

**APPENDIX B:**  
**Output of the Two-Step Cluster Analyses**

## APPENDIX B

### TwoStep Cluster

#### Total Database of 1943 Trace Element Analyses

Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	840	43,2%	43,2%
2	1103	56,8%	56,8%
Combined	1943	100,0%	100,0%
Total	1943		100,0%

### Cluster Profiles

Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3,4802335	,18657228	3,4245671	,37185232
2	2,2732415	1,13845828	2,0353559	1,32645787
Combined	2,7950497	1,05272504	2,6359413	1,23776139

Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,5136300	1,41625271	2,5687231	1,18017072
2	,4201517	,82592481	,5521913	,96703012
Combined	1,3252067	1,52636324	1,4239806	1,45975147

Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	2,3915399	1,09896981
2	,6949365	,74869011
Combined	1,4284141	1,24364435

Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,6727008	,68921916	3,0668499	,70682669
2	,8577566	1,07386524	2,4732119	,92485592
Combined	1,6423954	1,29168125	2,7298542	,88755490

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,4130109	,44639982
	2	2,3066204	1,26858494
	Combined	2,7849364	1,14012108

**LEVEL I**

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3340 .

```

**TwoStep Cluster****Cluster 1****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	425	50.6%	50.6%
	2	347	41.3%	41.3%
	3	68	8.1%	8.1%
	Combined	840	100.0%	100.0%
Total		840		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	2	3.5000000	.00000000	3.5000000	.00000000
	3	3.2558260	.61667026	2.5681815	.96000844
	Combined	3.4802335	.18657228	3.4245671	.37185232

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.4096165	.42191142	3.4115415	.36111182
	2	1.5623985	1.46870443	1.5277073	1.04963965
	3	1.7677924	1.58358813	2.6133506	.89766094
	Combined	2.5136300	1.41625271	2.5687231	1.18017072

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	3.1532375	.68445378
	2	1.5168084	.84585782
	3	2.0946341	.85535631
	Combined	2.3915399	1.09896981

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.6593536	.77161178	3.4785834	.10682337
	2	2.7398188	.55638206	2.5727559	.79947124
	3	2.4136222	.69957278	3.0148485	.73543051
	Combined	2.6727008	.68921916	3.0668499	.70682669

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.4988235	.02425356
	2	3.4985591	.02684141
	3	2.4401346	1.20112412
	Combined	3.4130109	.44639982

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_8755 .

```

**TwoStep Cluster****Cluster 2****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	576	52.2%	52.2%
	2	527	47.8%	47.8%
	Combined	1103	100.0%	100.0%
Total		1103		100.0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.4625241	.92831889	1.5866861	1.26476573
	2	2.0663596	1.30046382	2.5257427	1.21499341
	Combined	2.2732415	1.13845828	2.0353559	1.32645787

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	.5872897	1.03985902	1.2249301	.83532956
	2	.2374734	.42788397	-.1830983	.39891433
	Combined	.4201517	.82592481	.5521913	.96703012

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.1173485	.79683113
	2	.2332490	.26704833
	Combined	.6949365	.74869011

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1.6042977	.84902764	2.0746480	.93107617
	2	.0418028	.59215277	2.9088340	.69302536
	Combined	.8577566	1.07386524	2.4732119	.92485592

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1.8572134	1.23532632
	2	2.7978129	1.11378087
	Combined	2.3066204	1.26858494

**LEVEL II**

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6927 .

```

## TwoStep Cluster

### Cluster 3

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	365	85.9%	85.9%
2	60	14.1%	14.1%
Combined	425	100.0%	100.0%
Total	425		100.0%

### Cluster Profiles

**Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
2	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
2	2.8597838	.95983062	2.8734187	.77086439
Combined	3.4096165	.42191142	3.4115415	.36111182

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	3.2029829	.64161823
2	2.8506191	.84759892
Combined	3.1532375	.68445378

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2.6521832	.78089553	3.5000000	.00000000
2	2.7029730	.71714822	3.3482990	.24881095
Combined	2.6593536	.77161178	3.4785834	.10682337

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	2	3.4916667	.06454972
	Combined	3.4988235	.02425356

**TWOSTEP CLUSTER**

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6922 .

```

**TwoStep Cluster****Cluster 4****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	144	41.5%	41.5%
	2	70	20.2%	20.2%
	3	133	38.3%	38.3%
	Combined	347	100.0%	100.0%
Total		347		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	2	3.5000000	.00000000	3.5000000	.00000000
	3	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.7824973	1.24025661	.7191051	.56569378
	2	.8930150	1.14524002	1.9211944	.94893079
	3	.5936963	.70363237	2.1960879	.90830826
	Combined	1.5623985	1.46870443	1.5277073	1.04963965

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	.9843515	.49681354
	2	1.5366405	.68876692
	3	2.0828650	.85305262
	Combined	1.5168084	.84585782

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0034722	.04166667	1.9796876	.68563321
	2	1.7031019	.40130016	2.9173539	.67878234
	3	3.0000000	.10660036	3.0335076	.51446010
	Combined	2.7398188	.55638206	2.5727559	.79947124

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	2	3.4928571	.05976143
	3	3.5000000	.00000000
	Combined	3.4985591	.02684141

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_571 .

```

**TwoStep Cluster****Cluster 5****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	35	51.5%	51.5%
	2	33	48.5%	48.5%
	Combined	68	100.0%	100.0%
Total		68		100.0%

**Cluster Profiles**



**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0684620	.78150033	3.3127912	.48685707
	2	3.4545455	.26111648	1.7784440	.65436350
	Combined	3.2558260	.61667026	2.5681815	.96000844

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.1746487	1.56938176	2.9293062	.68685905
	2	1.3362782	1.50354125	2.2782461	.98024551
	Combined	1.7677924	1.58358813	2.6133506	.89766094

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	2.4295899	.74844443
	2	1.7393779	.82693125
	Combined	2.0946341	.85535631

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.3092141	.79163127	3.2237685	.54337330
	2	2.5243581	.57816031	2.7932666	.84872914
	Combined	2.4136222	.69957278	3.0148485	.73543051

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1.5265472	.97374629
	2	3.4090909	.36345876
	Combined	2.4401346	1.20112412

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_7917 .

```

## TwoStep Cluster

### Cluster 6

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	186	32,3%	32,3%
2	116	20,1%	20,1%
3	137	23,8%	23,8%
4	137	23,8%	23,8%
Combined	576	100,0%	100,0%
Total	576		100,0%

### Cluster Profiles

**Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,4885768	,29901009	,5946121	,49750805
2	2,5350933	,79161789	2,5179309	1,03503756
3	1,6951644	1,16659316	1,8467878	1,24344826
4	3,1887749	,59351928	1,9724725	1,30508773
Combined	2,4757739	,90905442	1,6074939	1,26764420

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,1171042	,42168856	1,1599227	,33340336
2	,4559517	1,01491085	2,0936894	,76752558
3	1,7481969	1,15267707	,8872452	,77100376
4	,1873625	,52299513	,9167806	,91759377
Combined	,5900059	1,03748345	1,2252867	,83471562

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1,0278087	,35297041
2	2,0962954	,77879126
3	,5452206	,64918332
4	,9621031	,65257796
Combined	1,1125799	,80089281

**Centroids**

		ng_LogNI		ng_LogFE	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,0092525	,48466469	1,0350121	,29384847
	2	1,7499484	,81189371	1,2741076	,96197582
	3	1,9570310	,79693437	1,8623829	1,30072004
	4	1,9894223	,86472208	3,4340044	,30952050
	Combined	1,6169776	,84742177	1,8505448	1,23097417

**TWOSTEP CLUSTER**

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_1287 .

```

**TwoStep Cluster****Cluster 7****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	174	33,0%	33,0%
	2	353	67,0%	67,0%
	Combined	527	100,0%	100,0%
Total		527		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,8337753	1,24822041	1,2691954	,94062700
	2	2,1593844	1,32905506	3,1111646	,83560296
	Combined	2,0518778	1,31072538	2,5030002	1,22883780

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,0483655	,28764848	-,4602200	,30240137
	2	,3739363	,42284495	-,0470817	,36927997
	Combined	,2345046	,43171906	-,1834879	,39894077

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,0794960	,27812816
	2	,3168177	,23025885
	Combined	,2384610	,27092819

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,3290168	,27641582	2,6041188	,70447079
	2	,2038963	,57571633	3,0131719	,68326713
	Combined	,0279440	,55665385	2,8781145	,71604452

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,7546177	1,17143917
	2	3,3229038	,60146349
	Combined	2,8051015	1,11283516

**LEVEL III**

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
  ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4191 .

```

**TwoStep Cluster****Cluster 8****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	365	85.9%	85.9%
	2	60	14.1%	14.1%
	Combined	425	100.0%	100.0%
Total		425		100.0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	2	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	2	2.8597838	.95983062	2.8734187	.77086439
	Combined	3.4096165	.42191142	3.4115415	.36111182

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	3.2029829	.64161823
	2	2.8506191	.84759892
	Combined	3.1532375	.68445378

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.6521832	.78089553	3.5000000	.00000000
	2	2.7029730	.71714822	3.3482990	.24881095
	Combined	2.6593536	.77161178	3.4785834	.10682337

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	2	3.4916667	.06454972
	Combined	3.4988235	.02425356

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3070 .

```

## TwoStep Cluster

### Cluster 9

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	60	100.0%	100.0%
Combined	60	100.0%	100.0%
Total	60		100.0%

### Cluster Profiles

**Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2.8597838	.95983062	2.8734187	.77086439
Combined	2.8597838	.95983062	2.8734187	.77086439

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	2.8506191	.84759892
Combined	2.8506191	.84759892

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2.7029730	.71714822	3.3482990	.24881095
Combined	2.7029730	.71714822	3.3482990	.24881095

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	3.4916667	.06454972
Combined	3.4916667	.06454972

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2716 .

```

## TwoStep Cluster

### Cluster 10

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	49	34.0%	34.0%
2	30	20.8%	20.8%
3	65	45.1%	45.1%
Combined	144	100.0%	100.0%
Total	144		100.0%

## Cluster Profiles

**Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
2	3.5000000	.00000000	3.5000000	.00000000
3	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.1962516	.69115871	1.2883103	.53856767
2	.5521095	.45289156	.4071288	.36343075
3	3.5000000	.00000000	.4340010	.24777885
Combined	2.7824973	1.24025661	.7191051	.56569378

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1.1931205	.52971923
2	1.1137114	.66962259
3	.7672673	.22088636
Combined	.9843515	.49681354

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0000000	.00000000	2.5708091	.59963988
	2	3.0166667	.09128709	1.6924181	.76730920
	3	3.0000000	.00000000	1.6666587	.32889973
	Combined	3.0034722	.04166667	1.9796876	.68563321

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	2	3.5000000	.00000000
	3	3.5000000	.00000000
	Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_7364 .

```

**TwoStep Cluster****Cluster 11****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	19	27.1%	27.1%
	2	51	72.9%	72.9%
	Combined	70	100.0%	100.0%
Total		70		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	2	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000



**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.4279898	1.00218455	1.2132095	.59655527
	2	.3211616	.46851445	2.1849535	.92363387
	Combined	.8930150	1.14524002	1.9211944	.94893079

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.1323024	.94497920
	2	1.6872763	.49792175
	Combined	1.5366405	.68876692

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1.3526749	.53075441	2.6928388	.75727390
	2	1.8336532	.23828021	3.0009967	.63489454
	Combined	1.7031019	.40130016	2.9173539	.67878234

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.4736842	.11470787
	2	3.5000000	.00000000
	Combined	3.4928571	.05976143

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3119 .

```

**TwoStep Cluster****Cluster 12**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	100	75.2%	75.2%
Cluster 2	33	24.8%	24.8%
Combined	133	100.0%	100.0%
Total	133		100.0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Cluster 2	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	.5546155	.61662195	2.2378433	.88265479
Cluster 2	.7121229	.92018021	2.0695564	.98538695
Combined	.5936963	.70363237	2.1960879	.90830826

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1.6352105	.36114796
Cluster 2	3.4393939	.27264835
Combined	2.0828650	.85305262

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.0000000	.00000000	3.0617048	.48529982
Cluster 2	3.0000000	.21650635	2.9480615	.59423840
Combined	3.0000000	.10660036	3.0335076	.51446010

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000
Cluster 2	3.5000000	.00000000
Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6057 .

```

## TwoStep Cluster

### Cluster 13

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	35	100.0%	100.0%
Combined	35	100.0%	100.0%
Total	35		100.0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.0684620	.78150033	3.3127912	.48685707
Combined	3.0684620	.78150033	3.3127912	.48685707

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2.1746487	1.56938176	2.9293062	.68685905
Combined	2.1746487	1.56938176	2.9293062	.68685905

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	2.4295899	.74844443
Combined	2.4295899	.74844443

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2.3092141	.79163127	3.2237685	.54337330
Combined	2.3092141	.79163127	3.2237685	.54337330

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1.5265472	.97374629
	Combined	1.5265472	.97374629

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
  ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_5739 .

```

**TwoStep Cluster****Cluster 14****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	30	90.9%	90.9%
	2	3	9.1%	9.1%
	Combined	33	100.0%	100.0%
Total		33		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	1.6062884	.36773956
	2	3.0000000	.86602540	3.5000000	.00000000
	Combined	3.4545455	.26111648	1.7784440	.65436350

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1.1199060	1.40062520	2.4082193	.92480594
	2	3.5000000	.00000000	.9785140	.43057126
	Combined	1.3362782	1.50354125	2.2782461	.98024551

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.7968207	.83637668
	2	1.1649500	.50346011
	Combined	1.7393779	.82693125

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.4767939	.58575159	2.9208318	.77163010
	2	3.0000000	.00000000	1.5176140	.45490860
	Combined	2.5243581	.57816031	2.7932666	.84872914

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	2	2.5000000	.86602540
	Combined	3.4090909	.36345876

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_395 .

```

**TwoStep Cluster****Cluster 15****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	35	18,8%	18,8%
	2	79	42,5%	42,5%
	3	72	38,7%	38,7%
	Combined	186	100,0%	100,0%
Total		186		100,0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,5378546	,65043422	,7835595	,59822978
	2	2,4774879	,11370438	,3362011	,48928382
	3	2,4767892	,12120030	,7862969	,28529199
	Combined	2,4885768	,29901009	,5946121	,49750805

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,3754193	,37874949	,7597892	,49671405
	2	,2769081	,43889988	1,2156192	,18545681
	3	-,1838061	,17287714	1,2933207	,18242317
	Combined	,1171042	,42168856	1,1599227	,33340336

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,8950579	,42230406
	2	1,2800979	,28956177
	3	,8155231	,14801018
	Combined	1,0278087	,35297041

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,2787763	,61087658	1,9681624	,75442993
	2	1,2506643	,33005441	1,4736113	,61348486
	3	,6133515	,23256016	1,3402698	,29801735
	Combined	1,0092525	,48466469	1,5150559	,59062395

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	,8713480	,45626840
	2	1,1239680	,19425875
	3	1,0169667	,24799183
	Combined	1,0350121	,29384847

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0

```

```

/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_7176 .

```

## TwoStep Cluster

### Cluster 16

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	70	60,3%	60,3%
2	11	9,5%	9,5%
3	35	30,2%	30,2%
Combined	116	100,0%	100,0%
Total	116		100,0%

### Cluster Profiles

**Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,4056847	,86404602	1,9149110	,88890978
2	3,5000000	,00000000	3,2305647	,62305841
3	2,4906541	,51646950	3,5000000	,00000000
Combined	2,5350933	,79161789	2,5179309	1,03503756

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,7161416	1,18857241	2,2985287	,78827482
2	-,1718755	,29765577	1,2957967	,78826731
3	,1328888	,46541520	1,9347770	,47999218
Combined	,4559517	1,01491085	2,0936894	,76752558

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	2,1403228	,71114275
2	3,4545455	,15075567
3	1,5813620	,38031150
Combined	2,0962954	,77879126

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,8503111	,69764653	2,4952157	,65583206
	2	,1260624	,51591294	3,1070710	,58584665
	3	2,0595870	,43697484	3,4857143	,08451543
	Combined	1,7499484	,81189371	2,8520938	,70424248

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,1288851	1,02724780
	2	1,9920508	1,23004674
	3	1,3389133	,57358536
	Combined	1,2741076	,96197582

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2346 .

```

**TwoStep Cluster****Cluster 17****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	30	21,9%	21,9%
	2	70	51,1%	51,1%
	3	37	27,0%	27,0%
	Combined	137	100,0%	100,0%
Total		137		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,4793744	,74898752	3,0485909	,90096791
	2	2,3452706	,95465086	1,2622773	,90618587
	3	,6401985	,96860005	1,9781837	1,31436902
	Combined	1,6951644	1,16659316	1,8467878	1,24344826



**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,9329761	,96935475	,6997586	,74308370
	2	2,0577970	1,07118779	,7185921	,53080507
	3	1,8234570	1,14768114	1,3583347	,97373654
	Combined	1,7481969	1,15267707	,8872452	,77100376

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,1653154	,40609913
	2	,3498552	,41641830
	3	1,2228621	,67856736
	Combined	,5452206	,64918332

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,6106821	,56298434	3,3848586	,40326461
	2	1,8331990	,69345201	1,7877923	,58189090
	3	1,6613202	,86402688	2,7320152	,65292866
	Combined	1,9570310	,79693437	2,3925239	,86954979

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	,7838439	,70346341
	2	1,6778514	1,15783509
	3	3,0859877	,92143929
	Combined	1,8623829	1,30072004

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_96 .

```

**TwoStep Cluster****Cluster 18**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	42	30,7%	30,7%
Cluster 2	95	69,3%	69,3%
Combined	137	100,0%	100,0%
Total	137		100,0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3,5000000	,00000000	3,4529257	,30507643
Cluster 2	3,0511807	,66876624	1,3179563	1,00570856
Combined	3,1887749	,59351928	1,9724725	1,30508773

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,1109758	,18118197	,0132134	,34301712
Cluster 2	,3192595	,56926988	1,3162524	,80049763
Combined	,1873625	,52299513	,9167806	,91759377

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,4106876	,38822356
Cluster 2	1,2058868	,59538017
Combined	,9621031	,65257796

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,8552576	,41244617	1,1358643	,58693065
Cluster 2	1,6066320	,72429176	2,3480111	,94011863
Combined	1,9894223	,86472208	1,9764040	1,01458256

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	3,2847287	,53372916
Cluster 2	3,5000000	,00000000
Combined	3,4340044	,30952050

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2390 .

```

## TwoStep Cluster

### Cluster 19

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	49	28,2%	28,2%
2	125	71,8%	71,8%
Combined	174	100,0%	100,0%
Total	174		100,0%

## Cluster Profiles

**Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,9498428	,89934255	,4776624	,36585668
2	1,3962768	1,08419664	1,5794763	,91540560
Combined	1,8337753	1,24822041	1,2691954	,94062700

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,3615806	,07187036	-,8137197	,12651992
2	,0744149	,24387509	-,3216481	,22945409
Combined	-,0483655	,28764848	-,4602200	,30240137

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	-,0506211	,12808913
2	,1305020	,30374199
Combined	,0794960	,27812816

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,5495050	,15337743	2,7635727	,76663553
	2	-,2425855	,26598980	2,5416128	,67148736
	Combined	-,3290168	,27641582	2,6041188	,70447079

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	2,3972502	,93616806
	2	1,5027057	1,16108488
	Combined	1,7546177	1,17143917

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4471 .

```

**TwoStep Cluster****Cluster 20****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	194	55,0%	55,0%
	2	159	45,0%	45,0%
	Combined	353	100,0%	100,0%
Total		353		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,1786608	1,21848751	3,4768041	,18556200
	2	2,1358648	1,45623697	2,6650384	1,07193871
	Combined	2,1593844	1,32905506	3,1111646	,83560296

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,2603530	,29059847	-,2175420	,21688625
	2	,5125223	,50991370	,1609012	,40882609
	Combined	,3739363	,42284495	-,0470817	,36927997

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,2836410	,17502668
	2	,3572975	,27874306
	Combined	,3168177	,23025885

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,0778401	,22184590	3,2834398	,46589532
	2	,5476502	,67965089	2,6834110	,75882830
	Combined	,2038963	,57571633	3,0131719	,68326713

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,4856796	,14112587
	2	3,1242967	,84225101
	Combined	3,3229038	,60146349

**LEVEL IV**

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
  ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6886 .

```

**TwoStep Cluster****Cluster 21**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	238	97.9%	97.9%
Cluster 2	5	2.1%	2.1%
Combined	243	100.0%	100.0%
Total	243		100.0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Cluster 2	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Cluster 2	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000
Cluster 2	3.0000000	.00000000
Combined	3.4897119	.07112670

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.0000000	.00000000	3.5000000	.00000000
Cluster 2	3.5000000	.00000000	3.5000000	.00000000
Combined	3.0102881	.07112670	3.5000000	.00000000

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000
Cluster 2	3.5000000	.00000000
Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3905 .

```

## TwoStep Cluster

### Cluster 48

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	238	100.0%	100.0%
Combined	238	100.0%	100.0%
Total	238		100.0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000
Combined	3.5000000	.00000000

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.0000000	.00000000	3.5000000	.00000000
Combined	3.0000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

**TWOSTEP CLUSTER**

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_1511 .

```

**TwoStep Cluster****Cluster 49****Warnings**

The number of valid cases is smaller than the maximum number of clusters specified for auto-clustering. The maximum number is reduced to the number of valid cases: 5.

**Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	5	100.0%	100.0%
	Combined	5	100.0%	100.0%
Total		5		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000



**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	3.0000000	.00000000
	Combined	3.0000000	.00000000

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_5110 .

```

**TwoStep Cluster****Cluster 22****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	69	100.0%	100.0%
	Combined	69	100.0%	100.0%
Total		69		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	3.2261054	.60700508
	Combined	3.2261054	.60700508

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1.0948823	.41901797	3.5000000	.00000000
	Combined	1.0948823	.41901797	3.5000000	.00000000

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3626 .

```

**TwoStep Cluster****Cluster 23****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	53	100.0%	100.0%
	Combined	53	100.0%	100.0%
Total		53		100.0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.8582546	.38520020
	Combined	1.8582546	.38520020

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0377358	.21592949	3.5000000	.00000000
	Combined	3.0377358	.21592949	3.5000000	.00000000

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_842 .

```

**TwoStep Cluster****Cluster 24**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	49	100.0%	100.0%
Combined	49	100.0%	100.0%
Total	49		100.0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.1962516	.69115871	1.2883103	.53856767
Combined	3.1962516	.69115871	1.2883103	.53856767

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1.1931205	.52971923
Combined	1.1931205	.52971923

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.0000000	.00000000	2.5708091	.59963988
Combined	3.0000000	.00000000	2.5708091	.59963988

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000
Combined	3.5000000	.00000000

TWOSTEP CLUSTER

/CONTINUOUS VARIABLES = ng\_LogSN ng\_LogPB ng\_LogAS ng\_LogSB ng\_LogAG  
 ng\_LogNI ng\_LogBI ng\_LogFE  
 /DISTANCE LIKELIHOOD  
 /NUMCLUSTERS AUTO 15 BIC

```

/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0)  MXBRANCH (8)  MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_86 .

```

## TwoStep Cluster

### Cluster 25

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	30	100.0%	100.0%
Combined	30	100.0%	100.0%
Total	30		100.0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	.5521095	.45289156	.4071288	.36343075
Combined	.5521095	.45289156	.4071288	.36343075

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1.1137114	.66962259
Combined	1.1137114	.66962259

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.0166667	.09128709	1.6924181	.76730920
Combined	3.0166667	.09128709	1.6924181	.76730920

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
  ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2972 .

```

**TwoStep Cluster****Cluster 26****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	65	100.0%	100.0%
	Combined	65	100.0%	100.0%
Total		65		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	.4340010	.24777885
	Combined	3.5000000	.00000000	.4340010	.24777885

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	.7672673	.22088636
	Combined	.7672673	.22088636

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0000000	.00000000	1.6666587	.32889973
	Combined	3.0000000	.00000000	1.6666587	.32889973

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_8954 .

```

**TwoStep Cluster****Cluster 27****Cluster Distribution**

	N	% of Combined	% of Total
Cluster	19	100.0%	100.0%
Combined	19	100.0%	100.0%
Total	19		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.4279898	1.00218455	1.2132095	.59655527
	Combined	2.4279898	1.00218455	1.2132095	.59655527

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.1323024	.94497920
	Combined	1.1323024	.94497920

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1.3526749	.53075441	2.6928388	.75727390
	Combined	1.3526749	.53075441	2.6928388	.75727390

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.4736842	.11470787
	Combined	3.4736842	.11470787

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_1844 .

```

**TwoStep Cluster****Cluster 28****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	51	100.0%	100.0%
	Combined	51	100.0%	100.0%
Total		51		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000



**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	.3211616	.46851445	2.1849535	.92363387
	Combined	.3211616	.46851445	2.1849535	.92363387

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.6872763	.49792175
	Combined	1.6872763	.49792175

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1.8336532	.23828021	3.0009967	.63489454
	Combined	1.8336532	.23828021	3.0009967	.63489454

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_5732 .

```

**TwoStep Cluster****Cluster 29****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	100	100.0%	100.0%
	Combined	100	100.0%	100.0%
Total		100		100.0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	.5546155	.61662195	2.2378433	.88265479
	Combined	.5546155	.61662195	2.2378433	.88265479

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.6352105	.36114796
	Combined	1.6352105	.36114796

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0000000	.00000000	3.0617048	.48529982
	Combined	3.0000000	.00000000	3.0617048	.48529982

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_7561 .

```

**TwoStep Cluster****Cluster 30**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	33	100.0%	100.0%
Combined	33	100.0%	100.0%
Total	33		100.0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.5000000	.00000000
Combined	3.5000000	.00000000	3.5000000	.00000000

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	.7121229	.92018021	2.0695564	.98538695
Combined	.7121229	.92018021	2.0695564	.98538695

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	3.4393939	.27264835
Combined	3.4393939	.27264835

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.0000000	.21650635	2.9480615	.59423840
Combined	3.0000000	.21650635	2.9480615	.59423840

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000
Combined	3.5000000	.00000000

TWOSTEP CLUSTER

/CONTINUOUS VARIABLES = ng\_LogSN ng\_LogPB ng\_LogAS ng\_LogSB ng\_LogAG  
 ng\_LogNI ng\_LogBI ng\_LogFE  
 /DISTANCE LIKELIHOOD  
 /NUMCLUSTERS AUTO 15 BIC

```

/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0)  MXBRANCH (8)  MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6623 .

```

## TwoStep Cluster

### Cluster 31

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	30	100.0%	100.0%
Combined	30	100.0%	100.0%
Total	30		100.0%

### Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	1.6062884	.36773956
Combined	3.5000000	.00000000	1.6062884	.36773956

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1.1199060	1.40062520	2.4082193	.92480594
Combined	1.1199060	1.40062520	2.4082193	.92480594

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1.7968207	.83637668
Combined	1.7968207	.83637668

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2.4767939	.58575159	2.9208318	.77163010
Combined	2.4767939	.58575159	2.9208318	.77163010

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.5000000	.00000000
	Combined	3.5000000	.00000000

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2009 .

```

**TwoStep Cluster****Cluster 32****Warnings**

The number of valid cases is smaller than the maximum number of clusters specified for auto-clustering. The maximum number is reduced to the number of valid cases: 3.

**Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	3	100.0%	100.0%
	Combined	3	100.0%	100.0%
Total		3		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0000000	.86602540	3.5000000	.00000000
	Combined	3.0000000	.86602540	3.5000000	.00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	.9785140	.43057126
	Combined	3.5000000	.00000000	.9785140	.43057126

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1.1649500	.50346011
	Combined	1.1649500	.50346011

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.0000000	.00000000	1.5176140	.45490860
	Combined	3.0000000	.00000000	1.5176140	.45490860

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	2.5000000	.86602540
	Combined	2.5000000	.86602540

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2020 .

```

**TwoStep Cluster****Cluster 33****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	35	100,0%	100,0%
	Combined	35	100,0%	100,0%
Total		35		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,5378546	,65043422	,7835595	,59822978
	Combined	2,5378546	,65043422	,7835595	,59822978

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,3754193	,37874949	,7597892	,49671405
	Combined	,3754193	,37874949	,7597892	,49671405

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,8950579	,42230406
	Combined	,8950579	,42230406

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,2787763	,61087658	1,9681624	,75442993
	Combined	1,2787763	,61087658	1,9681624	,75442993

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	,8713480	,45626840
	Combined	,8713480	,45626840

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_1005 .

```

**TwoStep Cluster****Cluster 34****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	28	35,4%	35,4%
	2	51	64,6%	64,6%
	Combined	79	100,0%	100,0%
Total		79		100,0%

## Cluster Profiles

### Centroids

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,5050304	,04452171	-,1637866	,21653241
	2	2,4623666	,13579520	,6107041	,36234137
	Combined	2,4774879	,11370438	,3362011	,48928382

### Centroids

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,0289738	,18416355	1,3323926	,09175736
	2	,4448433	,44836469	1,1515084	,19308014
	Combined	,2769081	,43889988	1,2156192	,18545681

### Centroids

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1,3245488	,21234278
	2	1,2556935	,32363174
	Combined	1,2800979	,28956177

### Centroids

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,2936971	,22751352	,8222877	,42722310
	2	1,2270385	,37467581	1,8312006	,34723865
	Combined	1,2506643	,33005441	1,4736113	,61348486

### Centroids

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,0027622	,23837582
	2	1,1905123	,12426124
	Combined	1,1239680	,19425875

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY

```



/SAVE VARIABLE=TSC\_9402 .

## TwoStep Cluster

### Cluster 50

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	28	100,0%	100,0%
Combined	28	100,0%	100,0%
Total	28		100,0%

### Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,5050304	,04452171	-,1637866	,21653241
Combined	2,5050304	,04452171	-,1637866	,21653241

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,0289738	,18416355	1,3323926	,09175736
Combined	-,0289738	,18416355	1,3323926	,09175736

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1,3245488	,21234278
Combined	1,3245488	,21234278

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,2936971	,22751352	,8222877	,42722310
Combined	1,2936971	,22751352	,8222877	,42722310

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,0027622	,23837582
	Combined	1,0027622	,23837582

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
  ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_5897 .

```

**TwoStep Cluster****Cluster 51****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	51	100,0%	100,0%
	Combined	51	100,0%	100,0%
Total		51		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,4623666	,13579520	,6107041	,36234137
	Combined	2,4623666	,13579520	,6107041	,36234137

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,4448433	,44836469	1,1515084	,19308014
	Combined	,4448433	,44836469	1,1515084	,19308014

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1,2556935	,32363174
	Combined	1,2556935	,32363174

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,2270385	,37467581	1,8312006	,34723865
	Combined	1,2270385	,37467581	1,8312006	,34723865

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,1905123	,12426124
	Combined	1,1905123	,12426124

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3877 .

```

**TwoStep Cluster****Cluster 35****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	38	52,8%	52,8%
	2	34	47,2%	47,2%
	Combined	72	100,0%	100,0%
Total		72		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,4388390	,15699112	,5765239	,18776376
	2	2,5192041	,02142682	1,0207491	,16816917
	Combined	2,4767892	,12120030	,7862969	,28529199

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,1585869	,20398730	1,1610497	,13432702
	2	-,2119923	,12686926	1,4411529	,09329849
	Combined	-,1838061	,17287714	1,2933207	,18242317

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,7255155	,13410918
	2	,9161198	,08492792
	Combined	,8155231	,14801018

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,4855312	,21344899	1,1266371	,19412463
	2	,7562096	,15949837	1,5790357	,19375904
	Combined	,6133515	,23256016	1,3402698	,29801735

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	,9917517	,20724568
	2	1,0451482	,28742085
	Combined	1,0169667	,24799183

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_9109 .

```

**TwoStep Cluster****Cluster 52**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	38	100,0%	100,0%
Combined	38	100,0%	100,0%
Total	38		100,0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,4388390	,15699112	,5765239	,18776376
Combined	2,4388390	,15699112	,5765239	,18776376

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,1585869	,20398730	1,1610497	,13432702
Combined	-,1585869	,20398730	1,1610497	,13432702

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,7255155	,13410918
Combined	,7255155	,13410918

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,4855312	,21344899	1,1266371	,19412463
Combined	,4855312	,21344899	1,1266371	,19412463

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	,9917517	,20724568
Combined	,9917517	,20724568

TWOSTEP CLUSTER

/CONTINUOUS VARIABLES = ng\_LogSN ng\_LogPB ng\_LogAS ng\_LogSB ng\_LogAG  
 ng\_LogNI ng\_LogBI ng\_LogFE  
 /DISTANCE LIKELIHOOD  
 /NUMCLUSTERS AUTO 15 BIC

```

/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0)  MXBRANCH (8)  MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_347 .

```

## TwoStep Cluster

### Cluster 53

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	34	100,0%	100,0%
Combined	34	100,0%	100,0%
Total	34		100,0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,5192041	,02142682	1,0207491	,16816917
Combined	2,5192041	,02142682	1,0207491	,16816917

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,2119923	,12686926	1,4411529	,09329849
Combined	-,2119923	,12686926	1,4411529	,09329849

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,9161198	,08492792
Combined	,9161198	,08492792

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,7562096	,15949837	1,5790357	,19375904
Combined	,7562096	,15949837	1,5790357	,19375904

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,0451482	,28742085
	Combined	1,0451482	,28742085

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
  ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_180 .

```

**TwoStep Cluster****Cluster 36****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	70	100,0%	100,0%
	Combined	70	100,0%	100,0%
Total		70		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,4056847	,86404602	1,9149110	,88890978
	Combined	2,4056847	,86404602	1,9149110	,88890978

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,7161416	1,18857241	2,2985287	,78827482
	Combined	,7161416	1,18857241	2,2985287	,78827482

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	2,1403228	,71114275
	Combined	2,1403228	,71114275

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,8503111	,69764653	2,4952157	,65583206
	Combined	1,8503111	,69764653	2,4952157	,65583206

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,1288851	1,02724780
	Combined	1,1288851	1,02724780

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_8496 .

```

**TwoStep Cluster****Cluster 37****Warnings**

The number of valid cases is smaller than the maximum number of clusters specified for auto-clustering. The maximum number is reduced to the number of valid cases: 11.

**Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	11	100,0%	100,0%
	Combined	11	100,0%	100,0%
Total		11		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3,5000000	,00000000	3,2305647	,62305841
	Combined	3,5000000	,00000000	3,2305647	,62305841



**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,1718755	,29765577	1,2957967	,78826731
	Combined	-,1718755	,29765577	1,2957967	,78826731

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	3,4545455	,15075567
	Combined	3,4545455	,15075567

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,1260624	,51591294	3,1070710	,58584665
	Combined	,1260624	,51591294	3,1070710	,58584665

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,9920508	1,23004674
	Combined	1,9920508	1,23004674

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2204 .

```

**TwoStep Cluster****Cluster 38****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	35	100,0%	100,0%
	Combined	35	100,0%	100,0%
Total		35		100,0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,4906541	,51646950	3,5000000	,00000000
	Combined	2,4906541	,51646950	3,5000000	,00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,1328888	,46541520	1,9347770	,47999218
	Combined	,1328888	,46541520	1,9347770	,47999218

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1,5813620	,38031150
	Combined	1,5813620	,38031150

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,0595870	,43697484	3,4857143	,08451543
	Combined	2,0595870	,43697484	3,4857143	,08451543

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,3389133	,57358536
	Combined	1,3389133	,57358536

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3885 .

```

**TwoStep Cluster****Cluster 39**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	30	100,0%	100,0%
Combined	30	100,0%	100,0%
Total	30		100,0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,4793744	,74898752	3,0485909	,90096791
Combined	1,4793744	,74898752	3,0485909	,90096791

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,9329761	,96935475	,6997586	,74308370
Combined	,9329761	,96935475	,6997586	,74308370

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,1653154	,40609913
Combined	,1653154	,40609913

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,6106821	,56298434	3,3848586	,40326461
Combined	2,6106821	,56298434	3,3848586	,40326461

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	,7838439	,70346341
Combined	,7838439	,70346341

TWOSTEP CLUSTER

/CONTINUOUS VARIABLES = ng\_LogSN ng\_LogPB ng\_LogAS ng\_LogSB ng\_LogAG  
 ng\_LogNI ng\_LogBI ng\_LogFE  
 /DISTANCE LIKELIHOOD  
 /NUMCLUSTERS AUTO 15 BIC

```

/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0)  MXBRANCH (8)  MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6493 .

```

## TwoStep Cluster

### Cluster 40

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	70	100,0%	100,0%
Combined	70	100,0%	100,0%
Total	70		100,0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,3452706	,95465086	1,2622773	,90618587
Combined	2,3452706	,95465086	1,2622773	,90618587

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,0577970	1,07118779	,7185921	,53080507
Combined	2,0577970	1,07118779	,7185921	,53080507

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,3498552	,41641830
Combined	,3498552	,41641830

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,8331990	,69345201	1,7877923	,58189090
Combined	1,8331990	,69345201	1,7877923	,58189090

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,6778514	1,15783509
	Combined	1,6778514	1,15783509

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_804 .

```

**TwoStep Cluster****Cluster 41****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	37	100,0%	100,0%
	Combined	37	100,0%	100,0%
Total		37		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,6401985	,96860005	1,9781837	1,31436902
	Combined	,6401985	,96860005	1,9781837	1,31436902

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,8234570	1,14768114	1,3583347	,97373654
	Combined	1,8234570	1,14768114	1,3583347	,97373654

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1,2228621	,67856736
	Combined	1,2228621	,67856736

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,6613202	,86402688	2,7320152	,65292866
	Combined	1,6613202	,86402688	2,7320152	,65292866

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,0859877	,92143929
	Combined	3,0859877	,92143929

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4520 .

```

**TwoStep Cluster****Cluster 42****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	37	88,1%	88,1%
	2	5	11,9%	11,9%
	Combined	42	100,0%	100,0%
Total		42		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3,5000000	,00000000	3,5000000	,00000000
	2	3,5000000	,00000000	3,1045757	,88419551
	Combined	3,5000000	,00000000	3,4529257	,30507643

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,1049955	,18241725	-,0720062	,23136149
	2	-,1552298	,18496618	,6438386	,39997760
	Combined	-,1109758	,18118197	,0132134	,34301712

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,3543966	,36291453
	2	,8272403	,33658094
	Combined	,4106876	,38822356

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,8837559	,34126846	1,0419106	,39673299
	2	2,6443697	,79521341	1,8311215	1,19521688
	Combined	2,8552576	,41244617	1,1358643	,58693065

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,4594595	,24659848
	2	1,9917215	,01851137
	Combined	3,2847287	,53372916

**TWOSTEP CLUSTER**

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_7544 .

```

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3,0511807	,66876624	1,3179563	1,00570856
	Combined	3,0511807	,66876624	1,3179563	1,00570856

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,3192595	,56926988	1,3162524	,80049763
	Combined	,3192595	,56926988	1,3162524	,80049763

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	1,2058868	,59538017
	Combined	1,2058868	,59538017

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,6066320	,72429176	2,3480111	,94011863
	Combined	1,6066320	,72429176	2,3480111	,94011863

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,5000000	,00000000
	Combined	3,5000000	,00000000

**TwoStep Cluster****Cluster 54****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	37	100.0%	100.0%
	Combined	37	100.0%	100.0%
Total		37		100.0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	3.5000000	.00000000	3.5000000	.00000000
	Combined	3.5000000	.00000000	3.5000000	.00000000



**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-.1049955	.18241725	-.0720062	.23136149
	Combined	-.1049955	.18241725	-.0720062	.23136149

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	.3543966	.36291453
	Combined	.3543966	.36291453

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2.8837559	.34126846	1.0419106	.39673299
	Combined	2.8837559	.34126846	1.0419106	.39673299

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3.4594595	.24659848
	Combined	3.4594595	.24659848

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2498 .

```

**TwoStep Cluster****Cluster 55****Warnings**

The number of valid cases is smaller than the maximum number of clusters specified for auto-clustering. The maximum number is reduced to the number of valid cases: 5.

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	5	100.0%	100.0%
Combined	5	100.0%	100.0%
Total	5		100.0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3.5000000	.00000000	3.1045757	.88419551
Combined	3.5000000	.00000000	3.1045757	.88419551

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-.1552298	.18496618	.6438386	.39997760
Combined	-.1552298	.18496618	.6438386	.39997760

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	.8272403	.33658094
Combined	.8272403	.33658094

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2.6443697	.79521341	1.8311215	1.19521688
Combined	2.6443697	.79521341	1.8311215	1.19521688

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	1.9917215	.01851137
Combined	1.9917215	.01851137

TWOSTEP CLUSTER

/CONTINUOUS VARIABLES = ng\_LogSN ng\_LogPB ng\_LogAS ng\_LogSB ng\_LogAG  
 ng\_LogNI ng\_LogBI ng\_LogFE  
 /DISTANCE LIKELIHOOD  
 /NUMCLUSTERS AUTO 15 BIC

```

/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0)  MXBRANCH (8)  MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_8502 .

```

## TwoStep Cluster

### Cluster 43

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	95	100,0%	100,0%
Combined	95	100,0%	100,0%
Total	95		100,0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	3,0511807	,66876624	1,3179563	1,00570856
Combined	3,0511807	,66876624	1,3179563	1,00570856

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,3192595	,56926988	1,3162524	,80049763
Combined	,3192595	,56926988	1,3162524	,80049763

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	1,2058868	,59538017
Combined	1,2058868	,59538017

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,6066320	,72429176	2,3480111	,94011863
Combined	1,6066320	,72429176	2,3480111	,94011863

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,5000000	,00000000
	Combined	3,5000000	,00000000

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
  ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_1902 .

```

**TwoStep Cluster****Cluster 44****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	22	44,9%	44,9%
	2	27	55,1%	55,1%
	Combined	49	100,0%	100,0%
Total		49		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,9182118	,99363678	,5252628	,38724970
	2	2,9756162	,83319763	,4388769	,35000992
	Combined	2,9498428	,89934255	,4776624	,36585668

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,3530930	,05233628	-,9206134	,05556177
	2	-,3684965	,08492977	-,7266211	,09753035
	Combined	-,3615806	,07187036	-,8137197	,12651992

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	-,0671235	,04978477
	2	-,0371748	,16694146
	Combined	-,0506211	,12808913

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,6489917	,09843171	3,5000000	,00000000
	2	-,4684417	,14284829	2,1635209	,50223385
	Combined	-,5495050	,15337743	2,7635727	,76663553

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,7129237	,57313932
	2	2,9548496	,79595193
	Combined	2,3972502	,93616806

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2427 .

```

**TwoStep Cluster****Cluster 56****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	22	100,0%	100,0%
	Combined	22	100,0%	100,0%
Total		22		100,0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,9182118	,99363678	,5252628	,38724970
	Combined	2,9182118	,99363678	,5252628	,38724970

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,3530930	,05233628	-,9206134	,05556177
	Combined	-,3530930	,05233628	-,9206134	,05556177

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	-,0671235	,04978477
	Combined	-,0671235	,04978477

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,6489917	,09843171	3,5000000	,00000000
	Combined	-,6489917	,09843171	3,5000000	,00000000

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,7129237	,57313932
	Combined	1,7129237	,57313932

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4486 .

```

**TwoStep Cluster****Cluster 57**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	27	100,0%	100,0%
Combined	27	100,0%	100,0%
Total	27		100,0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,9756162	,83319763	,4388769	,35000992
Combined	2,9756162	,83319763	,4388769	,35000992

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,3684965	,08492977	-,7266211	,09753035
Combined	-,3684965	,08492977	-,7266211	,09753035

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	-,0371748	,16694146
Combined	-,0371748	,16694146

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,4684417	,14284829	2,1635209	,50223385
Combined	-,4684417	,14284829	2,1635209	,50223385

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	2,9548496	,79595193
Combined	2,9548496	,79595193

TWOSTEP CLUSTER

/CONTINUOUS VARIABLES = ng\_LogSN ng\_LogPB ng\_LogAS ng\_LogSB ng\_LogAG  
 ng\_LogNI ng\_LogBI ng\_LogFE  
 /DISTANCE LIKELIHOOD  
 /NUMCLUSTERS AUTO 15 BIC

```

/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6259 .

```

## TwoStep Cluster

### Cluster 45

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	82	65,6%	65,6%
2	43	34,4%	34,4%
Combined	125	100,0%	100,0%
Total	125		100,0%

### Cluster Profiles

**Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,7820645	1,04742120	1,1851058	,66552456
2	,6605887	,71410955	2,3315316	,85853765
Combined	1,3962768	1,08419664	1,5794763	,91540560

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,0900584	,27283875	-,2580210	,24167202
2	,0445831	,17504105	-,4429836	,14079996
Combined	,0744149	,24387509	-,3216481	,22945409

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,2039148	,32572571
2	-,0094945	,19282193
Combined	,1305020	,30374199

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,1761042	,28253431	2,4633623	,69379019
2	-,3693638	,17276780	2,6908346	,60675756
Combined	-,2425855	,26598980	2,5416128	,67148736



**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,9418401	1,05922278
	2	,6652866	,84966404
	Combined	1,5027057	1,16108488

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2014 .

```

**TwoStep Cluster****Cluster 58****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	82	100,0%	100,0%
	Combined	82	100,0%	100,0%
Total		82		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,7820645	1,04742120	1,1851058	,66552456
	Combined	1,7820645	1,04742120	1,1851058	,66552456

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,0900584	,27283875	-,2580210	,24167202
	Combined	,0900584	,27283875	-,2580210	,24167202

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,2039148	,32572571
	Combined	,2039148	,32572571

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,1761042	,28253431	2,4633623	,69379019
	Combined	-,1761042	,28253431	2,4633623	,69379019

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,9418401	1,05922278
	Combined	1,9418401	1,05922278

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_3750 .

```

**TwoStep Cluster****Cluster 59****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	43	100,0%	100,0%
	Combined	43	100,0%	100,0%
Total		43		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,6605887	,71410955	2,3315316	,85853765
	Combined	,6605887	,71410955	2,3315316	,85853765

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,0445831	,17504105	-,4429836	,14079996
	Combined	,0445831	,17504105	-,4429836	,14079996

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	-,0094945	,19282193
	Combined	-,0094945	,19282193

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,3693638	,17276780	2,6908346	,60675756
	Combined	-,3693638	,17276780	2,6908346	,60675756

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	,6652866	,84966404
	Combined	,6652866	,84966404

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_9979 .

```

**TwoStep Cluster****Cluster 46****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	29	14,9%	14,9%
	2	69	35,6%	35,6%
	3	5	2,6%	2,6%
	4	91	46,9%	46,9%
	Combined	194	100,0%	100,0%
Total		194		100,0%

**Cluster Profiles**

**Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,4853937	1,09256062	3,5000000	,00000000
	2	1,9504043	1,21785118	3,5000000	,00000000
	3	1,6637518	,37700161	2,6000000	,82158384
	4	2,2822761	1,26084853	3,5000000	,00000000
	Combined	2,1786608	1,21848751	3,4768041	,18556200

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,0888539	,19880725	-,3768191	,18790559
	2	,0867590	,19692083	-,3251320	,11039362
	3	,0864536	,24966363	-,4351206	,15293241
	4	,4561877	,25236749	-,0732494	,19725849
	Combined	,2603530	,29059847	-,2175420	,21688625

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,2417066	,12046971
	2	,2023141	,17065127
	3	,1378948	,19675614
	4	,3666782	,15383574
	Combined	,2836410	,17502668

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,1650702	,19254659	2,2376003	,20427847
	2	-,2101603	,16222100	3,4927536	,06019293
	3	-,1688740	,12440090	3,5000000	,00000000
	4	,0552911	,19793648	3,4461199	,18535270
	Combined	-,0778401	,22184590	3,2834398	,46589532

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,5000000	,00000000
	2	3,5000000	,00000000
	3	2,9443697	,76486040
	4	3,5000000	,00000000
	Combined	3,4856796	,14112587

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_9902 .

```

## TwoStep Cluster

### Cluster 60

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	29	100,0%	100,0%
Combined	29	100,0%	100,0%
Total	29		100,0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,4853937	1,09256062	3,5000000	,00000000
Combined	2,4853937	1,09256062	3,5000000	,00000000

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,0888539	,19880725	-,3768191	,18790559
Combined	,0888539	,19880725	-,3768191	,18790559

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,2417066	,12046971
Combined	,2417066	,12046971

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	-,1650702	,19254659	2,2376003	,20427847
Combined	-,1650702	,19254659	2,2376003	,20427847

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster 1		3,5000000	,00000000
	Combined	3,5000000	,00000000

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6498 .

```

**TwoStep Cluster****Cluster 61****Cluster Distribution**

		N	% of Combined	% of Total
Cluster 1		69	100,0%	100,0%
	Combined	69	100,0%	100,0%
Total		69		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		1,9504043	1,21785118	3,5000000	,00000000
	Combined	1,9504043	1,21785118	3,5000000	,00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		,0867590	,19692083	-,3251320	,11039362
	Combined	,0867590	,19692083	-,3251320	,11039362

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster 1		,2023141	,17065127
	Combined	,2023141	,17065127

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,2101603	,16222100	3,4927536	,06019293
	Combined	-,2101603	,16222100	3,4927536	,06019293

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,5000000	,00000000
	Combined	3,5000000	,00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6242 .

```

**TwoStep Cluster****Cluster 62****Warnings**

The number of valid cases is smaller than the maximum number of clusters specified for auto-clustering. The maximum number is reduced to the number of valid cases: 5.

**Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	5	100,0%	100,0%
	Combined	5	100,0%	100,0%
Total		5		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,6637518	,37700161	2,6000000	,82158384
	Combined	1,6637518	,37700161	2,6000000	,82158384

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,0864536	,24966363	-,4351206	,15293241
	Combined	,0864536	,24966363	-,4351206	,15293241

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,1378948	,19675614
	Combined	,1378948	,19675614

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	-,1688740	,12440090	3,5000000	,00000000
	Combined	-,1688740	,12440090	3,5000000	,00000000

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	2,9443697	,76486040
	Combined	2,9443697	,76486040

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2811 .

```

**TwoStep Cluster****Cluster 63****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	70	76,9%	76,9%
	2	21	23,1%	23,1%
	Combined	91	100,0%	100,0%
Total		91		100,0%



## Cluster Profiles

### Centroids

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,2632031	1,27898496	3,5000000	,00000000
	2	2,3458527	1,22669865	3,5000000	,00000000
	Combined	2,2822761	1,26084853	3,5000000	,00000000

### Centroids

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,4681438	,22843368	-,1280416	,12822398
	2	,4163341	,32311966	,1093915	,26989451
	Combined	,4561877	,25236749	-,0732494	,19725849

### Centroids

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,4187005	,10963706
	2	,1932704	,15485013
	Combined	,3666782	,15383574

### Centroids

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,0131168	,10942260	3,5000000	,00000000
	2	,1958718	,32866472	3,2665195	,33252139
	Combined	,0552911	,19793648	3,4461199	,18535270

### Centroids

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,5000000	,00000000
	2	3,5000000	,00000000
	Combined	3,5000000	,00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY

```

/SAVE VARIABLE=TSC\_1650 .

## TwoStep Cluster

### Cluster 66

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	70	100,0%	100,0%
Combined	70	100,0%	100,0%
Total	70		100,0%

### Cluster Profiles

#### Centroids

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		2,2632031	1,27898496	3,5000000	,00000000
Combined		2,2632031	1,27898496	3,5000000	,00000000

#### Centroids

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		,4681438	,22843368	-,1280416	,12822398
Combined		,4681438	,22843368	-,1280416	,12822398

#### Centroids

		ng_LogAG	
		Mean	Std. Deviation
Cluster 1		,4187005	,10963706
Combined		,4187005	,10963706

#### Centroids

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		,0131168	,10942260	3,5000000	,00000000
Combined		,0131168	,10942260	3,5000000	,00000000

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster 1		3,5000000	,00000000
	Combined	3,5000000	,00000000

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4810 .

```

**TwoStep Cluster****Cluster 67****Cluster Distribution**

		N	% of Combined	% of Total
Cluster 1		21	100,0%	100,0%
	Combined	21	100,0%	100,0%
Total		21		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		2,3458527	1,22669865	3,5000000	,00000000
	Combined	2,3458527	1,22669865	3,5000000	,00000000

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		,4163341	,32311966	,1093915	,26989451
	Combined	,4163341	,32311966	,1093915	,26989451

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster 1		,1932704	,15485013
	Combined	,1932704	,15485013

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,1958718	,32866472	3,2665195	,33252139
	Combined	,1958718	,32866472	3,2665195	,33252139

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,5000000	,00000000
	Combined	3,5000000	,00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6303 .

```

**TwoStep Cluster****Cluster 47****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	84	52,8%	52,8%
	2	75	47,2%	47,2%
	Combined	159	100,0%	100,0%
Total		159		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	2,2349449	1,57766938	3,2663780	,70610841
	2	2,0248951	1,30860131	1,9915380	1,01190226
	Combined	2,1358648	1,45623697	2,6650384	1,07193871

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,5640241	,61048077	,3178268	,40410241
	2	,4548402	,36161321	-,0148554	,33829448
	Combined	,5125223	,50991370	,1609012	,40882609

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,4119883	,31425152
	2	,2960438	,21893477
	Combined	,3572975	,27874306

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,8326362	,69859168	2,5031338	,80095623
	2	,2284658	,49339628	2,8853215	,65703038
	Combined	,5476502	,67965089	2,6834110	,75882830

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,4940476	,05455447
	2	2,7101757	1,08733338
	Combined	3,1242967	,84225101

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4663 .

```

**TwoStep Cluster****CLuster 64**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	21	25,0%	25,0%
Cluster 2	63	75,0%	75,0%
Combined	84	100,0%	100,0%
Total	84		100,0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,5673000	1,39945148	3,2328291	,67866448
Cluster 2	2,1241598	1,62802179	3,2775610	,71998734
Combined	2,2349449	1,57766938	3,2663780	,70610841

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,0662516	,23929795	-,0077464	,23999427
Cluster 2	,7299483	,60708137	,4263512	,39007672
Combined	,5640241	,61048077	,3178268	,40410241

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,1842132	,13502306
Cluster 2	,4879134	,32076714
Combined	,4119883	,31425152

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,7209146	,42056788	1,6817864	,72365528
Cluster 2	,5365435	,48983036	2,7769163	,62067082
Combined	,8326362	,69859168	2,5031338	,80095623

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	3,4761905	,10910895
Cluster 2	3,5000000	,00000000
Combined	3,4940476	,05455447

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_2759 .

```

## TwoStep Cluster

### Cluster 68

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	21	100,0%	100,0%
Combined	21	100,0%	100,0%
Total	21		100,0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,5673000	1,39945148	3,2328291	,67866448
Combined	2,5673000	1,39945148	3,2328291	,67866448

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,0662516	,23929795	-,0077464	,23999427
Combined	,0662516	,23929795	-,0077464	,23999427

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,1842132	,13502306
Combined	,1842132	,13502306

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,7209146	,42056788	1,6817864	,72365528
Combined	1,7209146	,42056788	1,6817864	,72365528

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster 1		3,4761905	,10910895
	Combined	3,4761905	,10910895

TWOSTEP CLUSTER

```

/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_6223 .

```

**TwoStep Cluster****Cluster 69****Cluster Distribution**

		N	% of Combined	% of Total
Cluster 1		63	100,0%	100,0%
	Combined	63	100,0%	100,0%
Total		63		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		2,1241598	1,62802179	3,2775610	,71998734
	Combined	2,1241598	1,62802179	3,2775610	,71998734

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1		,7299483	,60708137	,4263512	,39007672
	Combined	,7299483	,60708137	,4263512	,39007672

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster 1		,4879134	,32076714
	Combined	,4879134	,32076714



**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,5365435	,48983036	2,7769163	,62067082
	Combined	,5365435	,48983036	2,7769163	,62067082

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,5000000	,00000000
	Combined	3,5000000	,00000000

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4978 .

```

**TwoStep Cluster****Cluster 65****Cluster Distribution**

		N	% of Combined	% of Total
Cluster	1	23	30,7%	30,7%
	2	52	69,3%	69,3%
	Combined	75	100,0%	100,0%
Total		75		100,0%

**Cluster Profiles****Centroids**

		ng_LogSN		ng_LogPB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	1,8464202	1,21366872	3,3433887	,41676431
	2	2,1038360	1,35225212	1,3936040	,47127223
	Combined	2,0248951	1,30860131	1,9915380	1,01190226

**Centroids**

		ng_LogAS		ng_LogSB	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,4425087	,35737687	-,0081542	,39649708
	2	,4602946	,36680120	-,0178194	,31338398
	Combined	,4548402	,36161321	-,0148554	,33829448

**Centroids**

		ng_LogAG	
		Mean	Std. Deviation
Cluster	1	,1439117	,16390062
	2	,3633330	,20713933
	Combined	,2960438	,21893477

**Centroids**

		ng_LogNI		ng_LogBI	
		Mean	Std. Deviation	Mean	Std. Deviation
Cluster	1	,2297553	,64354177	3,2438220	,49120616
	2	,2278955	,41782079	2,7267540	,66233772
	Combined	,2284658	,49339628	2,8853215	,65703038

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	1,3855955	,74711388
	2	3,2960477	,57747294
	Combined	2,7101757	1,08733338

```

TWOSTEP CLUSTER
/CONTINUOUS VARIABLES = ng_LogSN ng_LogPB ng_LogAS ng_LogSB ng_LogAG
ng_LogNI ng_LogBI ng_LogFE
/DISTANCE LIKELIHOOD
/NUMCLUSTERS AUTO 15 BIC
/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0) MXBRANCH (8) MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4221 .

```

**TwoStep Cluster****Cluster 70**

**Cluster Distribution**

	N	% of Combined	% of Total
Cluster 1	23	100,0%	100,0%
Combined	23	100,0%	100,0%
Total	23		100,0%

**Cluster Profiles****Centroids**

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	1,8464202	1,21366872	3,3433887	,41676431
Combined	1,8464202	1,21366872	3,3433887	,41676431

**Centroids**

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,4425087	,35737687	-,0081542	,39649708
Combined	,4425087	,35737687	-,0081542	,39649708

**Centroids**

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,1439117	,16390062
Combined	,1439117	,16390062

**Centroids**

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,2297553	,64354177	3,2438220	,49120616
Combined	,2297553	,64354177	3,2438220	,49120616

**Centroids**

	ng_LogFE	
	Mean	Std. Deviation
Cluster 1	1,3855955	,74711388
Combined	1,3855955	,74711388

TWOSTEP CLUSTER

/CONTINUOUS VARIABLES = ng\_LogSN ng\_LogPB ng\_LogAS ng\_LogSB ng\_LogAG  
 ng\_LogNI ng\_LogBI ng\_LogFE  
 /DISTANCE LIKELIHOOD  
 /NUMCLUSTERS AUTO 15 BIC

```

/HANDLENOISE 0
/MEMALLOCATE 64
/CRITERIA INITHRESHOLD (0)  MXBRANCH (8)  MXLEVEL (3)
/PRINT COUNT SUMMARY
/SAVE VARIABLE=TSC_4706 .

```

## TwoStep Cluster

### Cluster 71

#### Cluster Distribution

	N	% of Combined	% of Total
Cluster 1	52	100,0%	100,0%
Combined	52	100,0%	100,0%
Total	52		100,0%

## Cluster Profiles

#### Centroids

	ng_LogSN		ng_LogPB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	2,1038360	1,35225212	1,3936040	,47127223
Combined	2,1038360	1,35225212	1,3936040	,47127223

#### Centroids

	ng_LogAS		ng_LogSB	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,4602946	,36680120	-,0178194	,31338398
Combined	,4602946	,36680120	-,0178194	,31338398

#### Centroids

	ng_LogAG	
	Mean	Std. Deviation
Cluster 1	,3633330	,20713933
Combined	,3633330	,20713933

#### Centroids

	ng_LogNI		ng_LogBI	
	Mean	Std. Deviation	Mean	Std. Deviation
Cluster 1	,2278955	,41782079	2,7267540	,66233772
Combined	,2278955	,41782079	2,7267540	,66233772

**Centroids**

		ng_LogFE	
		Mean	Std. Deviation
Cluster	1	3,2960477	,57747294
	Combined	3,2960477	,57747294