Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The UNIVARIATE Procedure
Variable: isweights

Moments			
N	44	**Sum Weights**	44
Mean	4.41818182	**Sum Observations**	194.4
Std Deviation	1.75358142	**Variance**	3.07504778
Skewness	0.76202745	**Kurtosis**	-0.3549009
Uncorrected SS	991.1216	**Corrected SS**	132.227055
Coeff Variation	39.6901143	**Std Error Mean**	0.26436235

Basic Statistical Measures			
Location		**Variability**	
Mean	4.418182	**Std Deviation**	1.75358
Median	3.875000	**Variance**	3.07505
Mode	2.800000	**Range**	6.59000
		Interquartile Range	2.07000

Note: The mode displayed is the smallest of 4 modes with a count of 2.

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	16.7126	**Pr > |t|**	<.0001
Sign	**M**	22	**Pr >= |M|**	<.0001
Signed Rank	**S**	495	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Quantile	**Estimate**
100% Max	8.720
99%	8.720
95%	7.240
90%	7.130
75% Q3	5.190
50% Median	3.875
25% Q1	3.120
10%	2.430
5%	2.280
1%	2.130
0% Min	2.130

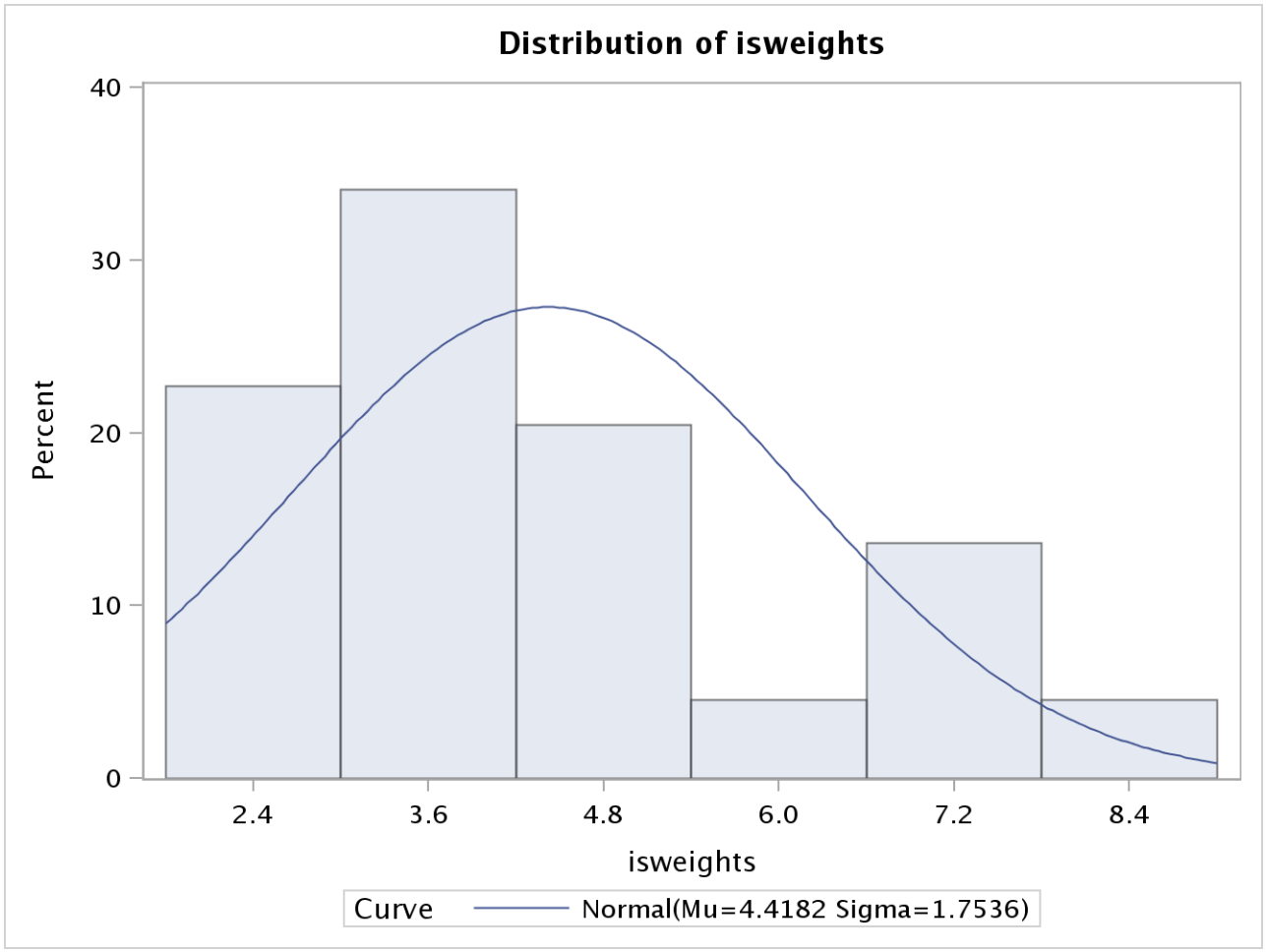
Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The UNIVARIATE Procedure
Variable: isweights

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
2.13	23	7.13	38
2.17	31	7.15	7
2.28	30	7.24	6
2.41	2	8.14	34
2.43	17	8.72	4

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The UNIVARIATE Procedure



Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The UNIVARIATE Procedure
Fitted Normal Distribution for isweights

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	4.418182
Std Dev	Sigma	1.753581

Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.14109695	**Pr > D**	0.026
Cramer-von Mises	**W-Sq**	0.19305299	**Pr > W-Sq**	0.006
Anderson-Darling	**A-Sq**	1.20207662	**Pr > A-Sq**	<0.005

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	2.13000	0.33874
5.0	2.28000	1.53380
10.0	2.43000	2.17088
25.0	3.12000	3.23541
50.0	3.87500	4.41818
75.0	5.19000	5.60095
90.0	7.13000	6.66549
95.0	7.24000	7.30257
99.0	8.72000	8.49762

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The UNIVARIATE Procedure
Variable: ln_s

Moments			
N	44	**Sum Weights**	44
Mean	1.41191507	**Sum Observations**	62.1242633
Std Deviation	0.38681494	**Variance**	0.1496258
Skewness	0.17775827	**Kurtosis**	-0.9240907
Uncorrected SS	94.1480931	**Corrected SS**	6.43390931
Coeff Variation	27.3964736	**Std Error Mean**	0.05831455

Basic Statistical Measures			
Location		**Variability**	
Mean	1.411915	**Std Deviation**	0.38681
Median	1.354538	**Variance**	0.14963
Mode	1.029619	**Range**	1.40950
		Interquartile Range	0.50898

Note: The mode displayed is the smallest of 4 modes with a count of 2.

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	24.21206	**Pr > |t|**	<.0001
Sign	**M**	22	**Pr >= |M|**	<.0001
Signed Rank	**S**	495	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Quantile	**Estimate**
100% Max	2.165619
99%	2.165619
95%	1.979621
90%	1.964311
75% Q3	1.646726
50% Median	1.354538
25% Q1	1.137751
10%	0.887891
5%	0.824175
1%	0.756122
0% Min	0.756122

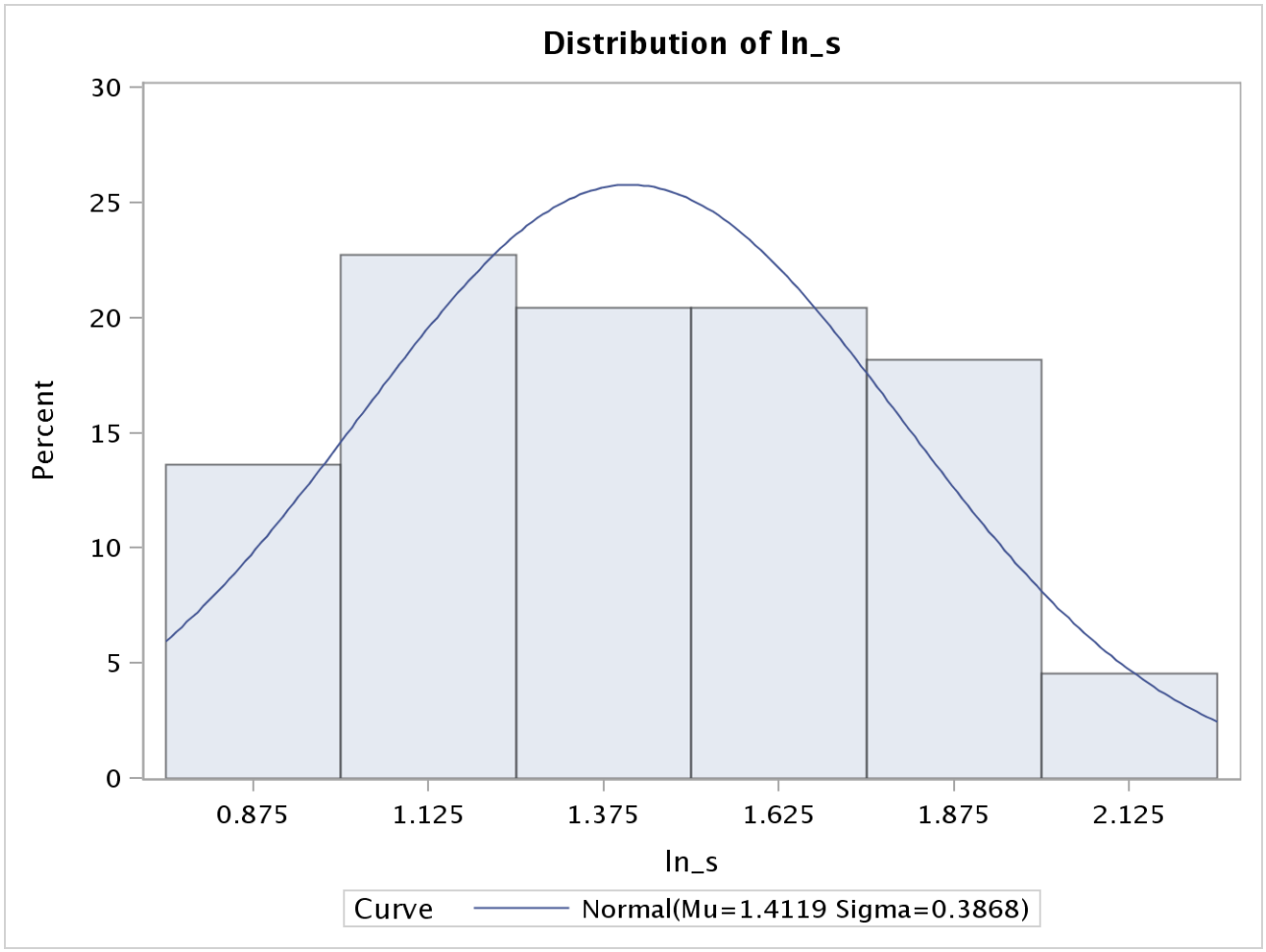
Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The UNIVARIATE Procedure
Variable: ln_s

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
0.756122	23	1.96431	38
0.774727	31	1.96711	7
0.824175	30	1.97962	6
0.879627	2	2.09679	34
0.887891	17	2.16562	4

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The UNIVARIATE Procedure



Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

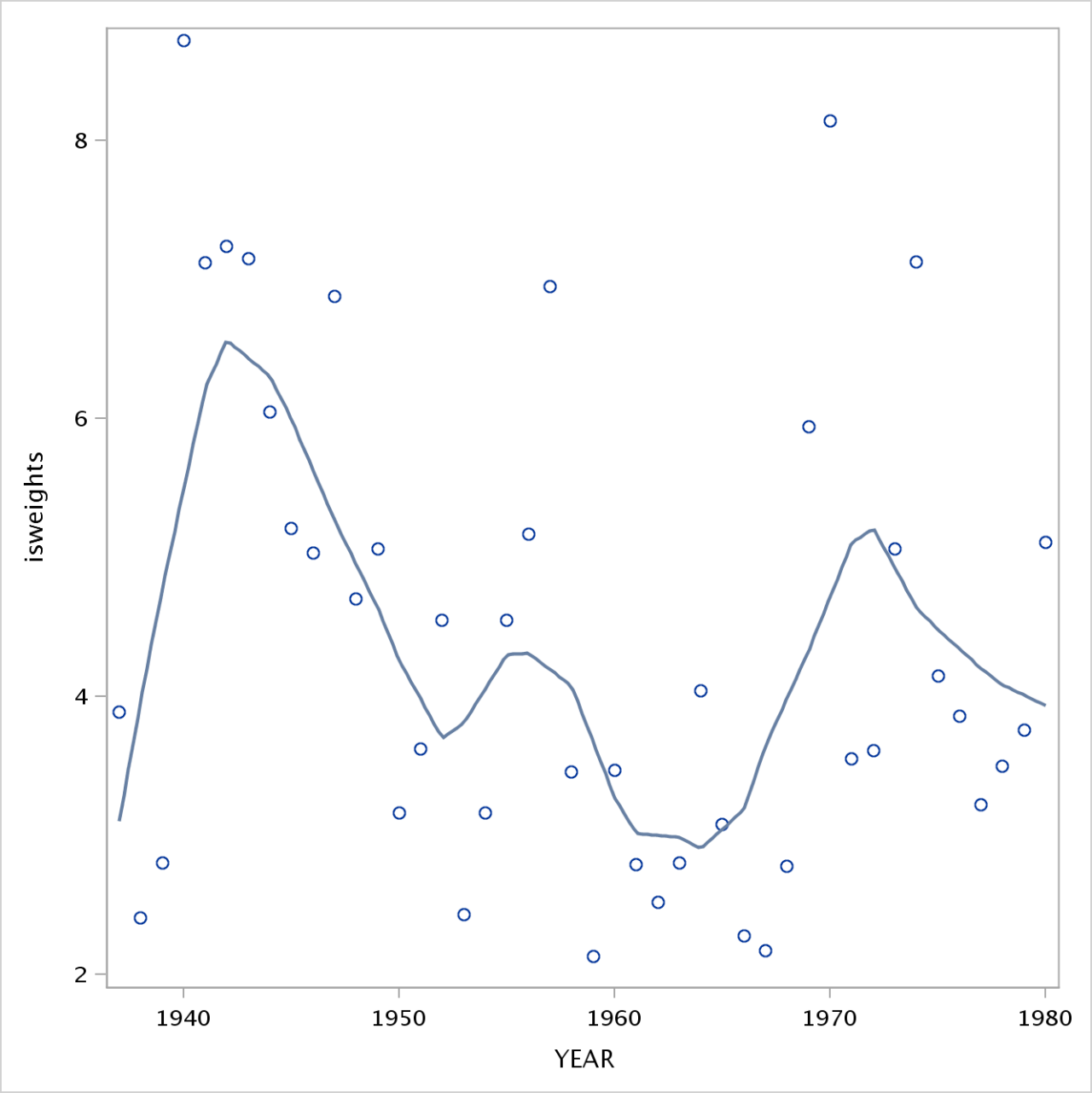
The UNIVARIATE Procedure
Fitted Normal Distribution for ln_s

Parameters for Normal Distribution		
Parameter	**Symbol**	**Estimate**
Mean	Mu	1.411915
Std Dev	Sigma	0.386815

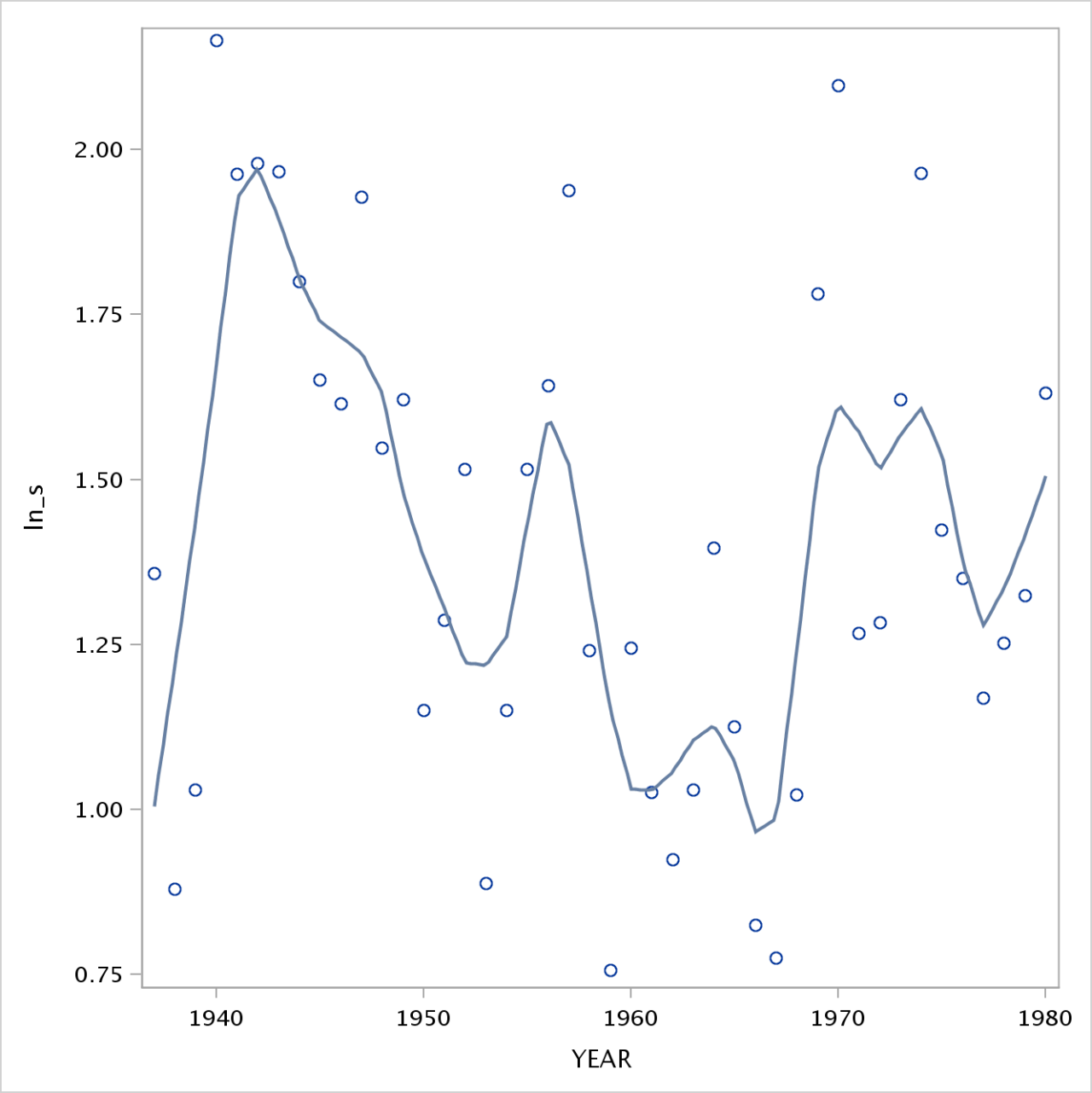
Goodness-of-Fit Tests for Normal Distribution				
Test	**Statistic**		**p Value**	
Kolmogorov-Smirnov	**D**	0.09100924	**Pr > D**	>0.150
Cramer-von Mises	**W-Sq**	0.06001402	**Pr > W-Sq**	>0.250
Anderson-Darling	**A-Sq**	0.42957213	**Pr > A-Sq**	>0.250

Quantiles for Normal Distribution		
	Quantile	
Percent	**Observed**	**Estimated**
1.0	0.75612	0.51205
5.0	0.82418	0.77566
10.0	0.88789	0.91619
25.0	1.13775	1.15101
50.0	1.35454	1.41192
75.0	1.64673	1.67282
90.0	1.96431	1.90764
95.0	1.97962	2.04817
99.0	2.16562	2.31178

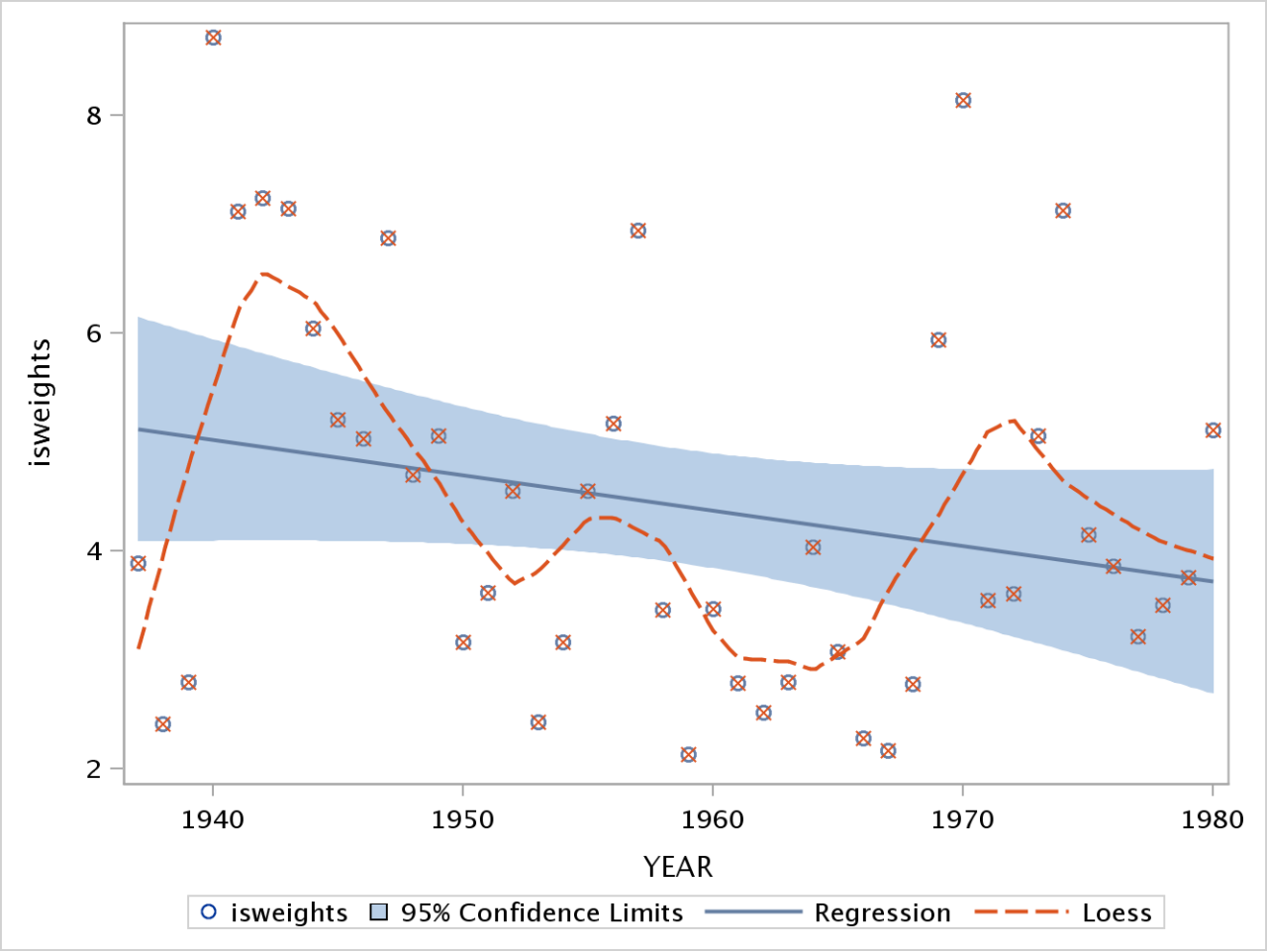
Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980



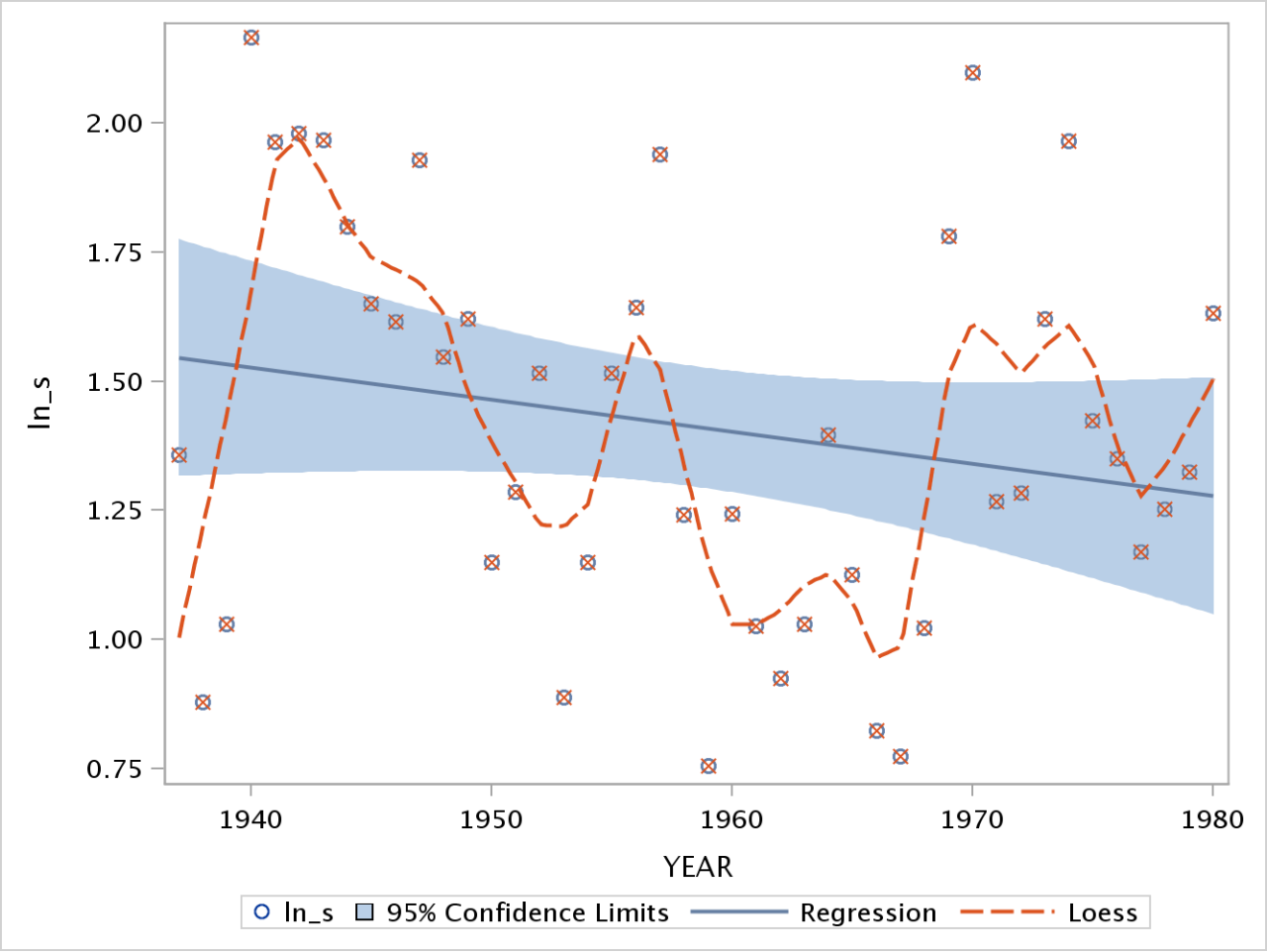
Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980



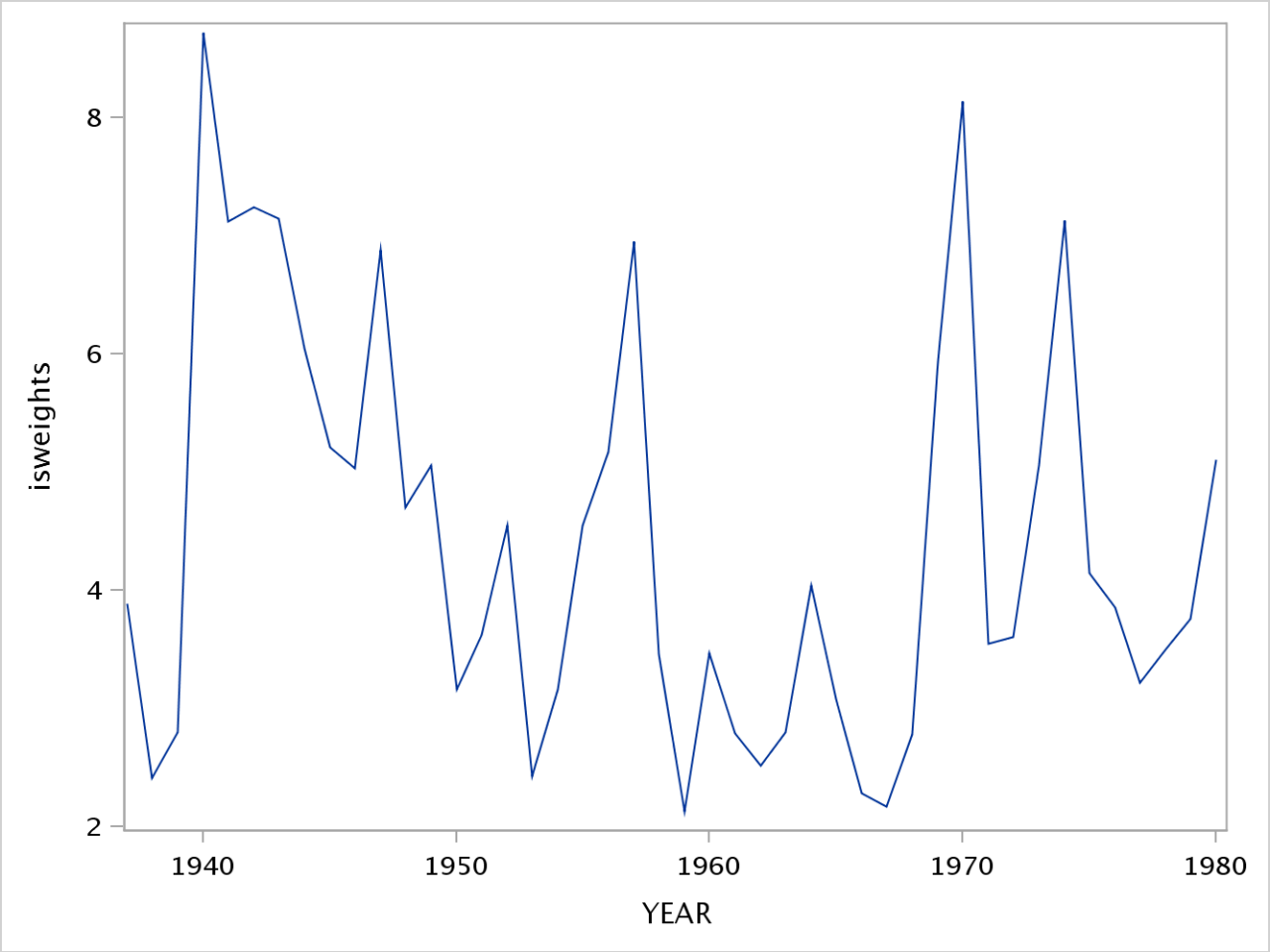
Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980



Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980



Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980



Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Name of Variable = isweights	
Mean of Working Series	4.418182
Standard Deviation	1.73354
Number of Observations	44

Autocorrelations

Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	Std Error
0	3.005160	1.00000	|**********|	0
1	1.418238	0.47193	|*********. |	0.150756
2	0.313839	0.10443	|**. |	0.181248
3	0.133835	0.04453	|*. |	0.182611
4	0.310097	0.10319	|**. |	0.182858
5	0.296534	0.09867	|**. |	0.184176
6	0.024517	0.00816	| . |	0.185374
7	-0.159424	-.05305	. *| . |	0.185382
8	-0.299770	-.09975	. **| . |	0.185727
9	-0.247158	-.08224	. **| . |	0.186940
10	-0.256881	-.08548	. **| . |	0.187761

"." marks two standard errors

Inverse Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.48107	| **********| . |
2	0.14768	| . |***. |
3	-0.01309	| . | . |
4	-0.03053	| . *| . |
5	-0.05510	| . *| . |
6	0.04941	| . |*. |
7	-0.04857	| . *| . |
8	0.07991	| . |**. |
9	-0.03744	| . *| . |
10	0.04236	| . |*. |

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Partial Autocorrelations		
Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.47193	| . |********* . |
2	-0.15218	| . ***| . |
3	0.07846	| . |** . |
4	0.08185	| . |** . |
5	0.01053	| . | . |
6	-0.05594	| . *| . |
7	-0.03333	| . *| . |
8	-0.08310	| . **| . |
9	-0.01156	| . | . |
10	-0.05715	| . *| . |

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	12.15	6	0.0586	0.472	0.104	0.045	0.103	0.099	0.008

Squared Canonical Correlation Estimates						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.2240	0.0114	0.0021	0.0135	0.0133	<.0001
AR 1	0.0233	0.0007	0.0105	0.0039	0.0132	0.0050
AR 2	0.0061	0.0103	0.0078	0.0113	0.0107	0.0092
AR 3	0.0064	0.0022	0.0001	0.0013	0.0161	0.0010
AR 4	0.0001	0.0044	0.0012	0.0001	0.0119	0.0046
AR 5	0.0043	0.0049	0.0136	0.0080	0.0074	0.0038

SCAN Chi-Square[1] Probability Values						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.0008	0.5585	0.8053	0.5647	0.5633	0.9600
AR 1	0.3143	0.8763	0.5215	0.7275	0.4954	0.7242
AR 2	0.6116	0.5686	0.6078	0.5449	0.5948	0.5890
AR 3	0.6075	0.8027	0.9547	0.8602	0.5696	0.8724
AR 4	0.9484	0.6783	0.8634	0.9524	0.5657	0.7455
AR 5	0.6832	0.6675	0.5197	0.6502	0.6891	0.7742

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Extended Sample Autocorrelation Function						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.4719	0.1044	0.0445	0.1032	0.0987	0.0082
AR 1	0.2955	-0.1171	-0.0294	0.0517	0.1089	0.0013
AR 2	0.3944	-0.0696	-0.1954	0.0752	0.1175	-0.0858
AR 3	-0.4768	0.2692	0.0186	-0.0377	0.1514	-0.0392
AR 4	-0.1089	0.2651	0.2271	-0.0258	0.1618	-0.1095
AR 5	0.1494	0.3345	0.0612	-0.0326	0.2339	-0.0851

ESACF Probability Values						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.0017	0.5645	0.8073	0.5725	0.5921	0.9649
AR 1	0.0527	0.4498	0.8513	0.7597	0.5437	0.9948
AR 2	0.0106	0.6566	0.2782	0.6704	0.5100	0.6189
AR 3	0.0023	0.1473	0.9312	0.8615	0.4308	0.8445
AR 4	0.4911	0.1941	0.1837	0.9012	0.4150	0.6013
AR 5	0.3507	0.0480	0.7586	0.8767	0.2359	0.6872

Minimum Information Criterion						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.732462	0.511187	0.584135	0.661365	0.725803	0.717396
AR 1	0.523154	0.583277	0.654785	0.714102	0.788007	0.803131
AR 2	0.566762	0.651488	0.72484	0.799218	0.868704	0.864005
AR 3	0.639815	0.702973	0.783441	0.865785	0.951405	0.949633
AR 4	0.692588	0.776282	0.861554	0.942049	1.027168	1.03551
AR 5	0.712759	0.789593	0.864307	0.948116	1.028008	1.112286

Error series model: AR(6)
Minimum Table Value: BIC(0,1) = 0.511187

ARMA(p+d,q) Tentative Order Selection Tests					
SCAN			**ESACF**		
p+d	**q**	**BIC**	**p+d**	**q**	**BIC**
1	0	0.523154	1	0	0.523154
0	1	0.511187	0	1	0.511187
			3	1	0.702973
			4	1	0.776282

(5% Significance Level)

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Random Walk with Drift Tests			
Type	**Lags**	**Tau**	**Pr < Tau**
Drift	0	-1.15	0.2566
	1	-0.87	0.3884
	2	-0.57	0.5741

Conditional Least Squares Estimation					
Parameter	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**	**Lag**
MU	4.41217	0.43509	10.14	<.0001	0
AR1,1	0.47368	0.13622	3.48	0.0012	1

Constant Estimate	2.322229
Variance Estimate	2.444518
Std Error Estimate	1.563495
AIC	166.149
SBC	169.7174
Number of Residuals	44

*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates		
Parameter	**MU**	**AR1,1**
MU	1.000	0.006
AR1,1	0.006	1.000

Autocorrelation Check of Residuals									
To Lag	**Chi-Square**	**DF**	**Pr > ChiSq**	**Autocorrelations**					
6	2.19	5	0.8224	0.074	-0.151	-0.057	0.072	0.086	-0.020
12	4.32	11	0.9597	-0.020	-0.072	-0.018	-0.006	-0.165	0.046
18	7.29	17	0.9794	0.096	0.013	0.007	-0.061	0.130	-0.102
24	12.95	23	0.9530	-0.216	-0.094	-0.081	-0.039	0.042	-0.050

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Autocorrelation Plot of Residuals

Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	Std Error
0	2.444518	1.00000	|********************|	0
1	0.179875	0.07358	| . |* . |	0.150756
2	-0.369250	-.15105	| . ***| . |	0.151570
3	-0.140093	-.05731	| . *| . |	0.154953
4	0.176888	0.07236	| . |* . |	0.155434
5	0.210970	0.08630	| . |** . |	0.156198
6	-0.048691	-.01992	| . | . |	0.157278
7	-0.049456	-.02023	| . | . |	0.157335
8	-0.175221	-.07168	| . *| . |	0.157394
9	-0.044316	-.01813	| . | . |	0.158135
10	-0.013776	-.00564	| . | . |	0.158182

"." marks two standard errors

Inverse Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.08098	| . **| . |
2	0.13185	| . |*** . |
3	0.01513	| . | . |
4	-0.04905	| . *| . |
5	-0.06910	| . *| . |
6	0.03576	| . |* . |
7	-0.01481	| . | . |
8	0.07805	| . |** . |
9	0.01456	| . | . |
10	0.02676	| . |* . |

Partial Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.07358	| . |* . |
2	-0.15732	| . ***| . |
3	-0.03389	| . *| . |
4	0.05791	| . |* . |
5	0.06418	| . |* . |
6	-0.01534	| . | . |
7	0.01004	| . | . |
8	-0.07629	| . **| . |
9	-0.01956	| . | . |
10	-0.02793	| . *| . |

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

SSE Surface on Grid Near Estimates: AR1,1 (isweights)			
MU (isweights)	**0.46868**	**0.47368**	**0.47868**
4.40717	102.67	102.67	102.67
4.41217	102.67	102.67	102.67
4.41717	102.67	102.67	102.67

Model for variable isweights	
Estimated Mean	4.412166

Autoregressive Factors	
Factor 1:	1 - 0.47368 B**(1)

Outlier Detection Summary	
Maximum number searched	1
Number found	1
Significance used	0.05

Outlier Details					
Obs	**Time ID**	**Type**	**Estimate**	**Chi-Square**	**Approx Prob>ChiSq**
4	**1940.000000**	Additive	3.88395	8.21	0.0042

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Name of Variable = ln_s	
Mean of Working Series	1.411915
Standard Deviation	0.382394
Number of Observations	44

Autocorrelations

Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	Std Error
0	0.146225	1.00000	||********************|	0
1	0.074051	0.50642	| . |********** |	0.150756
2	0.013744	0.09399	| . |** . |	0.185430
3	0.0068762	0.04702	| . |* . |	0.186510
4	0.014444	0.09878	| . |** . |	0.186779
5	0.019748	0.13505	| . |*** . |	0.187963
6	0.0059210	0.04049	| . |* . |	0.190155
7	-0.0098305	-.06723	| . *| . |	0.190351
8	-0.0098902	-.06764	| . *| . |	0.190890
9	-0.0073852	-.05051	| . *| . |	0.191434
10	-0.016937	-.11583	| . **| . |	0.191737

"." marks two standard errors

Inverse Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.57127	| **********| . |
2	0.26828	| . |***** . |
3	-0.13654	| . ***| . |
4	0.09419	| . |** . |
5	-0.11707	| . **| . |
6	0.02980	| . |* . |
7	0.00171	| . | . |
8	0.04552	| . |* . |
9	-0.06919	| . *| . |
10	0.07632	| . |** . |

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Partial Autocorrelations		
Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.50642	|. |********** |
2	-0.21850	|. **** | . |
3	0.14077	|. |*** . |
4	0.03707	|. |* . |
5	0.08030	|. |** . |
6	-0.08978	|. ** | . |
7	-0.04816	|. * | . |
8	-0.00770	|. | . |
9	-0.04411	|. * | . |
10	-0.11864	|. ** | . |

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	14.13	6	0.0282	0.506	0.094	0.047	0.099	0.135	0.040

Squared Canonical Correlation Estimates						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.2585	0.0093	0.0024	0.0118	0.0234	0.0022
AR 1	0.0504	0.0012	0.0104	0.0005	0.0241	0.0120
AR 2	0.0214	0.0100	0.0024	0.0102	0.0224	0.0005
AR 3	0.0023	0.0021	0.0174	0.0171	0.0142	0.0044
AR 4	0.0073	0.0069	0.0226	0.0005	0.0147	0.0066
AR 5	0.0099	0.0126	0.0104	0.0134	0.0078	0.0032

SCAN Chi-Square[1] Probability Values						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.0003	0.6051	0.7976	0.5970	0.4537	0.8176
AR 1	0.1359	0.8424	0.5336	0.8977	0.3664	0.5762
AR 2	0.3401	0.5843	0.7710	0.5646	0.3779	0.9032
AR 3	0.7567	0.8082	0.4516	0.5002	0.5638	0.7185
AR 4	0.5885	0.6398	0.5135	0.9155	0.5325	0.7425
AR 5	0.5335	0.5675	0.6387	0.5914	0.6868	0.8119

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Extended Sample Autocorrelation Function						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.5064	0.0940	0.0470	0.0988	0.1351	0.0405
AR 1	0.3790	-0.1975	-0.0310	0.0189	0.1381	0.0415
AR 2	0.4434	-0.1328	-0.1447	0.0279	0.1727	0.0370
AR 3	-0.2908	-0.1099	0.1132	-0.1669	0.1433	0.0576
AR 4	-0.3862	-0.1679	0.3646	-0.0365	0.2094	-0.0596
AR 5	0.4835	0.3455	0.3738	0.0788	0.1337	0.1581

ESACF Probability Values						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.0008	0.6122	0.8009	0.5969	0.4724	0.8314
AR 1	0.0129	0.2039	0.8474	0.9102	0.4057	0.8530
AR 2	0.0041	0.3999	0.3946	0.8631	0.3457	0.8436
AR 3	0.0626	0.5346	0.5192	0.3485	0.4365	0.7745
AR 4	0.0146	0.3081	0.0308	0.8378	0.3156	0.7924
AR 5	0.0025	0.0677	0.0297	0.6822	0.5271	0.4016

Minimum Information Criterion						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	-2.21399	-2.49682	-2.4312	-2.3501	-2.28181	-2.29479
AR 1	-2.46982	-2.43328	-2.36654	-2.29512	-2.21331	-2.20905
AR 2	-2.44491	-2.36132	-2.2909	-2.21105	-2.13014	-2.14038
AR 3	-2.38718	-2.31003	-2.22424	-2.13931	-2.07147	-2.07714
AR 4	-2.31752	-2.23171	-2.15117	-2.07717	-1.99784	-1.99713
AR 5	-2.29363	-2.20875	-2.15084	-2.06606	-1.99222	-1.92126

Error series model: AR(6)
Minimum Table Value: BIC(0,1) = -2.49682

ARMA(p+d,q) Tentative Order Selection Tests					
SCAN			**ESACF**		
p+d	**q**	**BIC**	**p+d**	**q**	**BIC**
1	0	-2.46982	0	1	-2.49682
0	1	-2.49682	1	1	-2.43328
			2	1	-2.36132
			5	3	-2.06606

(5% Significance Level)

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Random Walk with Drift Tests			
Type	**Lags**	**Tau**	**Pr < Tau**
Drift	0	-0.75	0.4602
	1	-0.51	0.6124
	2	-0.27	0.7852

Conditional Least Squares Estimation					
Parameter	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**	**Lag**
MU	1.41434	0.10023	14.11	<.0001	0
AR1,1	0.51023	0.13339	3.83	0.0004	1

Constant Estimate	0.69271
Variance Estimate	0.113605
Std Error Estimate	0.337053
AIC	31.11841
SBC	34.68679
Number of Residuals	44

*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates		
Parameter	**MU**	**AR1,1**
MU	1.000	0.019
AR1,1	0.019	1.000

Autocorrelation Check of Residuals									
To Lag	**Chi-Square**	**DF**	**Pr > ChiSq**	**Autocorrelations**					
6	4.11	5	0.5339	0.114	-0.221	-0.054	0.038	0.132	0.016
12	7.35	11	0.7705	-0.085	-0.027	0.039	-0.057	-0.187	0.077
18	8.53	17	0.9540	0.062	0.010	0.014	-0.061	0.062	-0.067
24	14.90	23	0.8983	-0.254	-0.058	-0.080	-0.047	0.030	-0.006

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Autocorrelation Plot of Residuals				
Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	Std Error
0	0.113605	1.00000	|********************|	0
1	0.012984	0.11429	|** . |	0.150756
2	-0.025137	-.22127	| . ****| . |	0.152712
3	-0.0061284	-.05394	| . *| . |	0.159833
4	0.0042758	0.03764	| . |* . |	0.160246
5	0.015008	0.13211	| . |*** . |	0.160447
6	0.0017943	0.01579	| . | . |	0.162900
7	-0.0096477	-.08492	| . **| . |	0.162935
8	-0.0030881	-.02718	| . *| . |	0.163938
9	0.0044789	0.03943	| . |* . |	0.164040
10	-0.0064603	-.05687	| . *| . |	0.164255

"." marks two standard errors

Inverse Autocorrelations		
Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.17963	| . ****| . |
2	0.22990	| . |*****. |
3	-0.06502	| . *| . |
4	0.05383	| . |* . |
5	-0.12813	| . ***| . |
6	0.02013	| . | . |
7	0.00695	| . | . |
8	0.05319	| . |* . |
9	-0.04000	| . *| . |
10	0.08506	| . |** . |

Partial Autocorrelations		
Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.11429	| . |** . |
2	-0.23743	| .*****| . |
3	0.00482	| . | . |
4	-0.00849	| . | . |
5	0.12466	| . |** . |
6	-0.01335	| . | . |
7	-0.03140	| . *| . |
8	-0.00731	| . | . |
9	0.01689	| . | . |
10	-0.09432	| . **| . |

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

SSE Surface on Grid Near Estimates: AR1,1 (ln_s)			
MU (ln_s)	**0.50523**	**0.51023**	**0.51523**
1.40934	4.7718	4.7717	4.7718
1.41434	4.7716	4.7714	4.7716
1.41934	4.7719	4.7717	4.7718

Model for variable ln_s	
Estimated Mean	1.414345

Autoregressive Factors	
Factor 1:	1 - 0.51023 B**(1)

Outlier Detection Summary	
Maximum number searched	1
Number found	1
Significance used	0.05

Outlier Details					
Obs	**Time ID**	**Type**	**Estimate**	**Chi-Square**	**Approx Prob>ChiSq**
4	**1940.000000**	Additive	0.68495	3.86	0.0495

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Name of Variable = isweights	
Period(s) of Differencing	1
Mean of Working Series	0.028372
Standard Deviation	1.797006
Number of Observations	43
Observation(s) eliminated by differencing	1

Autocorrelations				
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	**Std Error**
0	3.229232	1.00000	||********************|	0
1	-0.491114	-.15208	| . ***| . |	0.152499
2	-0.937418	-.29029	| ******| . |	0.155986
3	-0.283757	-.08787	| . **| . |	0.168081
4	0.166367	0.05152	| . |* . |	0.169146
5	0.263217	0.08151	| . |** . |	0.169510
6	-0.139274	-.04313	| . *| . |	0.170419
7	-0.024294	-.00752	| . | . |	0.170673
8	-0.183529	-.05683	| . *| . |	0.170681
9	0.063348	0.01962	| . | . |	0.171120
10	0.115740	0.03584	| . |* . |	0.171172

"." marks two standard errors

Inverse Autocorrelations		
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.49983	| . |********** |
2	0.50476	| . |********** |
3	0.35575	| . |******* |
4	0.26015	| . |*****. |
5	0.17580	| . |**** . |
6	0.17438	| . |*** . |
7	0.10456	| . |** . |
8	0.10385	| . |** . |
9	0.04170	| . |* . |
10	0.01975	| . | . |

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Partial Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.15208	| . ***| . |
2	-0.32084	| . ******| . |
3	-0.22250	| . ****| . |
4	-0.13489	| . ***| . |
5	-0.04296	| . *| . |
6	-0.08561	| . **| . |
7	-0.02353	| . | . |
8	-0.10003	| . **| . |
9	-0.04439	| . *| . |
10	-0.03022	| . *| . |

Autocorrelation Check for White Noise

To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	5.98	6	0.4250	-0.152	-0.290	-0.088	0.052	0.082	-0.043

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Name of Variable = isweights	
Period(s) of Differencing	1
Mean of Working Series	0.028372
Standard Deviation	1.797006
Number of Observations	43
Observation(s) eliminated by differencing	1

Autocorrelations				
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	**Std Error**
0	3.229232	1.00000	||********************|	0
1	-0.491114	-.15208	| . ***| . |	0.152499
2	-0.937418	-.29029	| ******| . |	0.155986
3	-0.283757	-.08787	| . **| . |	0.168081
4	0.166367	0.05152	| . |* . |	0.169146
5	0.263217	0.08151	| . |** . |	0.169510
6	-0.139274	-.04313	| . *| . |	0.170419
7	-0.024294	-.00752	| . | . |	0.170673
8	-0.183529	-.05683	| . *| . |	0.170681
9	0.063348	0.01962	| . | . |	0.171120
10	0.115740	0.03584	| . |* . |	0.171172

"." marks two standard errors

Inverse Autocorrelations		
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.49983	| . |********** |
2	0.50476	| . |********** |
3	0.35575	| . |******* |
4	0.26015	| . |*****. |
5	0.17580	| . |**** . |
6	0.17438	| . |*** . |
7	0.10456	| . |** . |
8	0.10385	| . |** . |
9	0.04170	| . |* . |
10	0.01975	| . | . |

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Partial Autocorrelations		
Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.15208	| . ***| . |
2	-0.32084	| ******| . |
3	-0.22250	| . ****| . |
4	-0.13489	| . ***| . |
5	-0.04296	| . *| . |
6	-0.08561	| . **| . |
7	-0.02353	| . | . |
8	-0.10003	| . **| . |
9	-0.04439	| . *| . |
10	-0.03022	| . *| . |

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	5.98	6	0.4250	-0.152	-0.290	-0.088	0.052	0.082	-0.043

Squared Canonical Correlation Estimates						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.0238	0.0869	0.0107	0.0038	0.0095	0.0028
AR 1	0.1096	0.0169	0.0077	0.0155	0.0105	0.0020
AR 2	0.0499	0.0020	0.0002	0.0043	0.0077	0.0139
AR 3	0.0194	0.0003	0.0057	0.0026	0.0004	0.0104
AR 4	0.0035	0.0059	0.0020	0.0067	0.0073	0.0035
AR 5	0.0097	0.0081	0.0019	0.0010	0.0026	0.0025

SCAN Chi-Square[1] Probability Values						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.3087	0.0563	0.5373	0.7306	0.5975	0.7795
AR 1	0.0272	0.4868	0.6109	0.5605	0.5937	0.8430
AR 2	0.1475	0.8164	0.9484	0.7687	0.6886	0.6021
AR 3	0.3760	0.9309	0.7242	0.7921	0.9135	0.5755
AR 4	0.7120	0.6728	0.7990	0.6677	0.6858	0.7726
AR 5	0.5430	0.6566	0.8213	0.8768	0.7984	0.8224

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Extended Sample Autocorrelation Function						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	-0.1521	-0.2903	-0.0879	0.0515	0.0815	-0.0431
AR 1	-0.3893	-0.1528	-0.2070	0.0548	0.1027	-0.0537
AR 2	-0.4774	0.1669	-0.0242	-0.1006	0.0952	-0.0580
AR 3	-0.3878	0.0978	-0.0402	-0.0891	0.0286	-0.1216
AR 4	-0.3545	-0.1442	-0.2905	-0.1442	0.0017	-0.1622
AR 5	-0.4131	-0.4131	0.1292	0.1302	-0.2543	0.0145

ESACF Probability Values						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.3186	0.0627	0.6011	0.7607	0.6306	0.8002
AR 1	0.0116	0.3664	0.2559	0.7621	0.5697	0.7501
AR 2	0.0022	0.4284	0.9134	0.6200	0.5921	0.7541
AR 3	0.0142	0.6305	0.8688	0.5842	0.8628	0.5647
AR 4	0.0268	0.4045	0.1385	0.3882	0.9920	0.3655
AR 5	0.0109	0.0109	0.4924	0.5211	0.1883	0.9320

Minimum Information Criterion						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.834725	0.834182	0.782979	0.848268	0.907986	0.973012
AR 1	0.90451	0.81801	0.857663	0.935738	0.986809	1.060466
AR 2	0.849993	0.836179	0.915189	0.982277	1.040053	1.102773
AR 3	0.814491	0.89239	0.979755	1.063212	1.126731	1.190025
AR 4	0.870445	0.957877	1.044974	1.130437	1.207862	1.276958
AR 5	0.945922	1.032717	1.11922	1.193912	1.277281	1.364227

Error series model: AR(5)
Minimum Table Value: BIC(0,2) = 0.782979

ARMA(p+d,q) Tentative Order Selection Tests					
SCAN			**ESACF**		
p+d	**q**	**BIC**	**p+d**	**q**	**BIC**
0	1	0.834182	0	0	0.834725
2	0	0.849993	2	1	0.836179
			3	1	0.89239
			4	1	0.957877

(5% Significance Level)

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Random Walk with Drift Tests			
Type	**Lags**	**Tau**	**Pr < Tau**
Drift	0	-7.49	<.0001
	1	-6.62	<.0001
	2	-6.30	<.0001

Conditional Least Squares Estimation					
Parameter	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**	**Lag**
MU	0.02833	0.24106	0.12	0.9070	0
AR1,1	-0.15402	0.15534	-0.99	0.3272	1

Constant Estimate	0.032689
Variance Estimate	3.307424
Std Error Estimate	1.818632
AIC	175.416
SBC	178.9384
Number of Residuals	43

*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates		
Parameter	**MU**	**AR1,1**
MU	1.000	0.017
AR1,1	0.017	1.000

Autocorrelation Check of Residuals									
To Lag	**Chi-Square**	**DF**	**Pr > ChiSq**	**Autocorrelations**					
6	7.05	5	0.2167	-0.050	-0.343	-0.130	0.054	0.088	-0.029
12	9.64	11	0.5632	-0.027	-0.060	0.018	0.017	-0.185	0.063
18	13.86	17	0.6771	0.121	0.020	-0.001	-0.053	0.197	-0.045
24	17.50	23	0.7838	-0.179	-0.029	-0.031	0.010	0.090	-0.036

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Autocorrelation Plot of Residuals

Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	Std Error
0	3.307424	1.00000	|**********|	0
1	-0.163822	-.04953	. *| .	0.152499
2	-1.132981	-.34256	*******| .	0.152872
3	-0.429957	-.13000	. ***| .	0.169788
4	0.178859	0.05408	. |* .	0.172087
5	0.290858	0.08794	. |** .	0.172482
6	-0.097565	-.02950	. *| .	0.173521
7	-0.089454	-.02705	. *| .	0.173638
8	-0.197825	-.05981	. *| .	0.173736
9	0.060435	0.01827	. | .	0.174214
10	0.056923	0.01721	. | .	0.174258

"." marks two standard errors

Inverse Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.34224	. |*******
2	0.47158	. |*********
3	0.29807	. |******
4	0.23358	. |*****.
5	0.14937	. |*** .
6	0.17227	. |*** .
7	0.09564	. |** .
8	0.12042	. |** .
9	0.03908	. |* .
10	0.04269	. |* .

Partial Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.04953	. *| .
2	-0.34586	*******| .
3	-0.19353	. ****| .
4	-0.11329	. **| .
5	-0.03914	. *| .
6	-0.07847	. **| .
7	-0.02823	. *| .
8	-0.10216	. **| .
9	-0.03362	. *| .
10	-0.05895	. *| .

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

SSE Surface on Grid Near Estimates: AR1,1 (isweights)			
MU (isweights)	**-0.15902**	**-0.15402**	**-0.14902**
0.02333	135.61	135.61	135.61
0.02833	135.61	135.60	135.61
0.03333	135.61	135.61	135.61

Model for variable isweights	
Estimated Mean	0.028327
Period(s) of Differencing	1

Autoregressive Factors	
Factor 1:	1 + 0.15402 B**(1)

Outlier Detection Summary	
Maximum number searched	1
Number found	1
Significance used	0.05

Outlier Details					
Obs	**Time ID**	**Type**	**Estimate**	**Chi-Square**	**Approx Prob>ChiSq**
4	**1940.000000**	Shift	5.70110	15.59	<.0001

Forecasts for variable isweights				
Obs	**Forecast**	**Std Error**	**95% Confidence Limits**	
45	4.9348	1.8186	1.3703	8.4992
46	4.9944	2.3821	0.3256	9.6633
47	5.0179	2.8594	-0.5864	10.6223
48	5.0470	3.2645	-1.3513	11.4453
49	5.0752	3.6250	-2.0297	12.1801

Iron and Steel Exports Excluding Scraps
Weight in Million Tons
1937 -1980

The ARIMA Procedure

Name of Variable = isweights	
Period(s) of Differencing	1
Mean of Working Series	0.028372
Standard Deviation	1.797006
Number of Observations	43
Observation(s) eliminated by differencing	1

Autocorrelations				
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	**Std Error**
0	3.229232	1.00000	||********************|	0
1	-0.491114	-.15208	| . ***| . |	0.152499
2	-0.937418	-.29029	| ******| . |	0.155986
3	-0.283757	-.08787	| . **| . |	0.168081
4	0.166367	0.05152	| . |* . |	0.169146
5	0.263217	0.08151	| . |** . |	0.169510
6	-0.139274	-.04313	| . *| . |	0.170419
7	-0.024294	-.00752	| . | . |	0.170673
8	-0.183529	-.05683	| . *| . |	0.170681
9	0.063348	0.01962	| . | . |	0.171120
10	0.115740	0.03584	| . |* . |	0.171172

"." marks two standard errors

Inverse Autocorrelations			
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	
1	0.49983	| . |********** |	
2	0.50476	| . |********** |	
3	0.35575	| . |******* |	
4	0.26015	| . |*****. |	
5	0.17580	| . |**** . |	
6	0.17438	| . |*** . |	
7	0.10456	| . |** . |	
8	0.10385	| . |** . |	
9	0.04170	| . |* . |	
10	0.01975	| . | . |	

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Partial Autocorrelations		
Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.15208	| . ***| . |
2	-0.32084	| . ******| . |
3	-0.22250	| . ****| . |
4	-0.13489	| . ***| . |
5	-0.04296	| . *| . |
6	-0.08561	| . **| . |
7	-0.02353	| . | . |
8	-0.10003	| . **| . |
9	-0.04439	| . *| . |
10	-0.03022	| . *| . |

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	5.98	6	0.4250	-0.152	-0.290	-0.088	0.052	0.082	-0.043

Squared Canonical Correlation Estimates						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.0238	0.0869	0.0107	0.0038	0.0095	0.0028
AR 1	0.1096	0.0169	0.0077	0.0155	0.0105	0.0020
AR 2	0.0499	0.0020	0.0002	0.0043	0.0077	0.0139
AR 3	0.0194	0.0003	0.0057	0.0026	0.0004	0.0104
AR 4	0.0035	0.0059	0.0020	0.0067	0.0073	0.0035
AR 5	0.0097	0.0081	0.0019	0.0010	0.0026	0.0025

SCAN Chi-Square[1] Probability Values						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.3087	0.0563	0.5373	0.7306	0.5975	0.7795
AR 1	0.0272	0.4868	0.6109	0.5605	0.5937	0.8430
AR 2	0.1475	0.8164	0.9484	0.7687	0.6886	0.6021
AR 3	0.3760	0.9309	0.7242	0.7921	0.9135	0.5755
AR 4	0.7120	0.6728	0.7990	0.6677	0.6858	0.7726
AR 5	0.5430	0.6566	0.8213	0.8768	0.7984	0.8224

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Extended Sample Autocorrelation Function						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	-0.1521	-0.2903	-0.0879	0.0515	0.0815	-0.0431
AR 1	-0.3893	-0.1528	-0.2070	0.0548	0.1027	-0.0537
AR 2	-0.4774	0.1669	-0.0242	-0.1006	0.0952	-0.0580
AR 3	-0.3878	0.0978	-0.0402	-0.0891	0.0286	-0.1216
AR 4	-0.3545	-0.1442	-0.2905	-0.1442	0.0017	-0.1622
AR 5	-0.4131	-0.4131	0.1292	0.1302	-0.2543	0.0145

ESACF Probability Values						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.3186	0.0627	0.6011	0.7607	0.6306	0.8002
AR 1	0.0116	0.3664	0.2559	0.7621	0.5697	0.7501
AR 2	0.0022	0.4284	0.9134	0.6200	0.5921	0.7541
AR 3	0.0142	0.6305	0.8688	0.5842	0.8628	0.5647
AR 4	0.0268	0.4045	0.1385	0.3882	0.9920	0.3655
AR 5	0.0109	0.0109	0.4924	0.5211	0.1883	0.9320

Minimum Information Criterion						
Lags	**MA 0**	**MA 1**	**MA 2**	**MA 3**	**MA 4**	**MA 5**
AR 0	0.834725	0.834182	0.782979	0.848268	0.907986	0.973012
AR 1	0.90451	0.81801	0.857663	0.935738	0.986809	1.060466
AR 2	0.849993	0.836179	0.915189	0.982277	1.040053	1.102773
AR 3	0.814491	0.89239	0.979755	1.063212	1.126731	1.190025
AR 4	0.870445	0.957877	1.044974	1.130437	1.207862	1.276958
AR 5	0.945922	1.032717	1.11922	1.193912	1.277281	1.364227

Error series model: AR(5)
Minimum Table Value: BIC(0,2) = 0.782979

ARMA(p+d,q) Tentative Order Selection Tests					
SCAN			**ESACF**		
p+d	**q**	**BIC**	**p+d**	**q**	**BIC**
0	1	0.834182	0	0	0.834725
2	0	0.849993	2	1	0.836179
			3	1	0.89239
			4	1	0.957877

(5% Significance Level)

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Augmented Dickey-Fuller Unit Root Tests							
Type	**Lags**	**Rho**	**Pr < Rho**	**Tau**	**Pr < Tau**	**F**	**Pr > F**
Zero Mean	0	-48.4589	<.0001	-7.49	<.0001		
	1	-93.0468	<.0001	-6.62	<.0001		
	2	-307.130	0.0001	-6.30	<.0001		
Single Mean	0	-48.4563	0.0003	-7.40	0.0001	27.41	0.0010
	1	-93.0669	0.0003	-6.54	0.0001	21.40	0.0010
	2	-306.182	0.0001	-6.22	0.0002	19.42	0.0010
Trend	0	-48.4966	<.0001	-7.31	<.0001	26.75	0.0010
	1	-93.7244	<.0001	-6.47	<.0001	20.93	0.0010
	2	-280.543	0.0001	-6.04	0.0001	19.07	0.0010

Warning: The model defined by the new estimates is unstable. The iteration process has been terminated.

Warning: Estimates may not have converged.

ARIMA Estimation Optimization Summary	
Estimation Method	Conditional Least Squares
Parameters Estimated	3
Termination Criteria	Maximum Relative Change in Estimates
Iteration Stopping Value	0.001
Criteria Value	0.454554
Maximum Absolute Value of Gradient	8.388645
R-Square Change from Last Iteration	0.033889
Objective Function	Sum of Squared Residuals
Objective Function Value	105.5058
Marquardt's Lambda Coefficient	1E-12
Numerical Derivative Perturbation Delta	0.001
Iterations	25
Warning Message	Estimates may not have converged.

Conditional Least Squares Estimation					
Parameter	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**	**Lag**
MU	0.01073	0.02749	0.39	0.6983	0
MA1,1	0.47981	0.13876	3.46	0.0013	1
MA1,2	0.52019	0.14404	3.61	0.0008	2

Constant Estimate	0.010731
Variance Estimate	2.637645
Std Error Estimate	1.624083
AIC	166.624

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SBC	171.9076
Number of Residuals	43

*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates			
Parameter	**MU**	**MA1,1**	**MA1,2**
MU	1.000	0.142	0.281
MA1,1	0.142	1.000	-0.874
MA1,2	0.281	-0.874	1.000

Autocorrelation Check of Residuals									
To Lag	**Chi-Square**	**DF**	**Pr > ChiSq**	**Autocorrelations**					
6	2.42	4	0.6583	0.074	0.142	0.022	0.115	0.104	0.004
12	4.11	10	0.9424	0.013	-0.061	-0.043	0.002	-0.144	0.041
18	7.34	16	0.9661	0.051	-0.005	0.047	-0.098	0.099	-0.139
24	14.02	22	0.9008	-0.190	-0.123	-0.117	-0.087	0.017	-0.073

Autocorrelation Plot of Residuals				
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	**Std Error**
0	2.637645	1.00000	|********************|	0
1	0.195010	0.07393	| . |* . |	0.152499
2	0.373686	0.14167	| . |*** . |	0.153330
3	0.058044	0.02201	| . | . |	0.156345
4	0.302179	0.11456	| . |** . |	0.156417
5	0.274003	0.10388	| . |** . |	0.158356
6	0.010011	0.00380	| . | . |	0.159933
7	0.033381	0.01266	| . | . |	0.159935
8	-0.162124	-.06147	| . *| . |	0.159958
9	-0.112162	-.04252	| . *| . |	0.160507
10	0.0060547	0.00230	| . | . |	0.160768

"." marks two standard errors

Iron and Steel Exports Excluding Scraps
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Inverse Autocorrelations		
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.03640	| . *| . |
2	-0.11137	| . **| . |
3	0.02063	| . | . |
4	-0.11386	| . **| . |
5	-0.09731	| . **| . |
6	0.02196	| . | . |
7	-0.01030	| . | . |
8	0.06647	| . |* . |
9	0.05679	| . |* . |
10	-0.01876	| . | . |

Partial Autocorrelations		
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.07393	| . |* . |
2	0.13696	| . |*** . |
3	0.00291	| . | . |
4	0.09589	| . |** . |
5	0.09028	| . |** . |
6	-0.03670	| . *| . |
7	-0.01203	| . | . |
8	-0.07118	| . *| . |
9	-0.05751	| . *| . |
10	0.01969	| . | . |

SSE Surface on Grid Near Estimates: MA1,1 (isweights)			
MU (isweights)	**0.47481**	**0.47981**	**0.48481**
0.0057311	105.72	105.80	106.00
0.01073	105.62	105.51	105.46
0.01573	106.06	105.82	105.59

SSE Surface on Grid Near Estimates: MA1,2 (isweights)			
MU (isweights)	**0.51519**	**0.52019**	**0.52519**
0.0057311	105.72	105.80	106.00
0.01073	105.61	105.51	105.46
0.01573	106.06	105.82	105.59

Iron and Steel Exports Excluding Scraps
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SSE Surface on Grid Near Estimates: MA1,2 (isweights)			
MA1,1 (isweights)	**0.51519**	**0.52019**	**0.52519**
0.47481	105.76	105.62	105.51
0.47981	105.61	105.51	105.46
0.48481	105.51	105.46	105.51

Model for variable isweights	
Estimated Mean	0.010731
Period(s) of Differencing	1

Moving Average Factors	
Factor 1:	1 - 0.47981 B**(1) - 0.52019 B**(2)

Outlier Detection Summary	
Maximum number searched	1
Number found	1
Significance used	0.05

Outlier Details					
Obs	**Time ID**	**Type**	**Estimate**	**Chi-Square**	**Approx Prob>ChiSq**
4	**1940.000000**	Additive	3.80661	6.02	0.0142

Forecasts for variable isweights				
Obs	**Forecast**	**Std Error**	**95% Confidence Limits**	
45	4.8898	1.6241	1.7067	8.0730
46	4.3729	1.8307	0.7848	7.9610
47	4.3836	1.8307	0.7956	7.9717
48	4.3944	1.8307	0.8063	7.9824
49	4.4051	1.8307	0.8170	7.9932

Iron and Steel Exports Excluding Scraps
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The ARIMA Procedure

Name of Variable = isweights	
Period(s) of Differencing	1
Mean of Working Series	0.028372
Standard Deviation	1.797006
Number of Observations	43
Observation(s) eliminated by differencing	1

Autocorrelations				
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	**Std Error**
0	3.229232	1.00000	||********************|	0
1	-0.491114	-.15208	| . ***| . |	0.152499
2	-0.937418	-.29029	| ******| . |	0.155986
3	-0.283757	-.08787	| . **| . |	0.168081
4	0.166367	0.05152	| . |* . |	0.169146
5	0.263217	0.08151	| . |** . |	0.169510
6	-0.139274	-.04313	| . *| . |	0.170419
7	-0.024294	-.00752	| . | . |	0.170673
8	-0.183529	-.05683	| . *| . |	0.170681
9	0.063348	0.01962	| . | . |	0.171120
10	0.115740	0.03584	| . |* . |	0.171172

"." marks two standard errors

Inverse Autocorrelations		
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.49983	| . |********** |
2	0.50476	| . |********** |
3	0.35575	| . |******* |
4	0.26015	| . |*****. |
5	0.17580	| . |**** . |
6	0.17438	| . |*** . |
7	0.10456	| . |** . |
8	0.10385	| . |** . |
9	0.04170	| . |* . |
10	0.01975	| . | . |

Iron and Steel Exports Excluding Scraps
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Partial Autocorrelations

Lag	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.15208	| . ***| . |
2	-0.32084	| ******| . |
3	-0.22250	| . ****| . |
4	-0.13489	| . ***| . |
5	-0.04296	| . *| . |
6	-0.08561	| . **| . |
7	-0.02353	| . | . |
8	-0.10003	| . **| . |
9	-0.04439	| . *| . |
10	-0.03022	| . *| . |

Autocorrelation Check for White Noise

To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	5.98	6	0.4250	-0.152	-0.290	-0.088	0.052	0.082	-0.043

Warning: The model defined by the new estimates is unstable. The iteration process has been terminated.

Warning: Estimates may not have converged.

ARIMA Estimation Optimization Summary

Estimation Method	Conditional Least Squares
Parameters Estimated	4
Termination Criteria	Maximum Relative Change in Estimates
Iteration Stopping Value	0.001
Criteria Value	0.138886
Maximum Absolute Value of Gradient	25.9409
R-Square Change from Last Iteration	0.100403
Objective Function	Sum of Squared Residuals
Objective Function Value	103.085
Marquardt's Lambda Coefficient	1E-7
Numerical Derivative Perturbation Delta	0.001
Iterations	10
Warning Message	Estimates may not have converged.

Iron and Steel Exports Excluding Scraps
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The ARIMA Procedure

Conditional Least Squares Estimation

Parameter	Estimate	Standard Error	t Value	Approx Pr > |t|	Lag
MU	0.0078158	0.03877	0.20	0.8413	0
MA1,1	0.71974	0.30508	2.36	0.0234	1
MA1,2	0.28026	0.28201	0.99	0.3265	2
AR1,1	0.32275	0.29930	1.08	0.2875	1

Constant Estimate	0.005293
Variance Estimate	2.643204
Std Error Estimate	1.625793
AIC	167.6259
SBC	174.6707
Number of Residuals	43

*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates

Parameter	MU	MA1,1	MA1,2	AR1,1
MU	1.000	0.350	-0.120	0.324
MA1,1	0.350	1.000	-0.964	0.859
MA1,2	-0.120	-0.964	1.000	-0.818
AR1,1	0.324	0.859	-0.818	1.000

Autocorrelation Check of Residuals

To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	0.90	3	0.8243	-0.017	-0.017	0.017	0.082	0.101	-0.014
12	3.04	9	0.9626	0.013	-0.062	-0.020	0.026	-0.165	0.058
18	6.38	15	0.9726	0.062	-0.007	0.034	-0.098	0.141	-0.104
24	10.92	21	0.9643	-0.185	-0.062	-0.089	-0.054	0.047	-0.054

Autocorrelation Plot of Residuals

Lag	Covariance	Correlation	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	Std Error
0	2.643204	1.00000	|********************|	0
1	-0.044670	-.01690	| . | . |	0.152499
2	-0.046004	-.01740	| . | . |	0.152542
3	0.045200	0.01710	| . | . |	0.152588
4	0.217688	0.08236	| . |** . |	0.152633
5	0.266023	0.10064	| . |** . |	0.153663
6	-0.037647	-.01424	| . | . |	0.155188
7	0.035664	0.01349	| . | . |	0.155219
8	-0.163657	-.06192	| . * | . |	0.155246

Iron and Steel Exports Excluding Scraps
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Autocorrelation Plot of Residuals				
Lag	**Covariance**	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1	**Std Error**
9	-0.052596	-.01990	| . | . |	0.155819
10	0.068142	0.02578	| . |* . |	0.155878

"." marks two standard errors

Inverse Autocorrelations		
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	0.03981	| . |* . |
2	0.01726	| . | . |
3	-0.03610	| . * | . |
4	-0.10575	| . ** | . |
5	-0.10963	| . ** | . |
6	0.00936	| . | . |
7	-0.00739	| . | . |
8	0.07317	| . |* . |
9	0.03868	| . |* . |
10	-0.01237	| . | . |

Partial Autocorrelations		
Lag	**Correlation**	-1 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 1
1	-0.01690	| . | . |
2	-0.01770	| . | . |
3	0.01651	| . | . |
4	0.08269	| . |** . |
5	0.10494	| . |** . |
6	-0.00729	| . | . |
7	0.01374	| . | . |
8	-0.07371	| . * | . |
9	-0.04056	| . * | . |
10	0.01274	| . | . |

SSE Surface on Grid Near Estimates: MA1,1 (isweights)			
MU (isweights)	**0.71474**	**0.71974**	**0.72474**
0.0028158	103.51	103.55	103.73
0.0078158	103.22	103.08	103.04
0.01282	103.29	103.03	102.80

Iron and Steel Exports Excluding Scraps
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SSE Surface on Grid Near Estimates: MA1,2 (isweights)			
MU (isweights)	**0.27526**	**0.28026**	**0.28526**
0.0028158	103.50	103.55	103.74
0.0078158	103.21	103.08	103.05
0.01282	103.28	103.03	102.81

SSE Surface on Grid Near Estimates: AR1,1 (isweights)			
MU (isweights)	**0.31775**	**0.32275**	**0.32775**
0.0028158	103.54	103.55	103.56
0.0078158	103.07	103.08	103.11
0.01282	103.01	103.03	103.05

SSE Surface on Grid Near Estimates: MA1,2 (isweights)			
MA1,1 (isweights)	**0.27526**	**0.28026**	**0.28526**
0.71474	103.40	103.22	103.10
0.71974	103.21	103.08	103.05
0.72474	103.08	103.04	103.14

SSE Surface on Grid Near Estimates: AR1,1 (isweights)			
MA1,1 (isweights)	**0.31775**	**0.32275**	**0.32775**
0.71474	103.20	103.22	103.25
0.71974	103.07	103.08	103.11
0.72474	103.03	103.04	103.05

SSE Surface on Grid Near Estimates: AR1,1 (isweights)			
MA1,2 (isweights)	**0.31775**	**0.32275**	**0.32775**
0.27526	103.20	103.21	103.23
0.28026	103.07	103.08	103.11
0.28526	103.04	103.05	103.07

Iron and Steel Exports Excluding Scraps
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The ARIMA Procedure

Model for variable isweights	
Estimated Mean	0.007816
Period(s) of Differencing	1

Autoregressive Factors	
Factor 1:	1 - 0.32275 B**(1)

Moving Average Factors	
Factor 1:	1 - 0.71974 B**(1) - 0.28026 B**(2)

Outlier Detection Summary	
Maximum number searched	1
Number found	1
Significance used	0.05

Outlier Details

Obs	Time ID	Type	Estimate	Chi-Square	Approx Prob>ChiSq
4	**1940.000000**	Additive	3.83277	11.40	0.0007