0.043759519
J	0.743001919	0.113640460
K	1.149720135	-0.054635996
L	1.039318874	0.027765154
M	-0.446302150	-0.264908108

Sintaks untuk memdapatkan plot peta posisi:

```
> plot(conf2[,1],conf2[,2], main="SMACOF (Matric) Solution", xlab="",
+ ylab="", xlim=c(-1.5,1.5), ylim=c(-0.5,0.5), asp=1, type="n")
> points(conf2[,1], conf2[,2], pch=16, col="purple")

> text(-0.5,0.9, paste("Stress = ",
+ round(smacof_metric_result2$stress,3)), font=2)
> text(conf2[,1], conf2[,2], rownames(jhis1.saham),
+ pos=c(3,4,1,4,3,3,1,4,4,1,1,3,2), nrow(jhis1.saham), offset=00.25,
+ col="black", font=2)
```



Sintaks untuk mendapatkan plot stress:

```
> stressPlot<-function(obj, maxdim=5){
+     s<-NULL
+     for(i in 1:maxdim){
+     s<-c(s, update(obj, ndim=i)$stress)
+     }
+     plot(1:maxdim, s, type="o", pch=16,
+     xlab="# Dimensions",ylab="Stress")
+ }
> stressPlot(smacof_metric_result2)
```