ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
CONTENTS OF GRAINS DATASET

The CONTENTS Procedure

Data Set Name	HOME.GRAINS	**Observations**	571
Member Type	DATA	**Variables**	16
Engine	V9	**Indexes**	0
Created	04/22/2022 19:17:13	**Observation Length**	160
Last Modified	04/22/2022 19:17:13	**Deleted Observations**	0
Protection		**Compressed**	NO
Data Set Type		**Sorted**	YES
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
Data Set Page Size	131072
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	818
Obs in First Data Page	571
Number of Data Set Repairs	0
Filename	/home/u59465388/SAS-Grain-Prices/grains.sas7bdat
Release Created	9.0401M6
Host Created	Linux
Inode Number	4409549951
Access Permission	rw-r--r--
Owner Name	u59465388
File Size	256KB
File Size (bytes)	262144

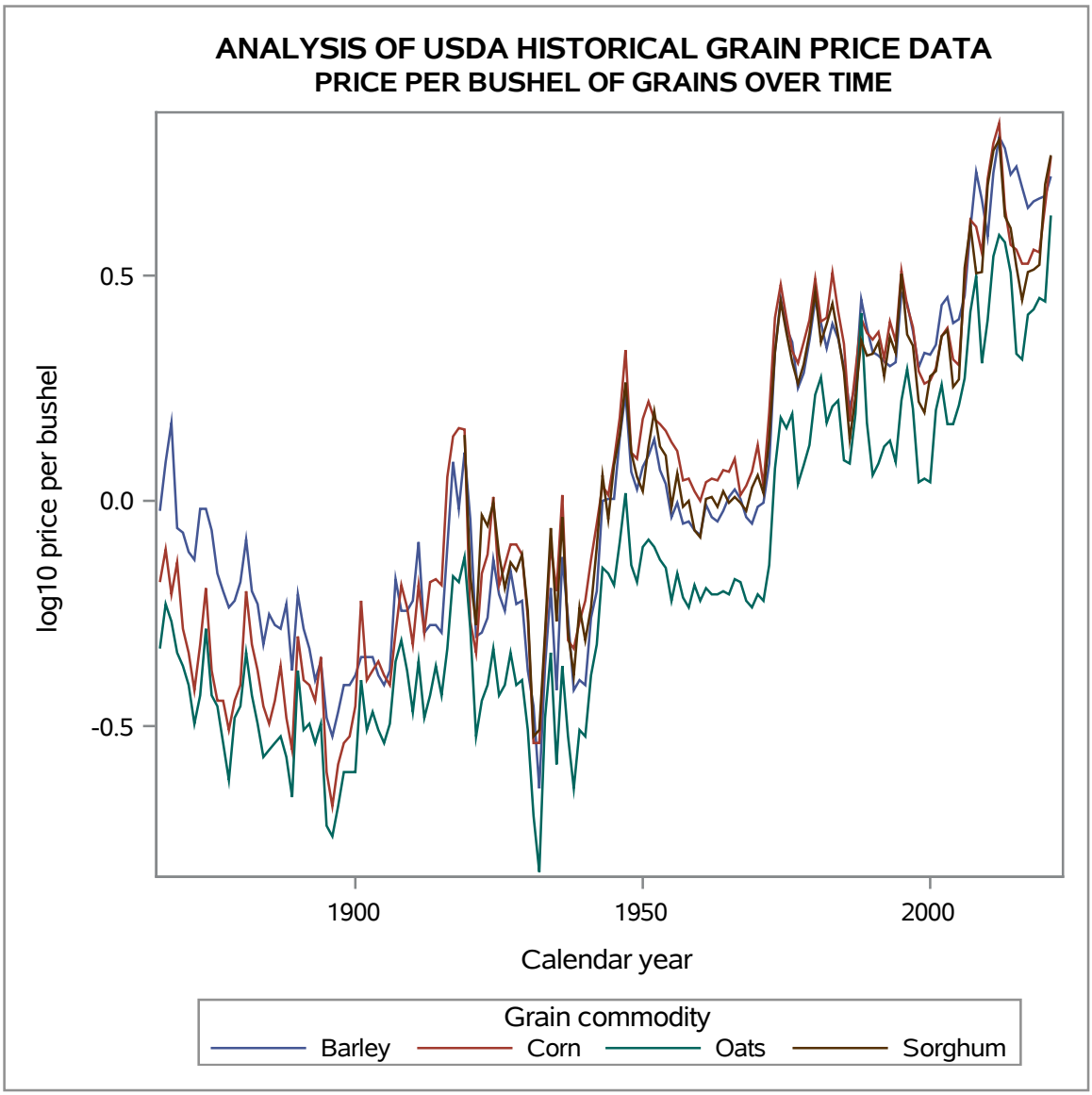
Alphabetic List of Variables and Attributes				
#	**Variable**	**Type**	**Len**	**Label**
3	ACR	Num	8	Acerage (M)
1	GRN	Char	8	Grain commodity
4	HVT	Num	8	Acres harvested (M)
12	INFL	Num	8	Rate of inflation
8	LNR	Num	8	Loan rate per bushel
10	LPE	Num	8	log10 price per bushel

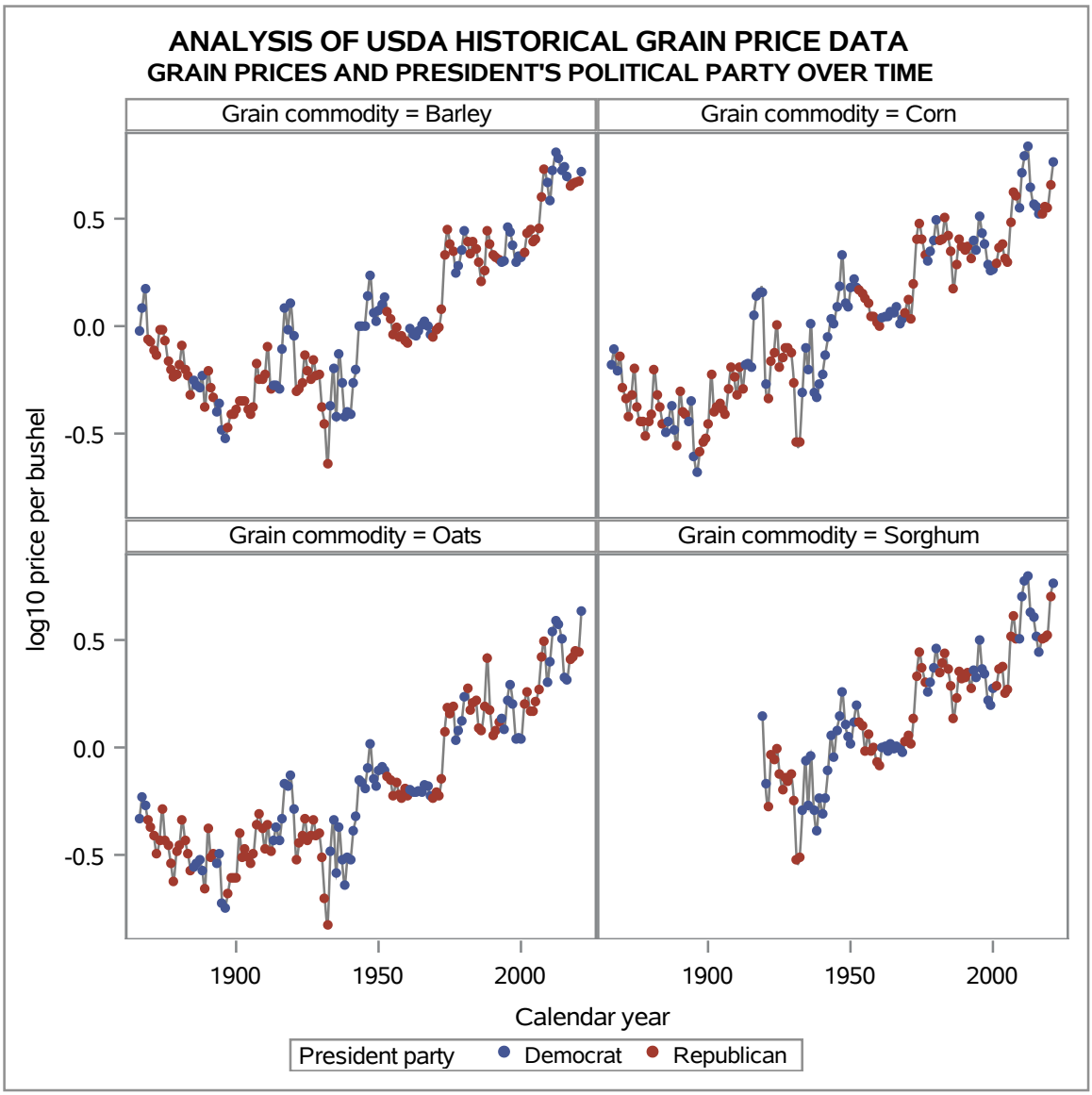
Job run by Zane Billings on 22APR22 at 20:31

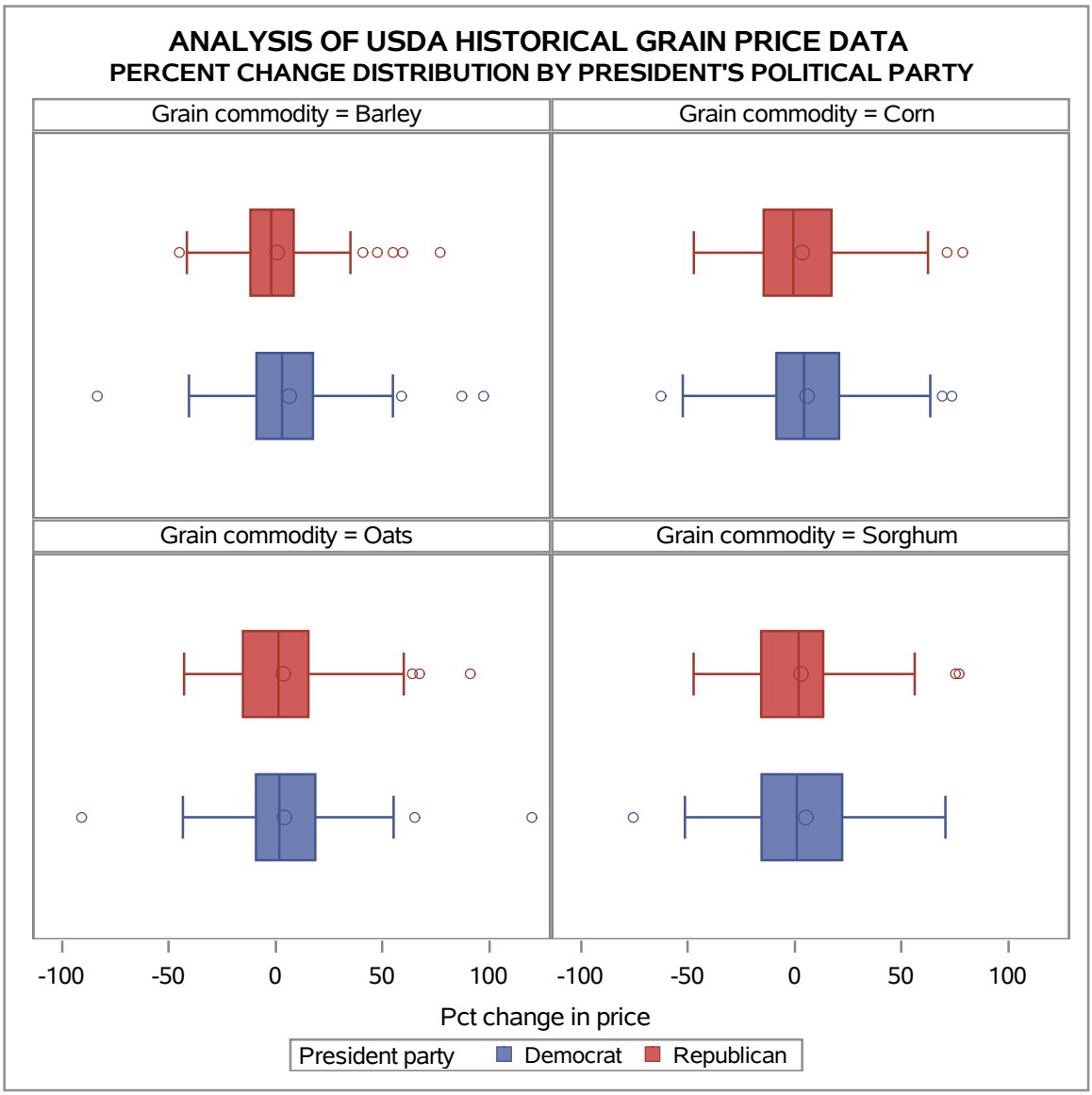
The CONTENTS Procedure

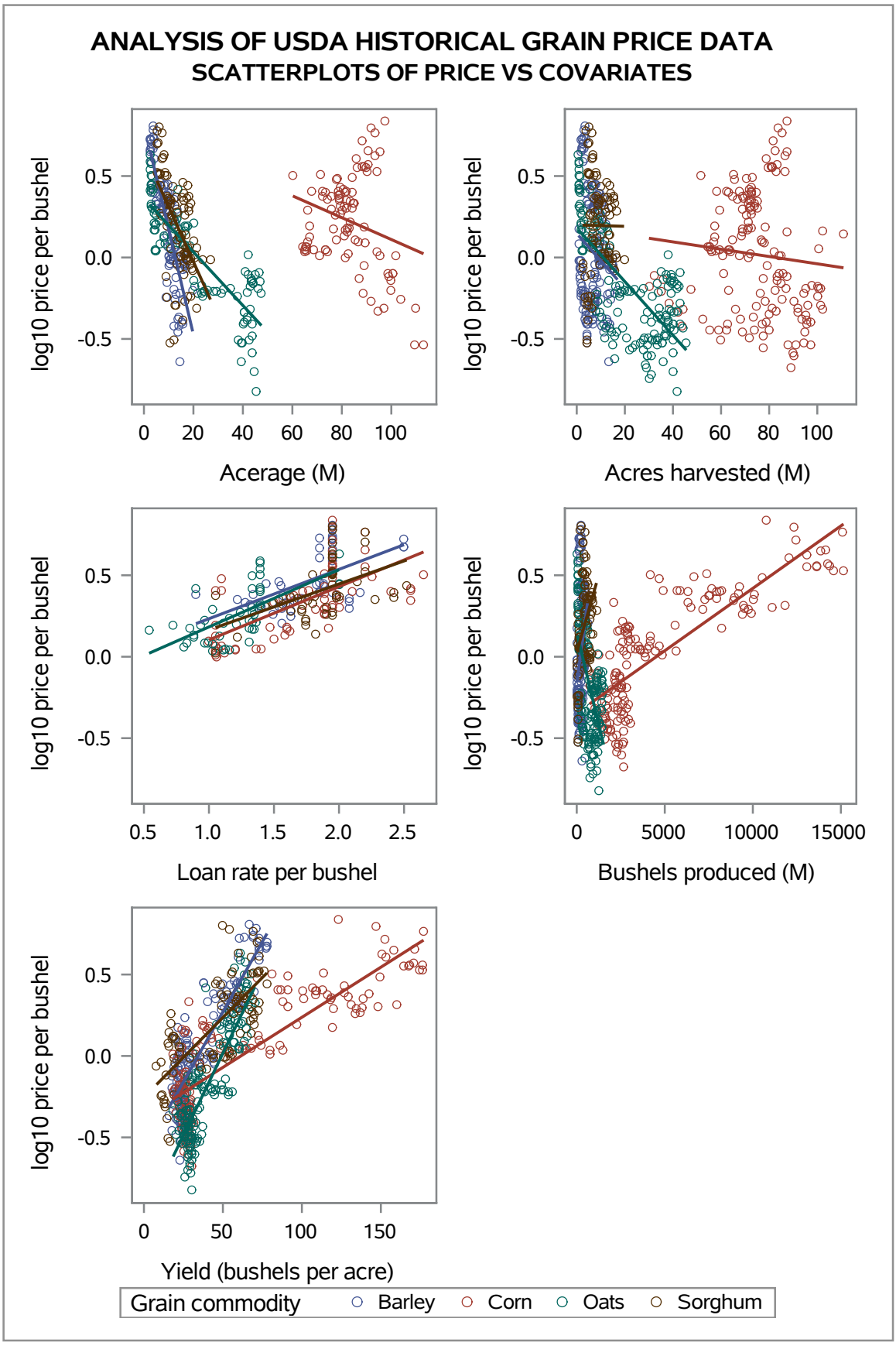
Alphabetic List of Variables and Attributes				
#	**Variable**	**Type**	**Len**	**Label**
15	PARTY	Char	25	President party
7	PCE	Num	8	Price per bushel
9	PCT	Num	8	Pct change in price
5	PRD	Num	8	Bushels produced (M)
14	PRES	Char	20	President name
13	PWR	Num	8	Buying power
16	TEMP	Num	8	Temperature diff. (deg. C)
11	VALUE	Num	8	Adjusted value
2	YEAR	Num	8	Calendar year
6	YLD	Num	8	Yield (bushels per acre)

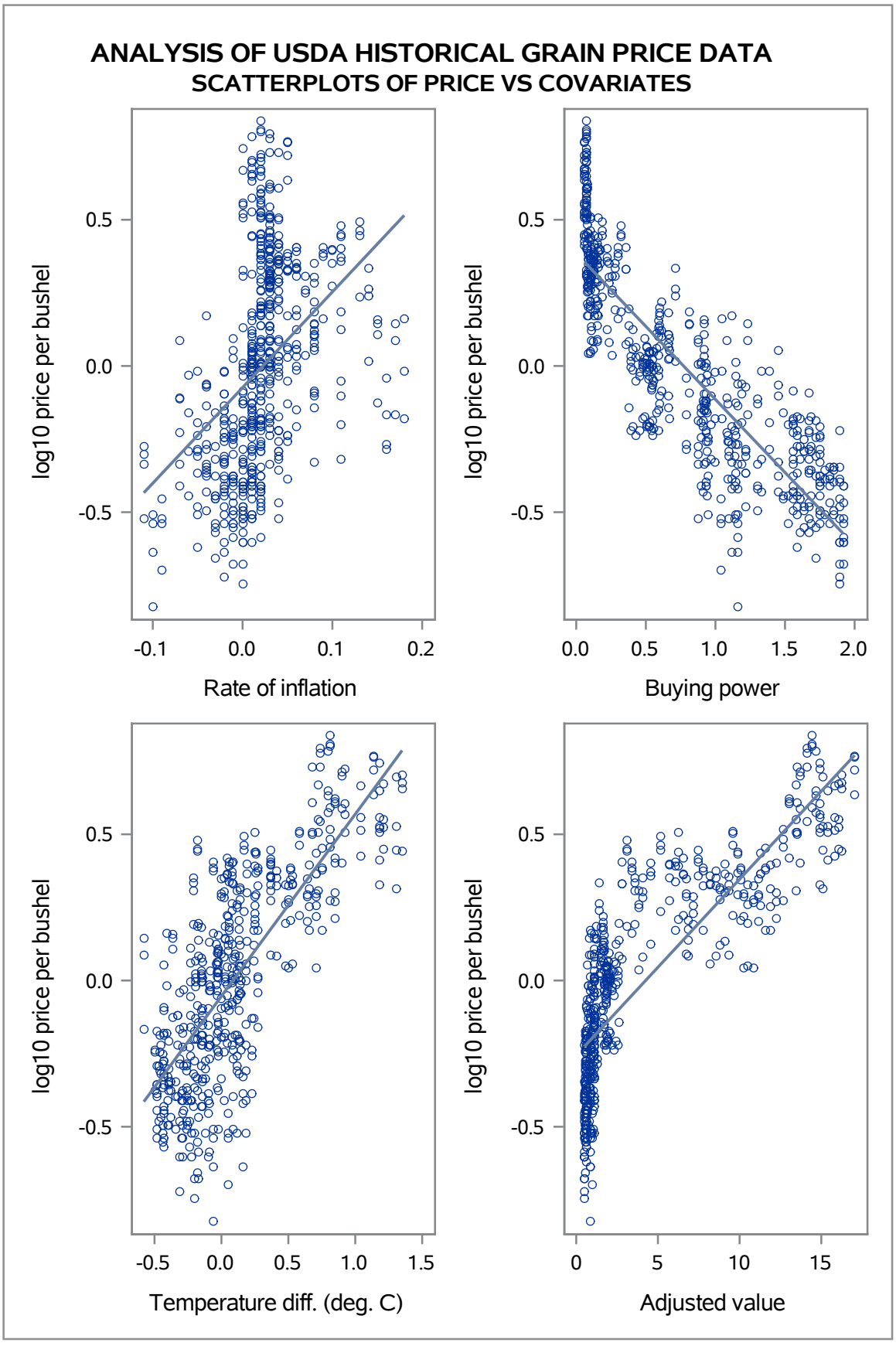
Sort Information	
Sortedby	GRN YEAR
Validated	YES
Character Set	ASCII

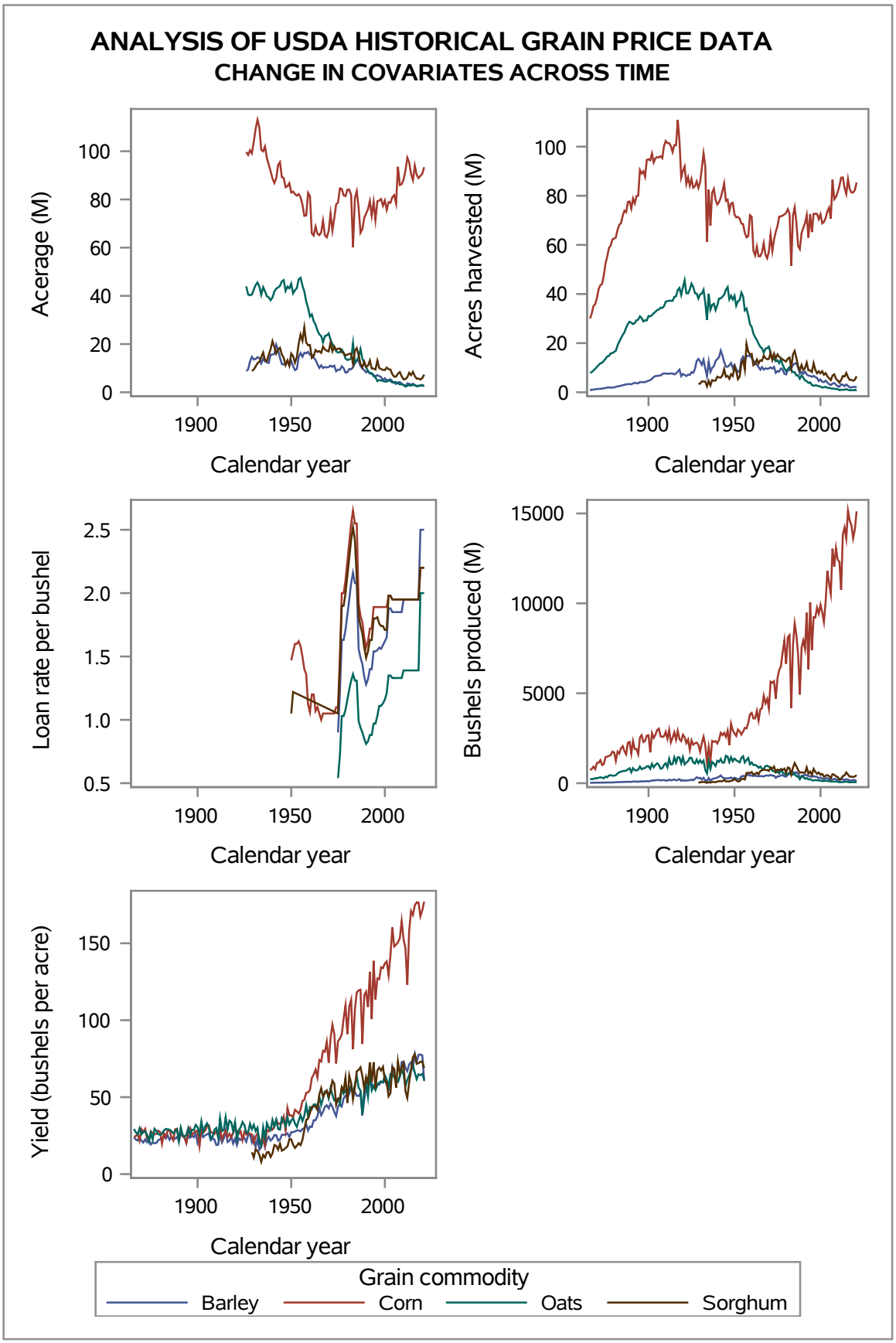

ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
PRICE PER BUSHEL OF GRAINS OVER TIME
log10 price per bushel
0.5
0.0
-0.5
1900
1950
2000
Calendar year
Grain commodity
Barley
Corn
Oats
Sorghum

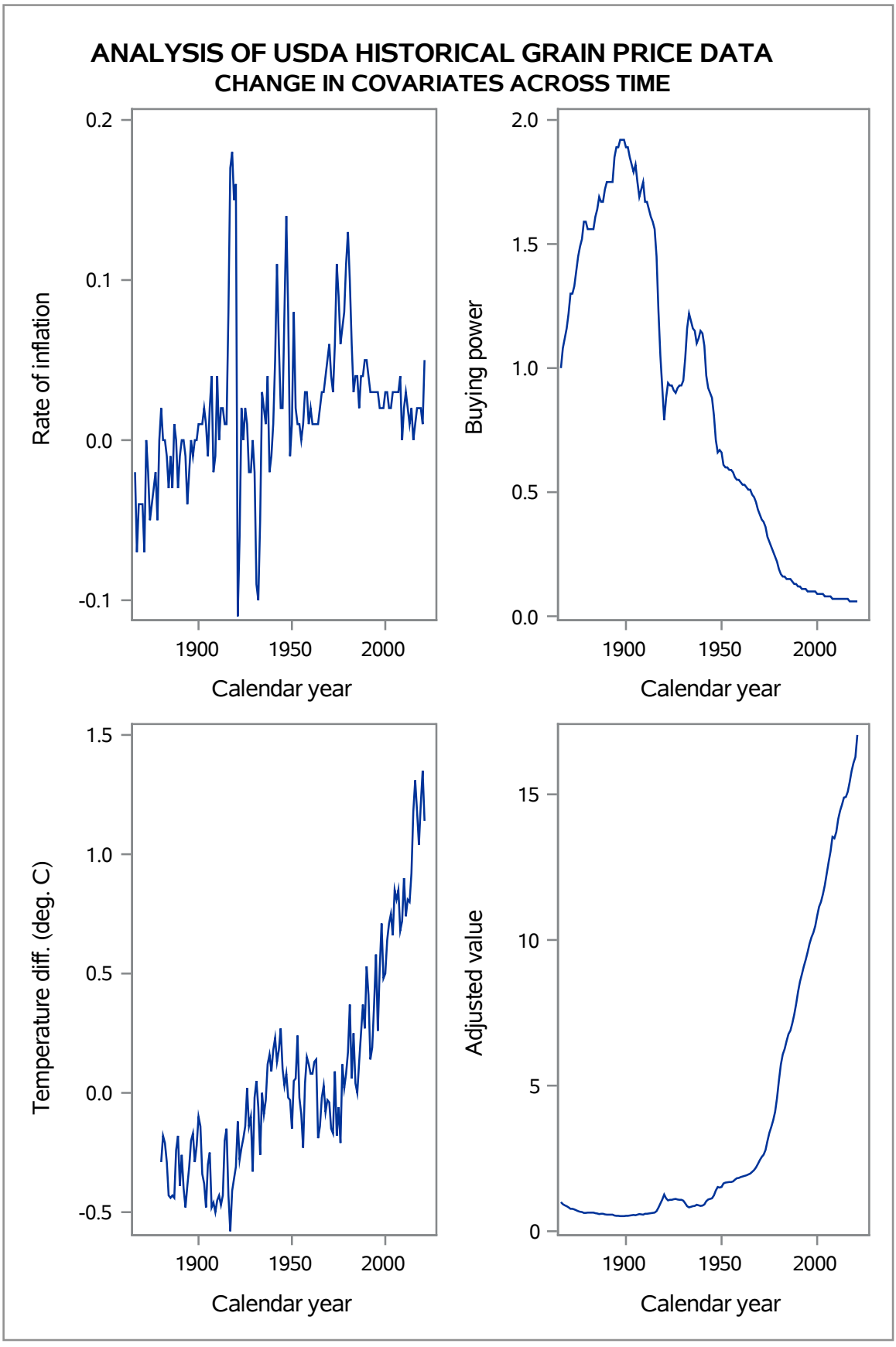

ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
GRAIN PRICES AND PRESIDENT'S POLITICAL PARTY OVER TIME
Grain commodity = Barley
Grain commodity = Corn
Grain commodity = Oats
Grain commodity = Sorghum
log10 price per bushel
0.5
0.0
-0.5
1900
1950
2000
Calendar year
President party
Democrat
Republican


ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
PERCENT CHANGE DISTRIBUTION BY PRESIDENT'S POLITICAL PARTY
Grain commodity = Barley
Grain commodity = Corn
Grain commodity = Oats
Grain commodity = Sorghum
-100
-50
0
50
100
Pct change in price
President party
Democrat
Republican


ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
SCATTERPLOTS OF PRICE VS COVARIATES
log10 price per bushel
0.5
0.0
-0.5
0
20
40
60
80
100
Acerage (M)
Acres harvested (M)
0.5
1.0
1.5
2.0
2.5
Loan rate per bushel
5000
10000
15000
Bushels produced (M)
50
100
150
Yield (bushels per acre)
Grain commodity
Barley
Corn
Oats
Sorghum


ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
SCATTERPLOTS OF PRICE VS COVARIATES
log10 price per bushel
0.5
0.0
-0.5
-0.1
0.0
0.1
0.2
Rate of inflation
log10 price per bushel
0.5
0.0
-0.5
0.0
0.5
1.0
1.5
2.0
Buying power
log10 price per bushel
0.5
0.0
-0.5
-0.5
0.0
0.5
1.0
1.5
Temperature diff. (deg. C)
log10 price per bushel
0.5
0.0
-0.5
0
5
10
15
Adjusted value


ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
CHANGE IN COVARIATES ACROSS TIME
Acerage (M)
Acres harvested (M)
Loan rate per bushel
Bushels produced (M)
Yield (bushels per acre)
Calendar year
1900
1950
2000
Grain commodity
Barley
Corn
Oats
Sorghum


ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
CHANGE IN COVARIATES ACROSS TIME
Rate of inflation
0.2
0.1
0.0
-0.1
1900
1950
2000
Calendar year
Buying power
2.0
1.5
1.0
0.5
0.0
1900
1950
2000
Calendar year
Temperature diff. (deg. C)
1.5
1.0
0.5
0.0
-0.5
1900
1950
2000
Calendar year
Adjusted value
15
10
5
0
1900
1950
2000
Calendar year

The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Barley

Moments			
N	156	**Sum Weights**	156
Mean	0.02934465	**Sum Observations**	4.57776484
Std Deviation	0.34244617	**Variance**	0.11726938
Skewness	0.49208948	**Kurtosis**	-0.6915247
Uncorrected SS	18.3110869	**Corrected SS**	18.176754
Coeff Variation	1166.98006	**Std Error Mean**	0.02741764

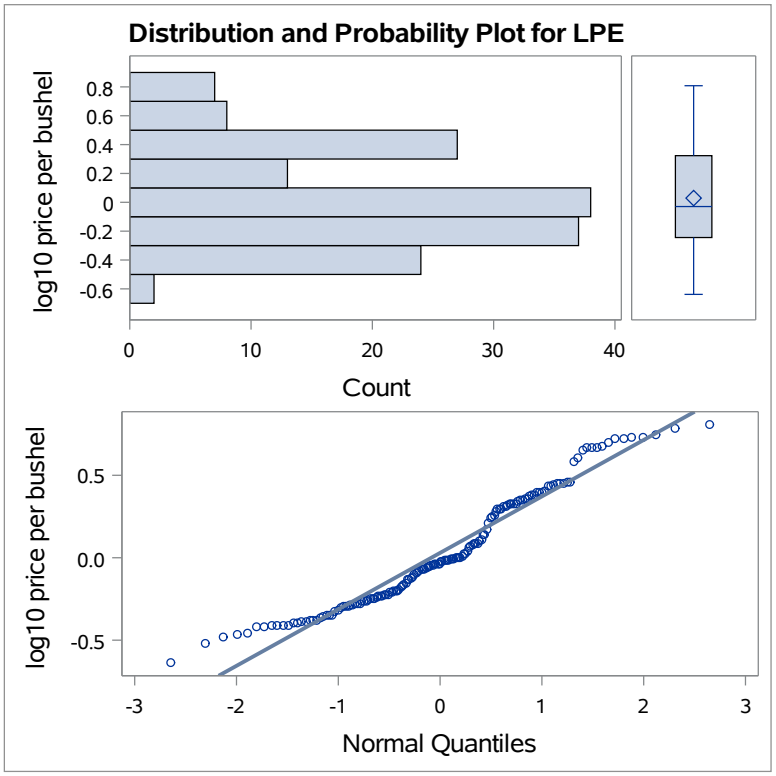
Basic Statistical Measures			
Location		**Variability**	
Mean	0.02934	**Std Deviation**	0.34245
Median	-0.02924	**Variance**	0.11727
Mode	-0.40894	**Range**	1.44648
		Interquartile Range	0.56738

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	1.070284	**Pr > |t|**	0.2862
Sign	**M**	-9.5	**Pr >= |M|**	0.1480
Signed Rank	**S**	262	**Pr >= |S|**	0.6412

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	0.8082110
99%	0.7824726
95%	0.6954817
90%	0.4608978
75% Q3	0.3232509
50% Median	-0.0292443
25% Q1	-0.2441251
10%	-0.3767507
5%	-0.4089354
1%	-0.5228787
0% Min	-0.6382722

The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Barley

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-0.638272	67	0.728354	146
-0.522879	31	0.729974	143
-0.481486	30	0.741939	150
-0.468521	32	0.782473	148
-0.455932	66	0.808211	147



The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Corn

Moments			
N	156	**Sum Weights**	156
Mean	0.01785547	**Sum Observations**	2.78545281
Std Deviation	0.36155338	**Variance**	0.13072085
Skewness	0.16806346	**Kurtosis**	-0.9939676
Uncorrected SS	20.3114672	**Corrected SS**	20.2617316
Coeff Variation	2024.88901	**Std Error Mean**	0.02894744

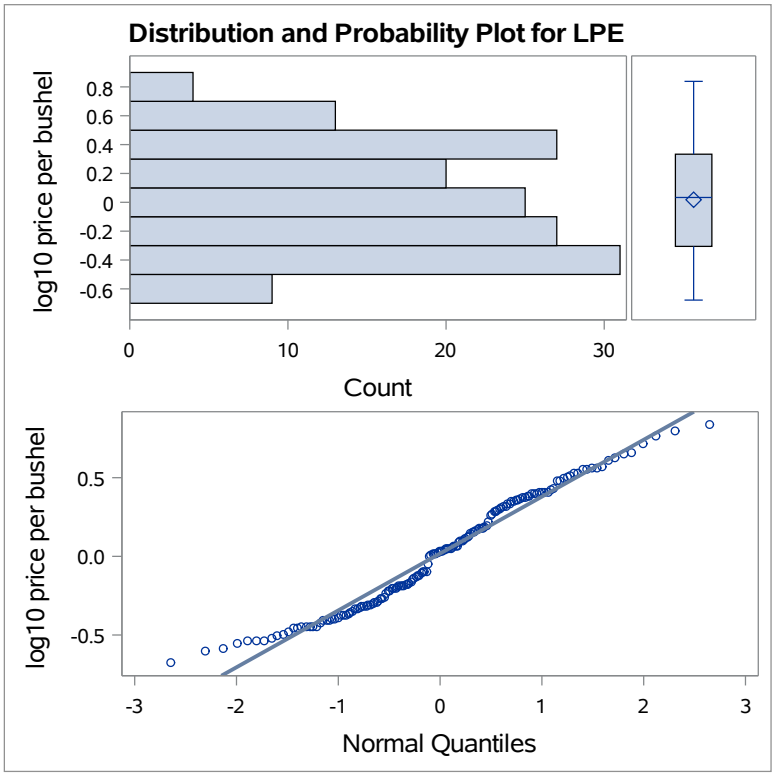
Basic Statistical Measures			
Location		**Variability**	
Mean	0.01786	**Std Deviation**	0.36155
Median	0.03342	**Variance**	0.13072
Mode	-0.44370	**Range**	1.51600
		Interquartile Range	0.63886

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	0.616824	**Pr > |t|**	0.5383
Sign	**M**	6.5	**Pr >= |M|**	0.3351
Signed Rank	**S**	218.5	**Pr >= |S|**	0.6976

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	0.8382192
99%	0.7937904
95%	0.6085260
90%	0.5105450
75% Q3	0.3334461
50% Median	0.0334238
25% Q1	-0.3054170
10%	-0.4436975
5%	-0.5228787
1%	-0.6020600
0% Min	-0.6777807

The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Corn

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-0.677781	187	0.656098	311
-0.602060	186	0.714330	301
-0.585027	188	0.763428	312
-0.552842	180	0.793790	302
-0.537602	223	0.838219	303



The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Oats

Moments			
N	156	**Sum Weights**	156
Mean	-0.1786223	**Sum Observations**	-27.865073
Std Deviation	0.33844514	**Variance**	0.11454511
Skewness	0.50076016	**Kurtosis**	-0.6999746
Uncorrected SS	22.7318144	**Corrected SS**	17.754492
Coeff Variation	-189.47534	**Std Error Mean**	0.0270973

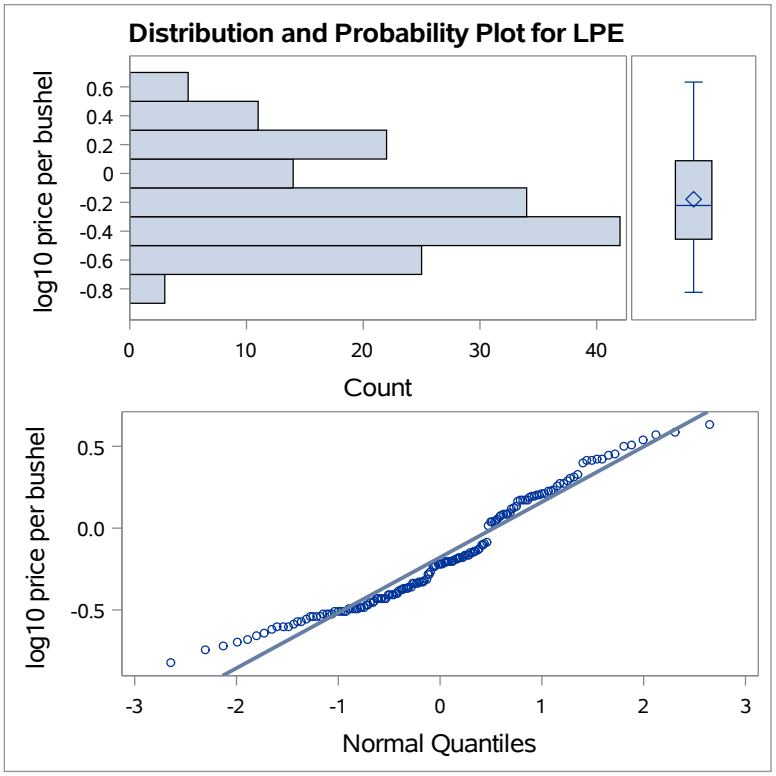
Basic Statistical Measures			
Location		**Variability**	
Mean	-0.17862	**Std Deviation**	0.33845
Median	-0.22185	**Variance**	0.11455
Mode	-0.43180	**Range**	1.45738
		Interquartile Range	0.54406

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	-6.59188	**Pr > |t|**	<.0001
Sign	**M**	-28	**Pr >= |M|**	<.0001
Signed Rank	**S**	-3325	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	0.6334685
99%	0.5899496
95%	0.4424798
90%	0.3053514
75% Q3	0.0881325
50% Median	-0.2218487
25% Q1	-0.4559320
10%	-0.5376020
5%	-0.6197888
1%	-0.7447275
0% Min	-0.8239087

The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Oats

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-0.823909	379	0.506505	461
-0.744727	343	0.542825	458
-0.721246	342	0.574031	460
-0.698970	378	0.589950	459
-0.677781	344	0.633468	468



The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Sorghum

Moments			
N	103	**Sum Weights**	103
Mean	0.16719027	**Sum Observations**	17.2205977
Std Deviation	0.28964023	**Variance**	0.08389146
Skewness	-0.0109097	**Kurtosis**	-0.4297184
Uncorrected SS	11.4360457	**Corrected SS**	8.55692937
Coeff Variation	173.239887	**Std Error Mean**	0.0285391

Basic Statistical Measures			
Location		**Variability**	
Mean	0.16719	**Std Deviation**	0.28964
Median	0.14613	**Variance**	0.08389
Mode	-0.01323	**Range**	1.32428
		Interquartile Range	0.38776

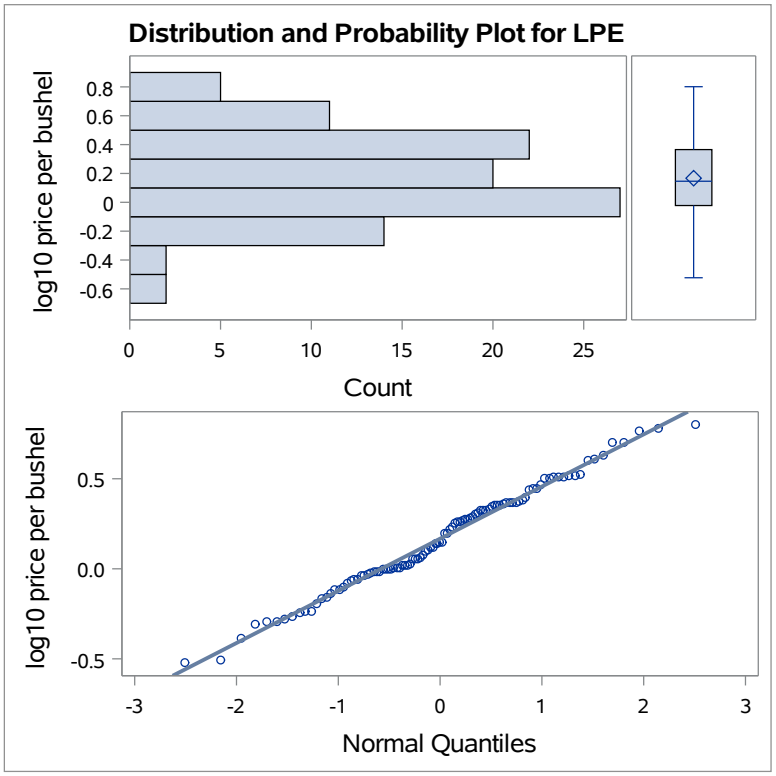
Note: The mode displayed is the smallest of 2 modes with a count of 3.

Tests for Location: Mu0=0				
Test	**Statistic**		**p Value**	
Student's t	**t**	5.858288	**Pr > |t|**	<.0001
Sign	**M**	19	**Pr >= |M|**	0.0002
Signed Rank	**S**	1508.5	**Pr >= |S|**	<.0001

Quantiles (Definition 5)	
Level	**Quantile**
100% Max	0.8014037
99%	0.7774268
95%	0.6314438
90%	0.5171959
75% Q3	0.3654880
50% Median	0.1461280
25% Q1	-0.0222764
10%	-0.2365720
5%	-0.2924298
1%	-0.5086383
0% Min	-0.5228787

The UNIVARIATE Procedure
Variable: LPE (log10 price per bushel)
GRN = Sorghum

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
-0.522879	481	0.700704	560
-0.508638	482	0.702431	570
-0.387216	488	0.767156	571
-0.309804	490	0.777427	561
-0.292430	487	0.801404	562



The CORR Procedure

Grain commodity=Barley

10 Variables:	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum	Label
LPE	156	0.02934	0.34245	-0.02924	-0.63827	0.80821	log10 price per bushel
ACR	96	9.80260	4.31682	10.20500	2.49000	19.69000	Acerage (M)
HVT	156	7.05577	3.91155	7.27000	0.75000	16.96000	Acres harvested (M)
LNR	47	1.76660	0.32874	1.85000	0.90000	2.50000	Loan rate per bushel
PRD	156	240.32865	144.25389	218.59000	18.10000	608.53000	Bushels produced (M)
YLD	156	35.95103	17.45752	26.15000	15.90000	77.90000	Yield (bushels per acre)
INFL	156	0.01897	0.04584	0.02000	-0.11000	0.18000	Rate of inflation
PWR	156	0.85154	0.63364	0.88000	0.06000	1.92000	Buying power
TEMP	142	0.07908	0.43795	-0.01000	-0.58000	1.35000	Temperature diff. (deg. C)
VALUE	156	3.85526	4.77324	1.13000	0.52000	17.04000	Adjusted value

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 156	-0.83160 <.0001 96	-0.19061 0.0172 156	0.57832 <.0001 47	0.34251 <.0001 156	0.87753 <.0001 156	0.38697 <.0001 156	-0.85844 <.0001 156	0.80330 <.0001 142	0.87771 <.0001 156
ACR **Acerage (M)**	-0.83160 <.0001 96	1.00000 96	0.98160 <.0001 96	-0.44658 0.0017 47	0.46113 <.0001 96	-0.86785 <.0001 96	-0.06361 0.5381 96	0.75187 <.0001 96	-0.79342 <.0001 96	-0.89244 <.0001 96
HVT **Acres harvested (M)**	-0.19061 0.0172 156	0.98160 <.0001 96	1.00000 156	-0.45137 0.0015 47	0.73833 <.0001 156	-0.19599 0.0142 156	0.29331 0.0002 156	-0.19291 0.0158 156	-0.26360 0.0015 142	-0.30081 0.0001 156
LNR **Loan rate per bushel**	0.57832 <.0001 47	-0.44658 0.0017 47	-0.45137 0.0015 47	1.00000 47	-0.39747 0.0057 47	0.56827 <.0001 47	-0.25302 0.0862 47	-0.49403 0.0004 47	0.59275 <.0001 47	0.58272 <.0001 47
PRD **Bushels produced (M)**	0.34251 <.0001 156	0.46113 <.0001 96	0.73833 <.0001 156	-0.39747 0.0057 47	1.00000 156	0.41031 <.0001 156	0.42965 <.0001 156	-0.66293 <.0001 156	0.19077 0.0230 142	0.22018 0.0057 156
YLD **Yield (bushels per acre)**	0.87753 <.0001 156	-0.86785 <.0001 96	-0.19599 0.0142 156	0.56827 <.0001 47	0.41031 <.0001 156	1.00000 156	0.24899 0.0017 156	-0.81989 <.0001 156	0.85221 <.0001 142	0.94836 <.0001 156
INFL **Rate of inflation**	0.38697 <.0001 156	-0.06361 0.5381 96	0.29331 0.0002 156	-0.25302 0.0862 47	0.42965 <.0001 156	0.24899 0.0017 156	1.00000 156	-0.36552 <.0001 156	0.05425 0.5214 142	0.16130 0.0443 156
PWR **Buying power**	-0.85844 <.0001 156	0.75187 <.0001 96	-0.19291 0.0158 156	-0.49403 0.0004 47	-0.66293 <.0001 156	-0.81989 <.0001 156	-0.36552 <.0001 156	1.00000 156	-0.75610 <.0001 142	-0.76001 <.0001 156

The CORR Procedure

Grain commodity=Barley

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
TEMP **Temperature diff. (deg. C)**	0.80330 <.0001 142	-0.79342 <.0001 96	-0.26360 0.0015 142	0.59275 <.0001 47	0.19077 0.0230 142	0.85221 <.0001 142	0.05425 0.5214 142	-0.75610 <.0001 142	1.00000 142	0.91319 <.0001 142
VALUE **Adjusted value**	0.87771 <.0001 156	-0.89244 <.0001 96	-0.30081 0.0001 156	0.58272 <.0001 47	0.22018 0.0057 156	0.94836 <.0001 156	0.16130 0.0443 156	-0.76001 <.0001 156	0.91319 <.0001 142	1.00000 156

Spearman Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 156	-0.84740 <.0001 96	-0.10113 0.2091 156	0.56439 <.0001 47	0.41006 <.0001 156	0.74751 <.0001 156	0.54181 <.0001 156	-0.89434 <.0001 156	0.72553 <.0001 142	0.89425 <.0001 156
ACR **Acerage (M)**	-0.84740 <.0001 96	1.00000 96	0.97157 <.0001 96	-0.45494 0.0013 47	0.43882 <.0001 96	-0.84569 <.0001 96	-0.12863 0.2117 96	0.85968 <.0001 96	-0.66783 <.0001 96	-0.85940 <.0001 96
HVT **Acres harvested (M)**	-0.10113 0.2091 156	0.97157 <.0001 96	1.00000 156	-0.46520 0.0010 47	0.77283 <.0001 156	0.01627 0.8402 156	0.36870 <.0001 156	-0.10530 0.1908 156	-0.04681 0.5801 142	0.10502 0.1920 156
LNR **Loan rate per bushel**	0.56439 <.0001 47	-0.45494 0.0013 47	-0.46520 0.0010 47	1.00000 47	-0.44004 0.0020 47	0.51253 0.0002 47	-0.33598 0.0209 47	-0.51468 0.0002 47	0.50440 0.0003 47	0.52498 0.0002 47
PRD **Bushels produced (M)**	0.41006 <.0001 156	0.43882 <.0001 96	0.77283 <.0001 156	-0.44004 0.0020 47	1.00000 156	0.57650 <.0001 156	0.60647 <.0001 156	-0.60027 <.0001 156	0.44532 <.0001 142	0.59968 <.0001 156
YLD **Yield (bushels per acre)**	0.74751 <.0001 156	-0.84569 <.0001 96	0.01627 0.8402 156	0.51253 0.0002 47	0.57650 <.0001 156	1.00000 156	0.46585 <.0001 156	-0.82312 <.0001 156	0.74993 <.0001 142	0.82292 <.0001 156
INFL **Rate of inflation**	0.54181 <.0001 156	-0.12863 0.2117 96	0.36870 <.0001 156	-0.33598 0.0209 47	0.60647 <.0001 156	0.46585 <.0001 156	1.00000 156	-0.50784 <.0001 156	0.30456 0.0002 142	0.50673 <.0001 156
PWR **Buying power**	-0.89434 <.0001 156	0.85968 <.0001 96	-0.10530 0.1908 156	-0.51468 0.0002 47	-0.60027 <.0001 156	-0.82312 <.0001 156	-0.50784 <.0001 156	1.00000 156	-0.84402 <.0001 142	-0.99985 <.0001 156
TEMP **Temperature diff. (deg. C)**	0.72553 <.0001 142	-0.66783 <.0001 96	-0.04681 0.5801 142	0.50440 0.0003 47	0.44532 <.0001 142	0.74993 <.0001 142	0.30456 0.0002 142	-0.84402 <.0001 142	1.00000 142	0.84474 <.0001 142
VALUE **Adjusted value**	0.89425 <.0001 156	-0.85940 <.0001 96	0.10502 0.1920 156	0.52498 0.0002 47	0.59968 <.0001 156	0.82292 <.0001 156	0.50673 <.0001 156	-0.99985 <.0001 156	0.84474 <.0001 142	1.00000 156

The CORR Procedure

Grain commodity=Corn

10 Variables:	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum	Label
LPE	156	0.01786	0.36155	0.03342	-0.67778	0.83822	log10 price per bushel
ACR	96	83.35083	11.25231	82.21000	60.21000	113.02000	Acerage (M)
HVT	156	74.73481	15.48441	73.85500	30.02000	110.89000	Acres harvested (M)
LNR	71	1.71479	0.43731	1.89000	1.00000	2.65000	Loan rate per bushel
PRD	156	4752	3851	2815	730.81000	15148	Bushels produced (M)
YLD	156	64.30615	49.43043	32.80000	18.20000	177.02000	Yield (bushels per acre)
INFL	156	0.01897	0.04584	0.02000	-0.11000	0.18000	Rate of inflation
PWR	156	0.85154	0.63364	0.88000	0.06000	1.92000	Buying power
TEMP	142	0.07908	0.43795	-0.01000	-0.58000	1.35000	Temperature diff. (deg. C)
VALUE	156	3.85526	4.77324	1.13000	0.52000	17.04000	Adjusted value

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 156	-0.26180 0.0100 96	-0.09614 0.2325 156	0.67365 <.0001 71	0.81613 <.0001 156	0.84078 <.0001 156	0.48431 <.0001 156	-0.90964 <.0001 156	0.75982 <.0001 142	0.81163 <.0001 156
ACR **Acerage (M)**	-0.26180 0.0100 96	1.00000 96	0.90457 <.0001 96	0.53180 <.0001 71	-0.03390 0.7430 96	-0.21630 0.0343 96	-0.37479 0.0002 96	0.47602 <.0001 96	0.10676 0.3005 96	-0.00455 0.9649 96
HVT **Acres harvested (M)**	-0.09614 0.2325 156	0.90457 <.0001 96	1.00000 156	0.58833 <.0001 71	0.08932 0.2675 156	-0.07122 0.3769 156	0.15835 0.0483 156	0.26732 0.0007 156	-0.20708 0.0134 142	0.01560 0.8467 156
LNR **Loan rate per bushel**	0.67365 <.0001 71	0.53180 <.0001 71	0.58833 <.0001 71	1.00000 71	0.61316 <.0001 71	0.59751 <.0001 71	0.09388 0.4362 71	-0.71810 <.0001 71	0.53912 <.0001 71	0.63534 <.0001 71
PRD **Bushels produced (M)**	0.81613 <.0001 156	-0.03390 0.7430 96	0.08932 0.2675 156	0.61316 <.0001 71	1.00000 156	0.97992 <.0001 156	0.23663 0.0029 156	-0.76995 <.0001 156	0.88325 <.0001 142	0.97082 <.0001 156
YLD **Yield (bushels per acre)**	0.84078 <.0001 156	-0.21630 0.0343 96	-0.07122 0.3769 156	0.59751 <.0001 71	0.97992 <.0001 156	1.00000 156	0.24634 0.0019 156	-0.83709 <.0001 156	0.86862 <.0001 142	0.95665 <.0001 156
INFL **Rate of inflation**	0.48431 <.0001 156	-0.37479 0.0002 96	0.15835 0.0483 156	0.09388 0.4362 71	0.23663 0.0029 156	0.24634 0.0019 156	1.00000 156	-0.36552 <.0001 156	0.05425 0.5214 142	0.16130 0.0443 156
PWR **Buying power**	-0.90964 <.0001 156	0.47602 <.0001 96	0.26732 0.0007 156	-0.71810 <.0001 71	-0.76995 <.0001 156	-0.83709 <.0001 156	-0.36552 <.0001 156	1.00000 156	-0.75610 <.0001 142	-0.76001 <.0001 156

The CORR Procedure

Grain commodity=Corn

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
TEMP **Temperature diff. (deg. C)**	0.75982 <.0001 142	0.10676 0.3005 96	-0.20708 0.0134 142	0.53912 <.0001 71	0.88325 <.0001 142	0.86862 <.0001 142	0.05425 0.5214 142	-0.75610 <.0001 142	1.00000 142	0.91319 <.0001 142
VALUE **Adjusted value**	0.81163 <.0001 156	-0.00455 0.9649 96	0.01560 0.8467 156	0.63534 <.0001 71	0.97082 <.0001 156	0.95665 <.0001 156	0.16130 0.0443 156	-0.76001 <.0001 156	0.91319 <.0001 142	1.00000 156

Spearman Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 156	-0.14574 0.1565 96	-0.15603 0.0518 156	0.70504 <.0001 71	0.80958 <.0001 156	0.78472 <.0001 156	0.62132 <.0001 156	-0.91894 <.0001 156	0.75309 <.0001 142	0.91872 <.0001 156
ACR **Acerage (M)**	-0.14574 0.1565 96	1.00000 96	0.89574 <.0001 96	0.62415 <.0001 71	-0.21093 0.0391 96	-0.25852 0.0110 96	-0.33548 0.0008 96	0.25069 0.0138 96	0.07013 0.4972 96	-0.24829 0.0147 96
HVT **Acres harvested (M)**	-0.15603 0.0518 156	0.89574 <.0001 96	1.00000 156	0.69827 <.0001 71	0.05560 0.4906 156	-0.17394 0.0299 156	-0.01754 0.8280 156	0.26899 0.0007 156	-0.31493 0.0001 142	-0.26828 0.0007 156
LNR **Loan rate per bushel**	0.70504 <.0001 71	0.62415 <.0001 71	0.69827 <.0001 71	1.00000 71	0.67343 <.0001 71	0.64216 <.0001 71	0.07610 0.5282 71	-0.65947 <.0001 71	0.61368 <.0001 71	0.66043 <.0001 71
PRD **Bushels produced (M)**	0.80958 <.0001 156	-0.21093 0.0391 96	0.05560 0.4906 156	0.67343 <.0001 71	1.00000 156	0.93603 <.0001 156	0.57987 <.0001 156	-0.82988 <.0001 156	0.73737 <.0001 142	0.83009 <.0001 156
YLD **Yield (bushels per acre)**	0.78472 <.0001 156	-0.25852 0.0110 96	-0.17394 0.0299 156	0.64216 <.0001 71	0.93603 <.0001 156	1.00000 156	0.51623 <.0001 156	-0.86260 <.0001 156	0.80161 <.0001 142	0.86276 <.0001 156
INFL **Rate of inflation**	0.62132 <.0001 156	-0.33548 0.0008 96	-0.01754 0.8280 156	0.07610 0.5282 71	0.57987 <.0001 156	0.51623 <.0001 156	1.00000 156	-0.50784 <.0001 156	0.30456 0.0002 142	0.50673 <.0001 156
PWR **Buying power**	-0.91894 <.0001 156	0.25069 0.0138 96	0.26899 0.0007 156	-0.65947 <.0001 71	-0.82988 <.0001 156	-0.86260 <.0001 156	-0.50784 <.0001 156	1.00000 156	-0.84402 <.0001 142	-0.99985 <.0001 156
TEMP **Temperature diff. (deg. C)**	0.75309 <.0001 142	0.07013 0.4972 96	-0.31493 0.0001 142	0.61368 <.0001 71	0.73737 <.0001 142	0.80161 <.0001 142	0.30456 0.0002 142	-0.84402 <.0001 142	1.00000 142	0.84474 <.0001 142
VALUE **Adjusted value**	0.91872 <.0001 156	-0.24829 0.0147 96	-0.26828 0.0007 156	0.66043 <.0001 71	0.83009 <.0001 156	0.86276 <.0001 156	0.50673 <.0001 156	-0.99985 <.0001 156	0.84474 <.0001 142	1.00000 156

The CORR Procedure

Grain commodity=Oats

10 Variables:	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum	Label
LPE	156	-0.17862	0.33845	-0.22185	-0.82391	0.63347	log10 price per bushel
ACR	96	22.66292	16.40564	19.30000	2.35000	47.49000	Acerage (M)
HVT	156	21.86167	14.59255	22.17500	0.65000	45.54000	Acres harvested (M)
LNR	47	1.21383	0.30076	1.31000	0.54000	2.00000	Loan rate per bushel
PRD	156	724.40276	442.06888	762.95500	39.84000	1524	Bushels produced (M)
YLD	156	40.28654	14.35811	34.40000	18.50000	70.20000	Yield (bushels per acre)
INFL	156	0.01897	0.04584	0.02000	-0.11000	0.18000	Rate of inflation
PWR	156	0.85154	0.63364	0.88000	0.06000	1.92000	Buying power
TEMP	142	0.07908	0.43795	-0.01000	-0.58000	1.35000	Temperature diff. (deg. C)
VALUE	156	3.85526	4.77324	1.13000	0.52000	17.04000	Adjusted value

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 156	-0.84277 <.0001 96	-0.71020 <.0001 156	0.64061 <.0001 47	-0.58945 <.0001 156	0.85487 <.0001 156	0.42936 <.0001 156	-0.87432 <.0001 156	0.79135 <.0001 142	0.87373 <.0001 156
ACR **Acerage (M)**	-0.84277 <.0001 96	1.00000 96	0.99047 <.0001 96	-0.55070 <.0001 47	0.95339 <.0001 96	-0.93733 <.0001 96	-0.19375 0.0586 96	0.91120 <.0001 96	-0.71822 <.0001 96	-0.88988 <.0001 96
HVT **Acres harvested (M)**	-0.71020 <.0001 156	0.99047 <.0001 96	1.00000 156	-0.55939 <.0001 47	0.93554 <.0001 156	-0.75072 <.0001 156	-0.03748 0.6423 156	0.61060 <.0001 156	-0.72039 <.0001 142	-0.77162 <.0001 156
LNR **Loan rate per bushel**	0.64061 <.0001 47	-0.55070 <.0001 47	-0.55939 <.0001 47	1.00000 47	-0.52812 0.0001 47	0.59862 <.0001 47	-0.35766 0.0136 47	-0.60327 <.0001 47	0.73693 <.0001 47	0.73005 <.0001 47
PRD **Bushels produced (M)**	-0.58945 <.0001 156	0.95339 <.0001 96	0.93554 <.0001 156	-0.52812 0.0001 47	1.00000 156	-0.55816 <.0001 156	0.12630 0.1162 156	0.41932 <.0001 156	-0.68345 <.0001 142	-0.72393 <.0001 156
YLD **Yield (bushels per acre)**	0.85487 <.0001 156	-0.93733 <.0001 96	-0.75072 <.0001 156	0.59862 <.0001 47	-0.55816 <.0001 156	1.00000 156	0.33684 <.0001 156	-0.86643 <.0001 156	0.79697 <.0001 142	0.87923 <.0001 156
INFL **Rate of inflation**	0.42936 <.0001 156	-0.19375 0.0586 96	-0.03748 0.6423 156	-0.35766 0.0136 47	0.12630 0.1162 156	0.33684 <.0001 156	1.00000 156	-0.36552 <.0001 156	0.05425 0.5214 142	0.16130 0.0443 156
PWR **Buying power**	-0.87432 <.0001 156	0.91120 <.0001 96	0.61060 <.0001 156	-0.60327 <.0001 47	0.41932 <.0001 156	-0.86643 <.0001 156	-0.36552 <.0001 156	1.00000 156	-0.75610 <.0001 142	-0.76001 <.0001 156

The CORR Procedure

Grain commodity=Oats

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
TEMP **Temperature diff. (deg. C)**	0.79135 <.0001 142	-0.71822 <.0001 96	-0.72039 <.0001 142	0.73693 <.0001 47	-0.68345 <.0001 142	0.79697 <.0001 142	0.05425 0.5214 142	-0.75610 <.0001 142	1.00000 142	0.91319 <.0001 142
VALUE **Adjusted value**	0.87373 <.0001 156	-0.88988 <.0001 96	-0.77162 <.0001 156	0.73005 <.0001 47	-0.72393 <.0001 156	0.87923 <.0001 156	0.16130 0.0443 156	-0.76001 <.0001 156	0.91319 <.0001 142	1.00000 156

Spearman Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 156	-0.83300 <.0001 96	-0.62198 <.0001 156	0.71818 <.0001 47	-0.50151 <.0001 156	0.78901 <.0001 156	0.59799 <.0001 156	-0.90382 <.0001 156	0.73980 <.0001 142	0.90362 <.0001 156
ACR **Acerage (M)**	-0.83300 <.0001 96	1.00000 96	0.98147 <.0001 96	-0.76980 <.0001 47	0.95326 <.0001 96	-0.91219 <.0001 96	-0.18219 0.0756 96	0.94330 <.0001 96	-0.74566 <.0001 96	-0.94309 <.0001 96
HVT **Acres harvested (M)**	-0.62198 <.0001 156	0.98147 <.0001 96	1.00000 156	-0.77907 <.0001 47	0.94133 <.0001 156	-0.60452 <.0001 156	-0.15359 0.0556 156	0.62442 <.0001 156	-0.61813 <.0001 142	-0.62451 <.0001 156
LNR **Loan rate per bushel**	0.71818 <.0001 47	-0.76980 <.0001 47	-0.77907 <.0001 47	1.00000 47	-0.77055 <.0001 47	0.65682 <.0001 47	-0.57181 <.0001 47	-0.78065 <.0001 47	0.77409 <.0001 47	0.79170 <.0001 47
PRD **Bushels produced (M)**	-0.50151 <.0001 156	0.95326 <.0001 96	0.94133 <.0001 156	-0.77055 <.0001 47	1.00000 156	-0.38347 <.0001 156	0.01051 0.8964 156	0.48393 <.0001 156	-0.52294 <.0001 142	-0.48410 <.0001 156
YLD **Yield (bushels per acre)**	0.78901 <.0001 156	-0.91219 <.0001 96	-0.60452 <.0001 156	0.65682 <.0001 47	-0.38347 <.0001 156	1.00000 156	0.55485 <.0001 156	-0.87086 <.0001 156	0.76845 <.0001 142	0.87081 <.0001 156
INFL **Rate of inflation**	0.59799 <.0001 156	-0.18219 0.0756 96	-0.15359 0.0556 156	-0.57181 <.0001 47	0.01051 0.8964 156	0.55485 <.0001 156	1.00000 156	-0.50784 <.0001 156	0.30456 0.0002 142	0.50673 <.0001 156
PWR **Buying power**	-0.90382 <.0001 156	0.94330 <.0001 96	0.62442 <.0001 156	-0.78065 <.0001 47	0.48393 <.0001 156	-0.87086 <.0001 156	-0.50784 <.0001 156	1.00000 156	-0.84402 <.0001 142	-0.99985 <.0001 156
TEMP **Temperature diff. (deg. C)**	0.73980 <.0001 142	-0.74566 <.0001 96	-0.61813 <.0001 142	0.77409 <.0001 47	-0.52294 <.0001 142	0.76845 <.0001 142	0.30456 0.0002 142	-0.84402 <.0001 142	1.00000 142	0.84474 <.0001 142
VALUE **Adjusted value**	0.90362 <.0001 156	-0.94309 <.0001 96	-0.62451 <.0001 156	0.79170 <.0001 47	-0.48410 <.0001 156	0.87081 <.0001 156	0.50673 <.0001 156	-0.99985 <.0001 156	0.84474 <.0001 142	1.00000 156

The CORR Procedure

Grain commodity=Sorghum

10 Variables:	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE

Simple Statistics

Variable	N	Mean	Std Dev	Median	Minimum	Maximum	Label
LPE	103	0.16719	0.28964	0.14613	-0.52288	0.80140	log10 price per bushel
ACR	93	13.42828	4.83863	13.36000	5.27000	26.89000	Acerage (M)
HVT	93	9.22172	4.03361	8.54000	2.40000	19.68000	Acres harvested (M)
LNR	48	1.86063	0.30301	1.95000	1.05000	2.52000	Loan rate per bushel
PRD	93	445.08301	274.05948	475.86000	19.21000	1120	Bushels produced (M)
YLD	93	45.88387	21.78882	52.60000	8.00000	77.90000	Yield (bushels per acre)
INFL	103	0.02922	0.04329	0.03000	-0.11000	0.16000	Rate of inflation
PWR	103	0.46825	0.37811	0.41000	0.06000	1.22000	Buying power
TEMP	103	0.23738	0.40905	0.12000	-0.36000	1.35000	Temperature diff. (deg. C)
VALUE	103	5.50786	5.14760	2.44000	0.82000	17.04000	Adjusted value

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 103	-0.56604 <.0001 93	-0.00585 0.9556 93	0.49343 0.0004 48	0.36168 0.0004 93	0.74104 <.0001 93	0.35150 0.0003 103	-0.86843 <.0001 103	0.70269 <.0001 103	0.83468 <.0001 103
ACR **Acerage (M)**	-0.56604 <.0001 93	1.00000 93	0.67448 <.0001 93	-0.26711 0.0665 48	0.18851 0.0704 93	-0.46563 <.0001 93	0.17852 0.0869 93	0.46830 <.0001 93	-0.75916 <.0001 93	-0.78446 <.0001 93
HVT **Acres harvested (M)**	-0.00585 0.9556 93	0.67448 <.0001 93	1.00000 93	-0.15738 0.2854 48	0.80185 <.0001 93	0.25264 0.0146 93	0.35022 0.0006 93	-0.26058 0.0116 93	-0.41240 <.0001 93	-0.26855 0.0092 93
LNR **Loan rate per bushel**	0.49343 0.0004 48	-0.26711 0.0665 48	-0.15738 0.2854 48	1.00000 48	0.06836 0.6443 48	0.40373 0.0044 48	-0.04241 0.7747 48	-0.55583 <.0001 48	0.39211 0.0058 48	0.40695 0.0041 48
PRD **Bushels produced (M)**	0.36168 0.0004 93	0.18851 0.0704 93	0.80185 <.0001 93	0.06836 0.6443 48	1.00000 93	0.72826 <.0001 93	0.34458 0.0007 93	-0.64920 <.0001 93	-0.01047 0.9206 93	0.21293 0.0404 93
YLD **Yield (bushels per acre)**	0.74104 <.0001 93	-0.46563 <.0001 93	0.25264 0.0146 93	0.40373 0.0044 48	0.72826 <.0001 93	1.00000 93	0.17361 0.0961 93	-0.92236 <.0001 93	0.61662 <.0001 93	0.79106 <.0001 93
INFL **Rate of inflation**	0.35150 0.0003 103	0.17852 0.0869 93	0.35022 0.0006 93	-0.04241 0.7747 48	0.34458 0.0007 93	0.17361 0.0961 93	1.00000 103	-0.25087 0.0106 103	-0.04585 0.6456 103	0.01383 0.8898 103
PWR **Buying power**	-0.86843 <.0001 103	0.46830 <.0001 93	-0.26058 0.0116 93	-0.55583 <.0001 48	-0.64920 <.0001 93	-0.92236 <.0001 93	-0.25087 0.0106 103	1.00000 103	-0.65438 <.0001 103	-0.81993 <.0001 103

The CORR Procedure

Grain commodity=Sorghum

Pearson Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
TEMP **Temperature diff. (deg. C)**	0.70269 <.0001 103	-0.75916 <.0001 93	-0.41240 <.0001 93	0.39211 0.0058 48	-0.01047 0.9206 93	0.61662 <.0001 93	-0.04585 0.6456 103	-0.65438 <.0001 103	1.00000 103	0.91425 <.0001 103
VALUE **Adjusted value**	0.83468 <.0001 103	-0.78446 <.0001 93	-0.26855 0.0092 93	0.40695 0.0041 48	0.21293 0.0404 93	0.79106 <.0001 93	0.01383 0.8898 103	-0.81993 <.0001 103	0.91425 <.0001 103	1.00000 103

Spearman Correlation Coefficients
Prob > |r| under H0: Rho=0
Number of Observations

	LPE	ACR	HVT	LNR	PRD	YLD	INFL	PWR	TEMP	VALUE
LPE **log10 price per bushel**	1.00000 103	-0.59558 <.0001 93	0.00785 0.9405 93	0.59066 <.0001 48	0.32828 0.0013 93	0.73920 <.0001 93	0.34935 0.0003 103	-0.89447 <.0001 103	0.65834 <.0001 103	0.89401 <.0001 103
ACR **Acerage (M)**	-0.59558 <.0001 93	1.00000 93	0.63883 <.0001 93	-0.33092 0.0216 48	0.24190 0.0195 93	-0.50224 <.0001 93	0.18291 0.0793 93	0.64332 <.0001 93	-0.70496 <.0001 93	-0.64275 <.0001 93
HVT **Acres harvested (M)**	0.00785 0.9405 93	0.63883 <.0001 93	1.00000 93	-0.28737 0.0477 48	0.84310 <.0001 93	0.20328 0.0507 93	0.41617 <.0001 93	-0.05764 0.5832 93	-0.32482 0.0015 93	0.05876 0.5758 93
LNR **Loan rate per bushel**	0.59066 <.0001 48	-0.33092 0.0216 48	-0.28737 0.0477 48	1.00000 48	-0.14393 0.3291 48	0.16286 0.2687 48	-0.11985 0.4171 48	-0.39210 0.0058 48	0.41090 0.0037 48	0.39853 0.0050 48
PRD **Bushels produced (M)**	0.32828 0.0013 93	0.24190 0.0195 93	0.84310 <.0001 93	-0.14393 0.3291 48	1.00000 93	0.61396 <.0001 93	0.45406 <.0001 93	-0.44038 <.0001 93	-0.00636 0.9517 93	0.44214 <.0001 93
YLD **Yield (bushels per acre)**	0.73920 <.0001 93	-0.50224 <.0001 93	0.20328 0.0507 93	0.16286 0.2687 48	0.61396 <.0001 93	1.00000 93	0.17054 0.1022 93	-0.90725 <.0001 93	0.63394 <.0001 93	0.90852 <.0001 93
INFL **Rate of inflation**	0.34935 0.0003 103	0.18291 0.0793 93	0.41617 <.0001 93	-0.11985 0.4171 48	0.45406 <.0001 93	0.17054 0.1022 93	1.00000 103	-0.21628 0.0282 103	0.05180 0.6033 103	0.21307 0.0307 103
PWR **Buying power**	-0.89447 <.0001 103	0.64332 <.0001 93	-0.05764 0.5832 93	-0.39210 0.0058 48	-0.44038 <.0001 93	-0.90725 <.0001 93	-0.21628 0.0282 103	1.00000 103	-0.73956 <.0001 103	-0.99946 <.0001 103
TEMP **Temperature diff. (deg. C)**	0.65834 <.0001 103	-0.70496 <.0001 93	-0.32482 0.0015 93	0.41090 0.0037 48	-0.00636 0.9517 93	0.63394 <.0001 93	0.05180 0.6033 103	-0.73956 <.0001 103	1.00000 103	0.74148 <.0001 103
VALUE **Adjusted value**	0.89401 <.0001 103	-0.64275 <.0001 93	0.05876 0.5758 93	0.39853 0.0050 48	0.44214 <.0001 93	0.90852 <.0001 93	0.21307 0.0307 103	-0.99946 <.0001 103	0.74148 <.0001 103	1.00000 103

The MEANS Procedure

Grain commodity=Barley

Analysis Variable : LPE log10 price per bushel					
President party	N Obs	Mean	Std Error	Median	Range
Democrat	68	0.0716753	0.0428029	0.0064608	1.3310897
Republican	88	-0.0033654	0.0354361	-0.0731509	1.3682464

Grain commodity=Corn

Analysis Variable : LPE log10 price per bushel					
President party	N Obs	Mean	Std Error	Median	Range
Democrat	68	0.0839426	0.0429087	0.0663219	1.5159999
Republican	88	-0.0332119	0.0384980	-0.1191864	1.2411249

Grain commodity=Oats

Analysis Variable : LPE log10 price per bushel					
President party	N Obs	Mean	Std Error	Median	Range
Democrat	68	-0.1401061	0.0409049	-0.1804561	1.3781960
Republican	88	-0.2083847	0.0360550	-0.3372422	1.3222193

Grain commodity=Sorghum

Analysis Variable : LPE log10 price per bushel					
President party	N Obs	Mean	Std Error	Median	Range
Democrat	51	0.1669931	0.0427354	0.1205739	1.1886199
Republican	52	0.1673836	0.0383474	0.2416510	1.2253093

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
GRN	4	Barley Corn Oats Sorghum

Number of Observations Read	571
Number of Observations Used	381

The GLM Procedure

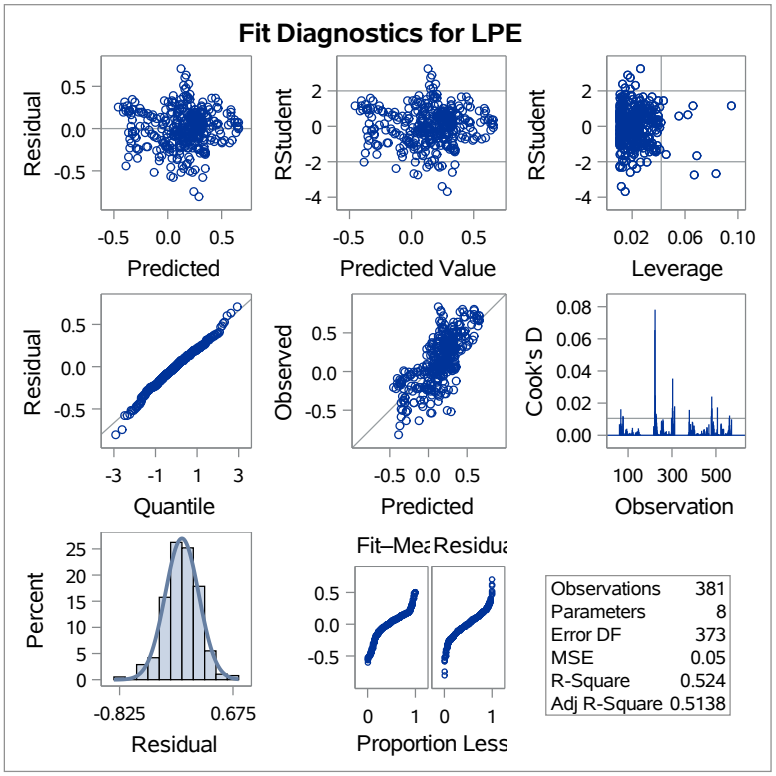
Dependent Variable: LPE log10 price per bushel

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	28.88305487	3.61038186	72.16	<.0001
Error	373	18.66250273	0.05003352		
Uncorrected Total	381	47.54555760			

R-Square	Coeff Var	Root MSE	LPE Mean
0.524028	151.2190	0.223682	0.147919

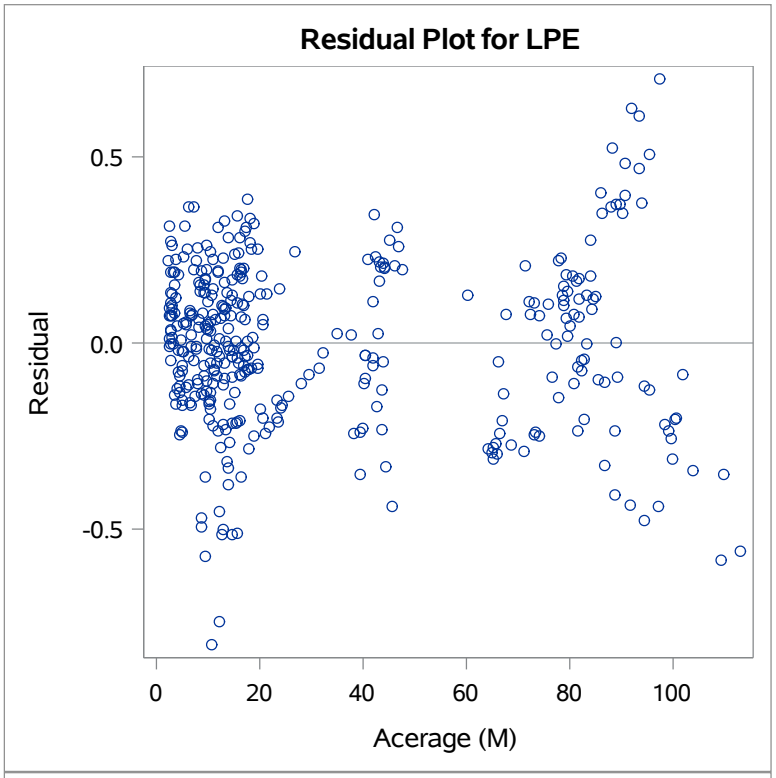
Source	DF	Type I SS	Mean Square	F Value	Pr > F
ACR	1	2.82042057	2.82042057	56.37	<.0001
GRN	4	20.16851408	5.04212852	100.78	<.0001
ACR*GRN	3	5.89412022	1.96470674	39.27	<.0001

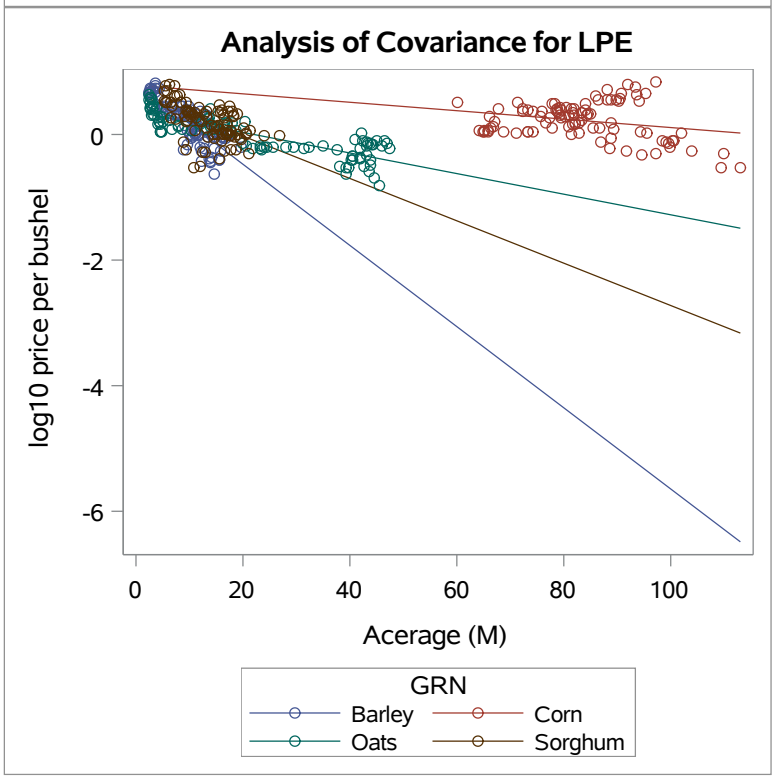
Source	DF	Type III SS	Mean Square	F Value	Pr > F
ACR	1	12.81613728	12.81613728	256.15	<.0001
GRN	4	20.14757500	5.03689375	100.67	<.0001
ACR*GRN	3	5.89412022	1.96470674	39.27	<.0001



The GLM Procedure

Dependent Variable: LPE log10 price per bushel





The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
GRN	4	Barley Corn Oats Sorghum

Number of Observations Read	571
Number of Observations Used	561

The GLM Procedure

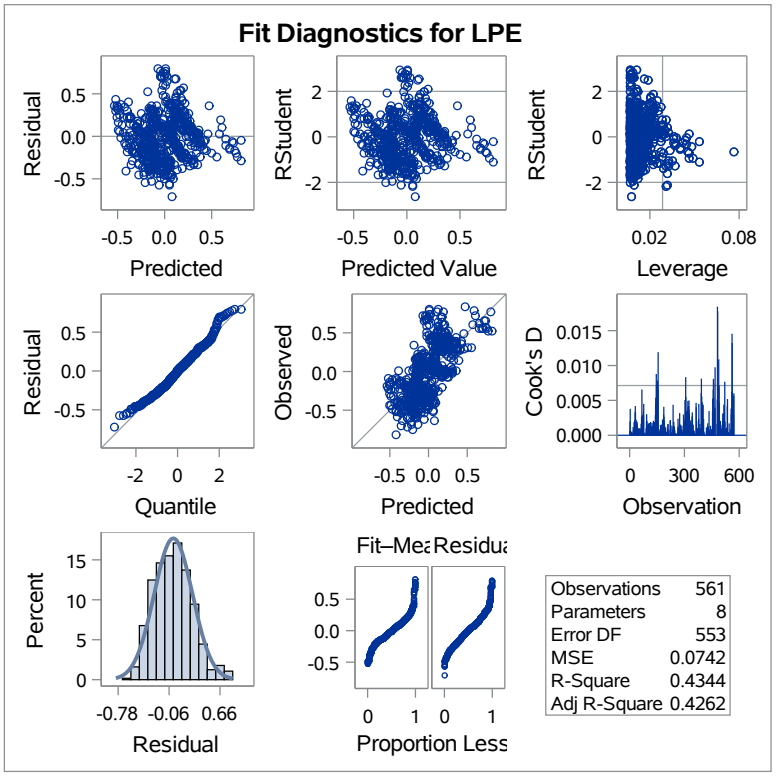
Dependent Variable: LPE log10 price per bushel

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	31.52546836	3.94068355	53.10	<.0001
Error	553	41.04097399	0.07421514		
Uncorrected Total	561	72.56644235			

R-Square	Coeff Var	Root MSE	LPE Mean
0.434363	-6679.099	0.272425	-0.004079

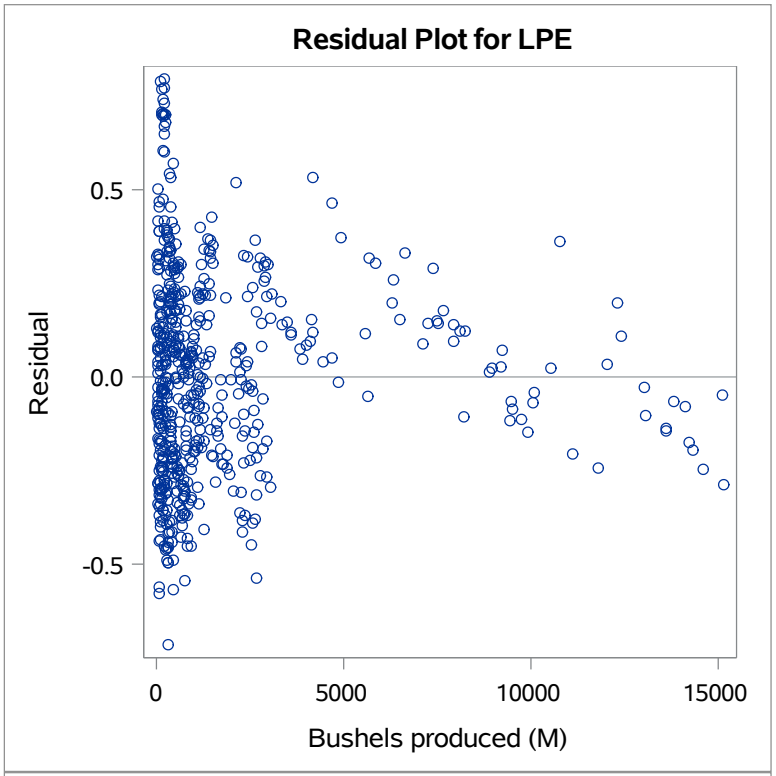
Source	DF	Type I SS	Mean Square	F Value	Pr > F
PRD	1	4.83890347	4.83890347	65.20	<.0001
GRN	4	15.91470398	3.97867599	53.61	<.0001
PRD*GRN	3	10.77186091	3.59062030	48.38	<.0001

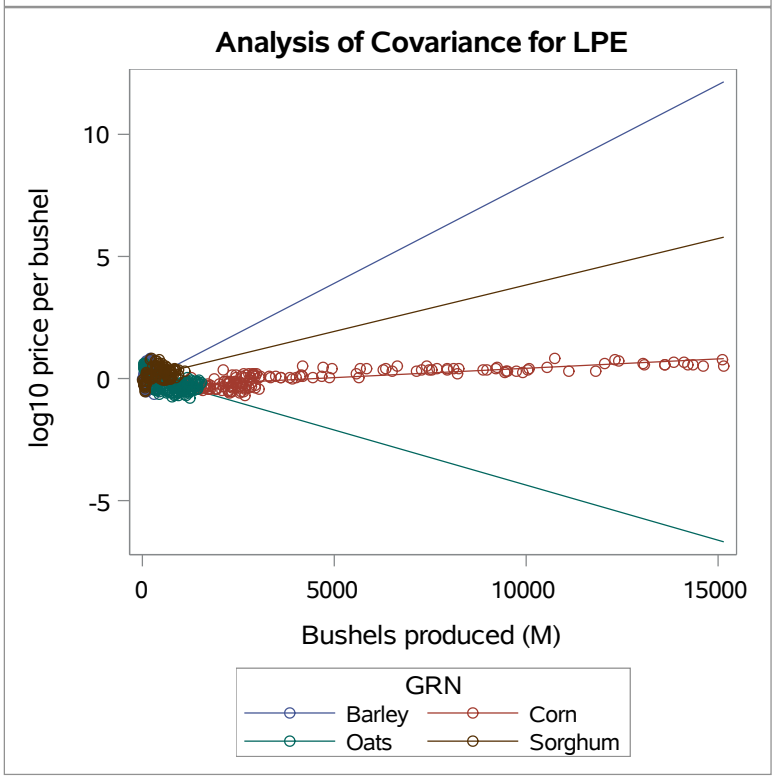
Source	DF	Type III SS	Mean Square	F Value	Pr > F
PRD	1	1.37349877	1.37349877	18.51	<.0001
GRN	4	9.46309189	2.36577297	31.88	<.0001
PRD*GRN	3	10.77186091	3.59062030	48.38	<.0001



The GLM Procedure

Dependent Variable: LPE log10 price per bushel





The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
GRN	4	Barley Corn Oats Sorghum
PARTY	2	Democrat Republican

Number of Observations Read	571
Number of Observations Used	571

The GLM Procedure

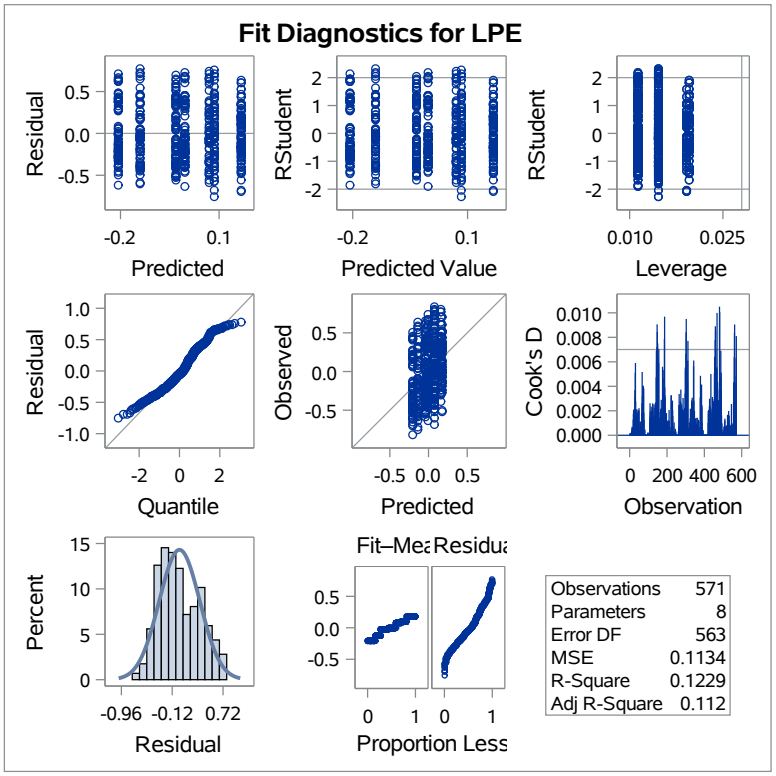
Dependent Variable: LPE log10 price per bushel

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	8.94297112	1.27756730	11.27	<.0001
Error	563	63.82858732	0.11337227		
Corrected Total	570	72.77155844			

R-Square	Coeff Var	Root MSE	LPE Mean
0.122891	-5859.347	0.336708	-0.005747

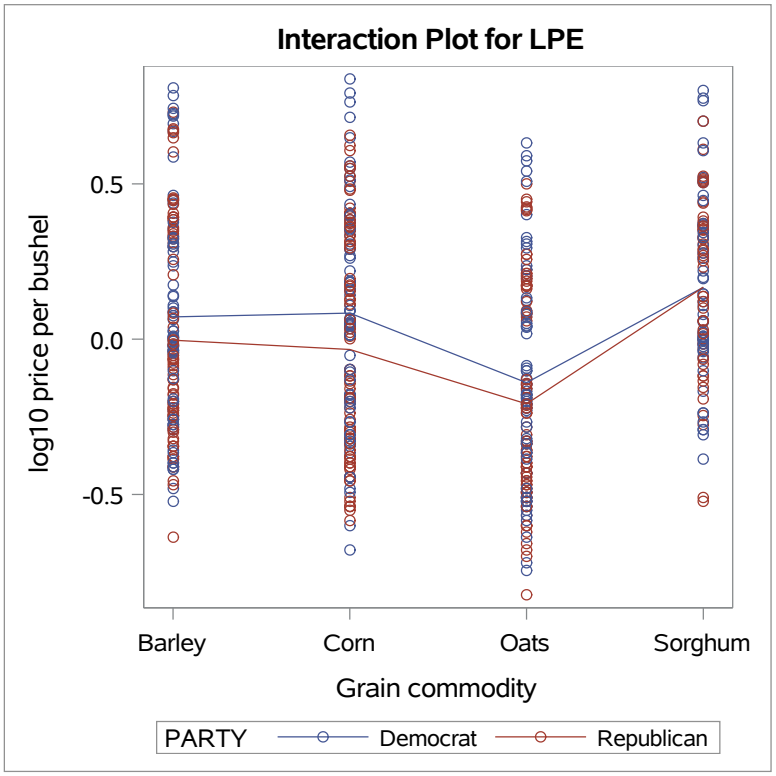
Source	DF	Type I SS	Mean Square	F Value	Pr > F
GRN	3	8.02165144	2.67388381	23.58	<.0001
PARTY	1	0.70747223	0.70747223	6.24	0.0128
GRN*PARTY	3	0.21384745	0.07128248	0.63	0.5967

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GRN	3	7.81477029	2.60492343	22.98	<.0001
PARTY	1	0.57791507	0.57791507	5.10	0.0243
GRN*PARTY	3	0.21384745	0.07128248	0.63	0.5967



The GLM Procedure

Dependent Variable: LPE log10 price per bushel



The Mixed Procedure

Model Information	
Data Set	HOME.GRAINS
Dependent Variable	LPE
Covariance Structure	Diagonal
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Residual

Class Level Information		
Class	**Levels**	**Values**
GRN	4	Barley Corn Oats Sorghum
PARTY	2	Democrat Republican

Dimensions	
Covariance Parameters	1
Columns in X	39
Columns in Z	0
Subjects	1
Max Obs per Subject	561

Number of Observations	
Number of Observations Read	571
Number of Observations Used	561
Number of Observations Not Used	10

Covariance Parameter Estimates	
Cov Parm	**Estimate**
Residual	0.01250

Fit Statistics	
-2 Res Log Likelihood	-643.9
AIC (Smaller is Better)	-641.9
AICC (Smaller is Better)	-641.9
BIC (Smaller is Better)	-637.6

The Mixed Procedure

Solution for Fixed Effects

Effect	Grain commodity	President party	Estimate	Standard Error	DF	t Value	Pr > |t|
GRN	Barley		-2.8704	1.0158	533	-2.83	0.0049
GRN	Corn		-0.5539	1.6268	533	-0.34	0.7336
GRN	Oats		-4.7336	1.0153	533	-4.66	<.0001
GRN	Sorghum		-10.0665	3.6378	533	-2.77	0.0059
HVT			0.001795	0.007151	533	0.25	0.8019
PRD			-0.00034	0.000113	533	-3.02	0.0027
INFL			2.0406	0.3632	533	5.62	<.0001
PWR			-0.4236	0.1382	533	-3.07	0.0023
YEAR			0.005317	0.001802	533	2.95	0.0033
PARTY		Democrat	0.02167	0.02582	533	0.84	0.4018
PARTY		Republican	0	.	.	.	.
HVT*GRN	Barley		-0.03393	0.008348	533	-4.06	<.0001
HVT*GRN	Corn		-0.00176	0.007212	533	-0.24	0.8074
HVT*GRN	Oats		0.003426	0.007565	533	0.45	0.6508
HVT*GRN	Sorghum		0	.	.	.	.
PRD*GRN	Barley		0.000129	0.000193	533	0.67	0.5023
PRD*GRN	Corn		0.000367	0.000113	533	3.25	0.0012
PRD*GRN	Oats		-0.00007	0.000134	533	-0.54	0.5870
PRD*GRN	Sorghum		0	.	.	.	.
INFL*GRN	Barley		-0.6573	0.4278	533	-1.54	0.1250
INFL*GRN	Corn		-0.6234	0.4307	533	-1.45	0.1483
INFL*GRN	Oats		-0.2952	0.4329	533	-0.68	0.4956
INFL*GRN	Sorghum		0	.	.	.	.
PWR*GRN	Barley		0.04278	0.1434	533	0.30	0.7655
PWR*GRN	Corn		0.09316	0.1493	533	0.62	0.5328
PWR*GRN	Oats		0.2134	0.1440	533	1.48	0.1389
PWR*GRN	Sorghum		0	.	.	.	.
YEAR*GRN	Barley		-0.00353	0.001873	533	-1.88	0.0602
YEAR*GRN	Corn		-0.00496	0.001990	533	-2.49	0.0129
YEAR*GRN	Oats		-0.00280	0.001872	533	-1.50	0.1354
YEAR*GRN	Sorghum		0	.	.	.	.
GRN*PARTY	Barley	Democrat	-0.02661	0.03218	533	-0.83	0.4086
GRN*PARTY	Barley	Republican	0	.	.	.	.
GRN*PARTY	Corn	Democrat	0.000521	0.03191	533	0.02	0.9870

The Mixed Procedure

Solution for Fixed Effects

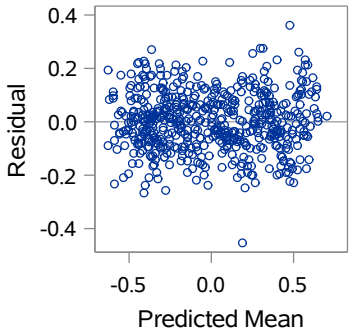
Effect	Grain commodity	President party	Estimate	Standard Error	DF	t Value	Pr > |t|
GRN*PARTY	Corn	Republican	0	.	.	.	.
GRN*PARTY	Oats	Democrat	-0.03541	0.03197	533	-1.11	0.2686
GRN*PARTY	Oats	Republican	0	.	.	.	.
GRN*PARTY	Sorghum	Democrat	0	.	.	.	.
GRN*PARTY	Sorghum	Republican	0	.	.	.	.

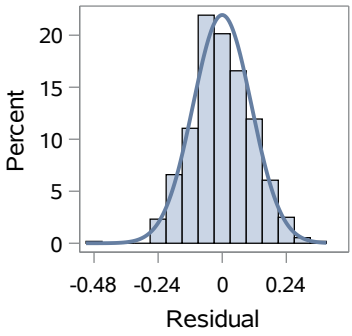
Type 3 Tests of Fixed Effects

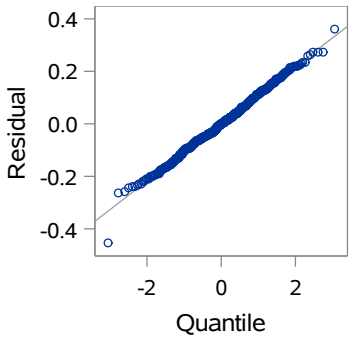
Effect	Num DF	Den DF	F Value	Pr > F
GRN	3	533	2.81	0.0392
HVT	1	533	8.21	0.0043
PRD	1	533	20.66	<.0001
INFL	1	533	148.51	<.0001
PWR	1	533	71.28	<.0001
YEAR	1	533	22.22	<.0001
PARTY	1	533	0.36	0.5466
HVT*GRN	3	533	19.92	<.0001
PRD*GRN	3	533	16.42	<.0001
INFL*GRN	3	533	1.12	0.3418
PWR*GRN	3	533	3.44	0.0167
YEAR*GRN	3	533	2.80	0.0394
GRN*PARTY	3	533	0.84	0.4740

The Mixed Procedure

Residuals for LPE

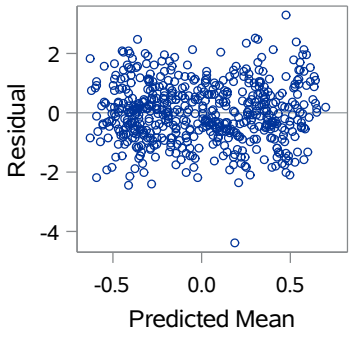


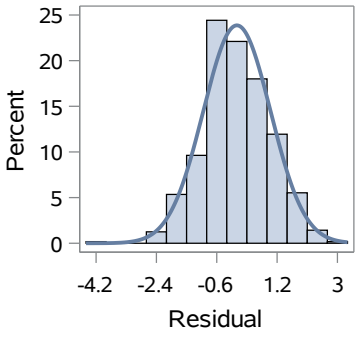


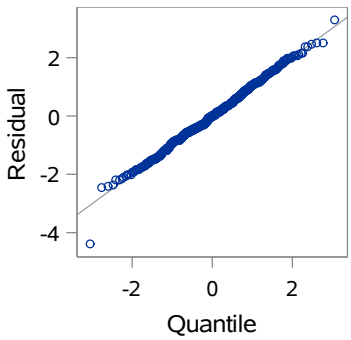


Residual Statistics	
Observations	561
Minimum	-0.455
Mean	-9E-16
Maximum	0.3614
Std Dev	0.1091
Fit Statistics	
Objective	-643.9
AIC	-641.9
AICC	-641.9
BIC	-637.6

Studentized Residuals for LPE

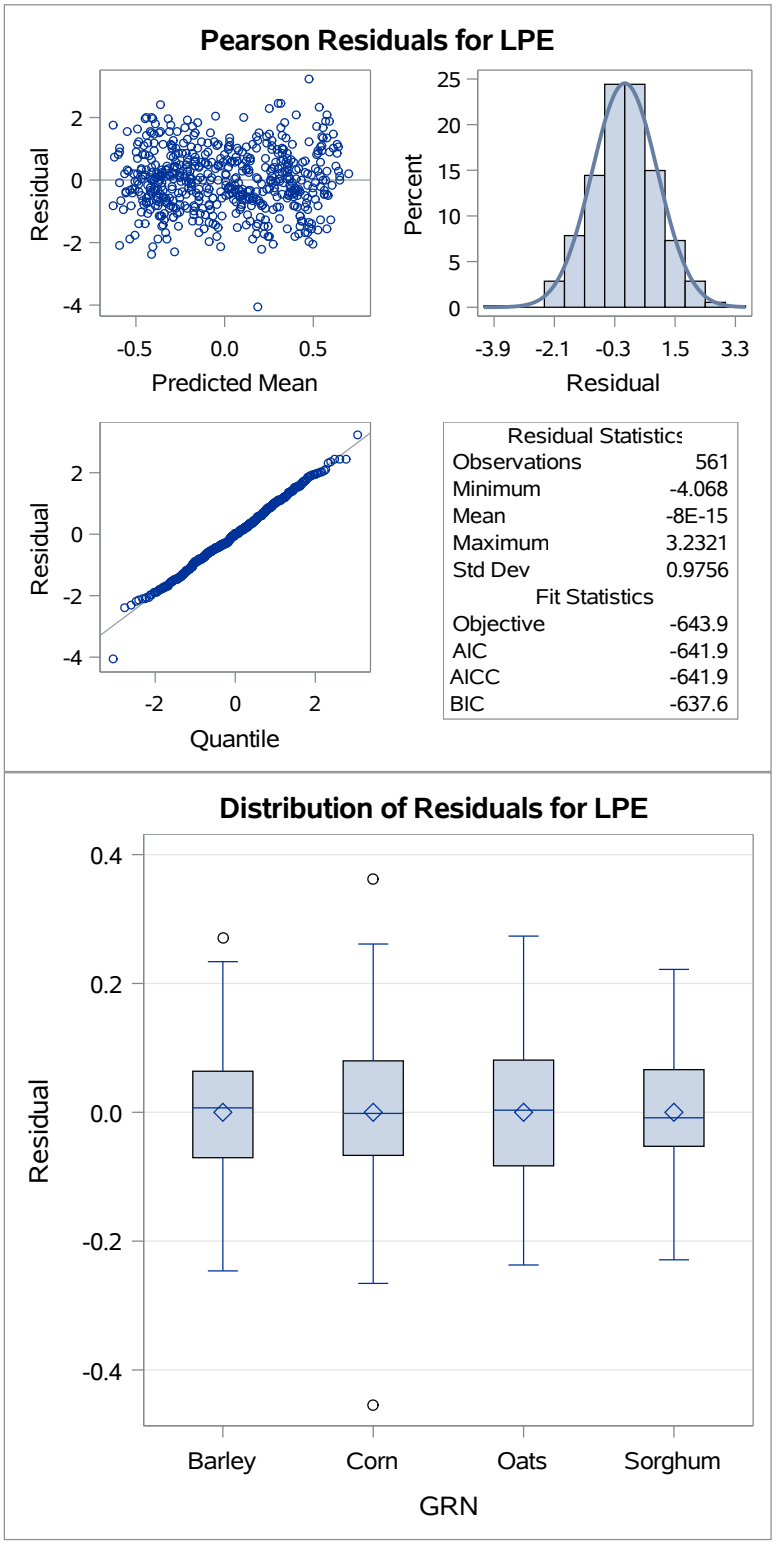




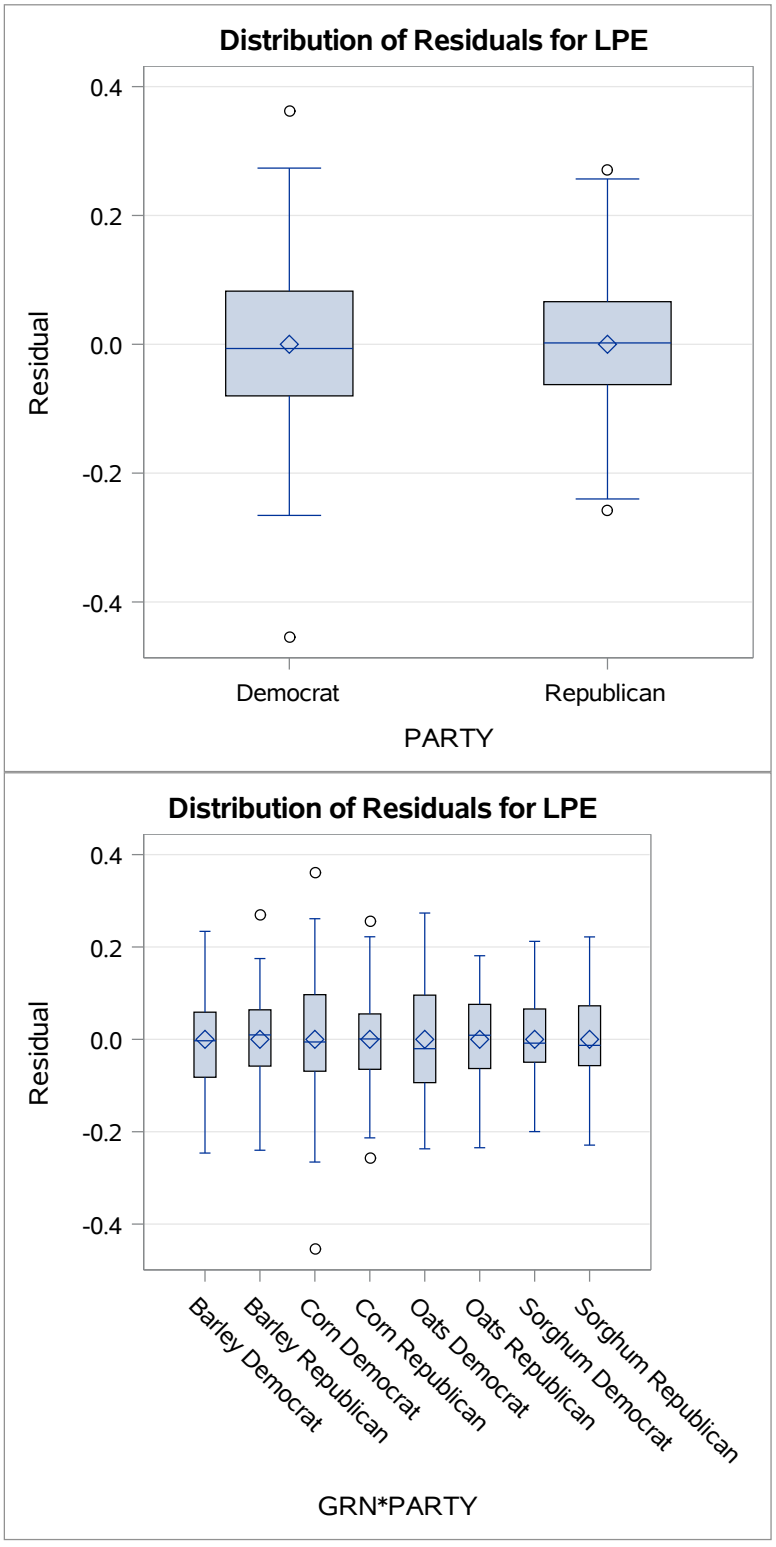


Residual Statistics	
Observations	561
Minimum	-4.398
Mean	0.0008
Maximum	3.2965
Std Dev	1.003
Fit Statistics	
Objective	-643.9
AIC	-641.9
AICC	-641.9
BIC	-637.6

The Mixed Procedure



The Mixed Procedure



The Mixed Procedure

Model Information	
Data Set	HOME.GRAINS
Dependent Variable	LPE
Covariance Structure	Diagonal
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Residual

Class Level Information		
Class	**Levels**	**Values**
PARTY	2	Democrat Republican
GRN	4	Barley Corn Oats Sorghum

Dimensions	
Covariance Parameters	1
Columns in X	37
Columns in Z	0
Subjects	1
Max Obs per Subject	561

Number of Observations	
Number of Observations Read	571
Number of Observations Used	561
Number of Observations Not Used	10

Covariance Parameter Estimates	
Cov Parm	**Estimate**
Residual	0.01250

Fit Statistics	
-2 Res Log Likelihood	-643.9
AIC (Smaller is Better)	-641.9
AICC (Smaller is Better)	-641.9
BIC (Smaller is Better)	-637.6

The Mixed Procedure

Solution for Fixed Effects

Effect	President party	Grain commodity	Estimate	Standard Error	DF	t Value	Pr > |t|
GRN		Barley	-2.8704	1.0158	533	-2.83	0.0049
GRN		Corn	-0.5539	1.6268	533	-0.34	0.7336
GRN		Oats	-4.7336	1.0153	533	-4.66	<.0001
GRN		Sorghum	-10.0665	3.6378	533	-2.77	0.0059
HVT			0.001795	0.007151	533	0.25	0.8019
PRD			-0.00034	0.000113	533	-3.02	0.0027
INFL			2.0406	0.3632	533	5.62	<.0001
PWR			-0.4236	0.1382	533	-3.07	0.0023
YEAR			0.005317	0.001802	533	2.95	0.0033
HVT*GRN		Barley	-0.03393	0.008348	533	-4.06	<.0001
HVT*GRN		Corn	-0.00176	0.007212	533	-0.24	0.8074
HVT*GRN		Oats	0.003426	0.007565	533	0.45	0.6508
HVT*GRN		Sorghum	0	.	.	.	.
PRD*GRN		Barley	0.000129	0.000193	533	0.67	0.5023
PRD*GRN		Corn	0.000367	0.000113	533	3.25	0.0012
PRD*GRN		Oats	-0.00007	0.000134	533	-0.54	0.5870
PRD*GRN		Sorghum	0	.	.	.	.
INFL*GRN		Barley	-0.6573	0.4278	533	-1.54	0.1250
INFL*GRN		Corn	-0.6234	0.4307	533	-1.45	0.1483
INFL*GRN		Oats	-0.2952	0.4329	533	-0.68	0.4956
INFL*GRN		Sorghum	0	.	.	.	.
PWR*GRN		Barley	0.04278	0.1434	533	0.30	0.7655
PWR*GRN		Corn	0.09316	0.1493	533	0.62	0.5328
PWR*GRN		Oats	0.2134	0.1440	533	1.48	0.1389
PWR*GRN		Sorghum	0	.	.	.	.
YEAR*GRN		Barley	-0.00353	0.001873	533	-1.88	0.0602
YEAR*GRN		Corn	-0.00496	0.001990	533	-2.49	0.0129
YEAR*GRN		Oats	-0.00280	0.001872	533	-1.50	0.1354
YEAR*GRN		Sorghum	0	.	.	.	.
PARTY*GRN	Democrat	Barley	-0.00494	0.01920	533	-0.26	0.7969
PARTY*GRN	Democrat	Corn	0.02219	0.01874	533	1.18	0.2369
PARTY*GRN	Democrat	Oats	-0.01374	0.01885	533	-0.73	0.4665
PARTY*GRN	Democrat	Sorghum	0.02167	0.02582	533	0.84	0.4018
PARTY*GRN	Republican	Barley	0	.	.	.	.

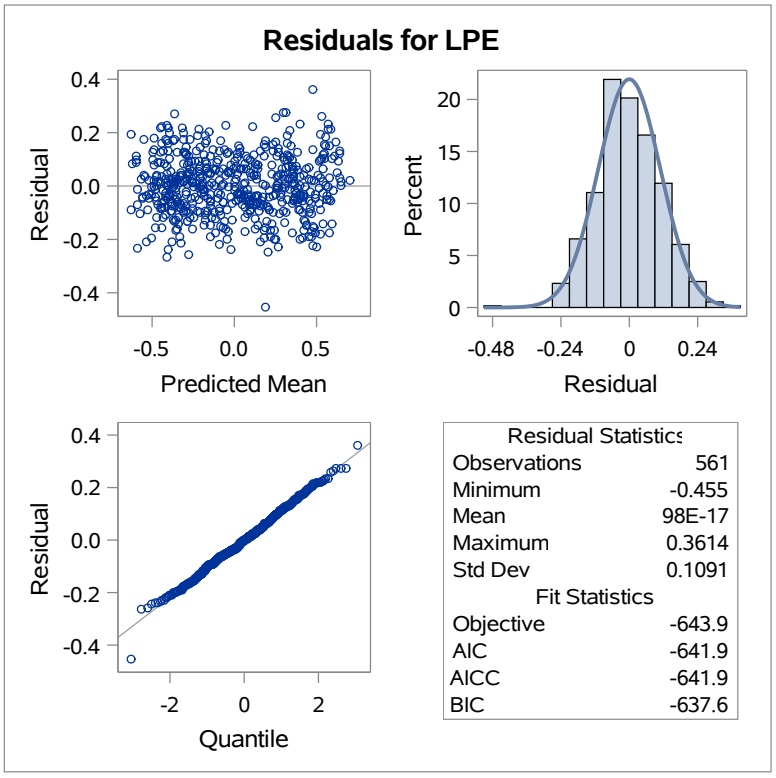
The Mixed Procedure

Solution for Fixed Effects

Effect	President party	Grain commodity	Estimate	Standard Error	DF	t Value	Pr > |t|
PARTY*GRN	Republican	Corn	0	.	.	.	.
PARTY*GRN	Republican	Oats	0	.	.	.	.
PARTY*GRN	Republican	Sorghum	0	.	.	.	.

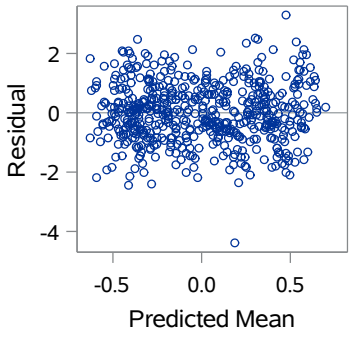
Type 3 Tests of Fixed Effects

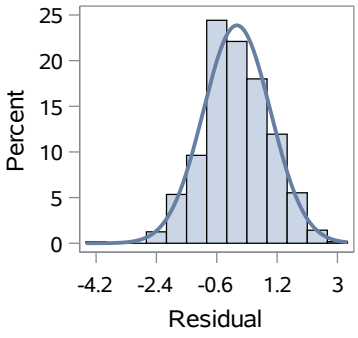
Effect	Num DF	Den DF	F Value	Pr > F
GRN	4	533	9.38	<.0001
HVT	1	533	8.21	0.0043
PRD	1	533	20.66	<.0001
INFL	1	533	148.51	<.0001
PWR	1	533	71.28	<.0001
YEAR	1	533	22.22	<.0001
HVT*GRN	3	533	19.92	<.0001
PRD*GRN	3	533	16.42	<.0001
INFL*GRN	3	533	1.12	0.3418
PWR*GRN	3	533	3.44	0.0167
YEAR*GRN	3	533	2.80	0.0394
PARTY*GRN	4	533	0.68	0.6090

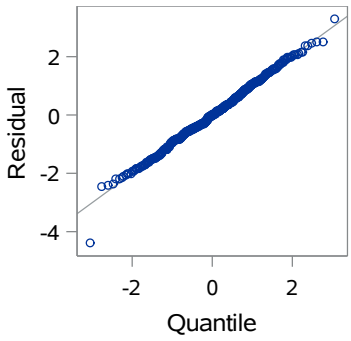


The Mixed Procedure

Studentized Residuals for LPE

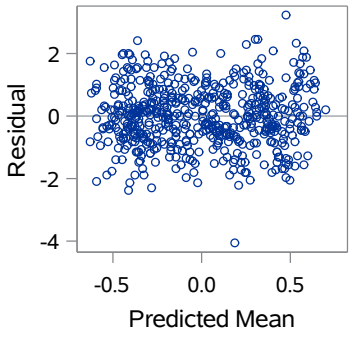


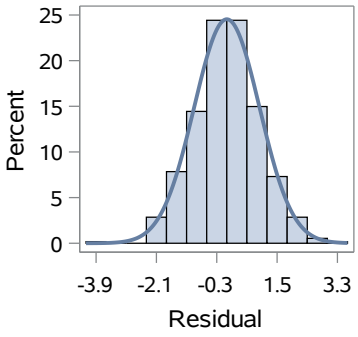


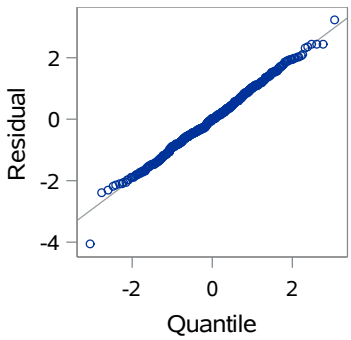


Residual Statistics	
Observations	561
Minimum	-4.398
Mean	0.0008
Maximum	3.2965
Std Dev	1.003
Fit Statistics	
Objective	-643.9
AIC	-641.9
AICC	-641.9
BIC	-637.6

Pearson Residuals for LPE

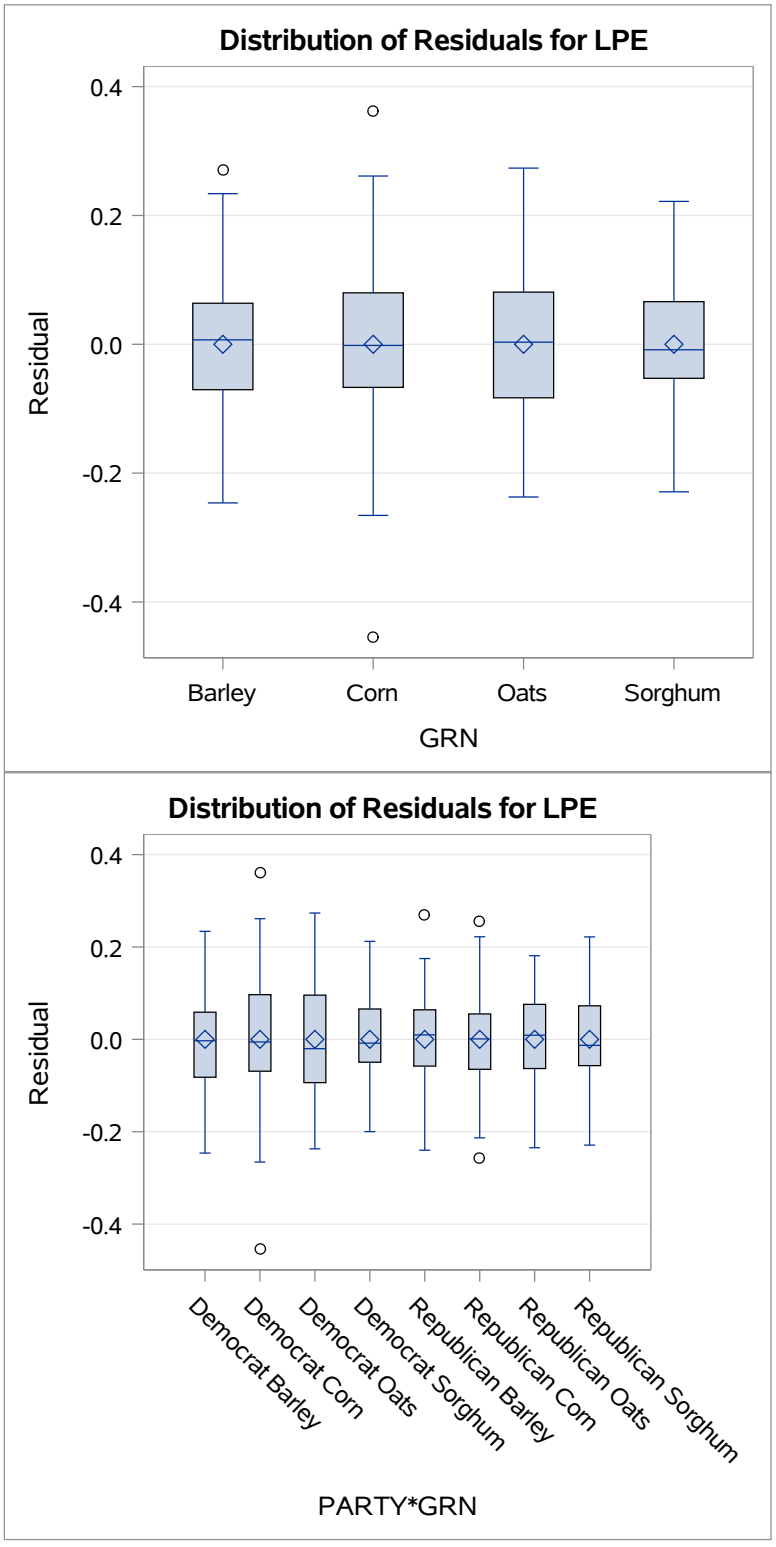






Residual Statistics	
Observations	561
Minimum	-4.068
Mean	88E-16
Maximum	3.2321
Std Dev	0.9756
Fit Statistics	
Objective	-643.9
AIC	-641.9
AICC	-641.9
BIC	-637.6

The Mixed Procedure



The Mixed Procedure

Model Information	
Data Set	HOME.GRAINS
Dependent Variable	LPE
Covariance Structure	Variance Components
Estimation Method	REML
Residual Variance Method	Parameter
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Between-Within

Class Level Information		
Class	**Levels**	**Values**
PARTY	2	Democrat Republican
GRN	4	Barley Corn Oats Sorghum

Dimensions	
Covariance Parameters	1
Columns in X	17
Columns in Z	0
Subjects	571
Max Obs per Subject	1

Number of Observations	
Number of Observations Read	571
Number of Observations Used	561
Number of Observations Not Used	10

Iteration History			
Iteration	**Evaluations**	**-2 Res Log Like**	**Criterion**
0	1	-639.28790249	
1	1	-639.28790249	0.00000000

Convergence criteria met.

Covariance Parameter Estimates	
Cov Parm	**Estimate**
Residual	0.01412

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-639.3
AIC (Smaller is Better)	-637.3
AICC (Smaller is Better)	-637.3
BIC (Smaller is Better)	-632.9

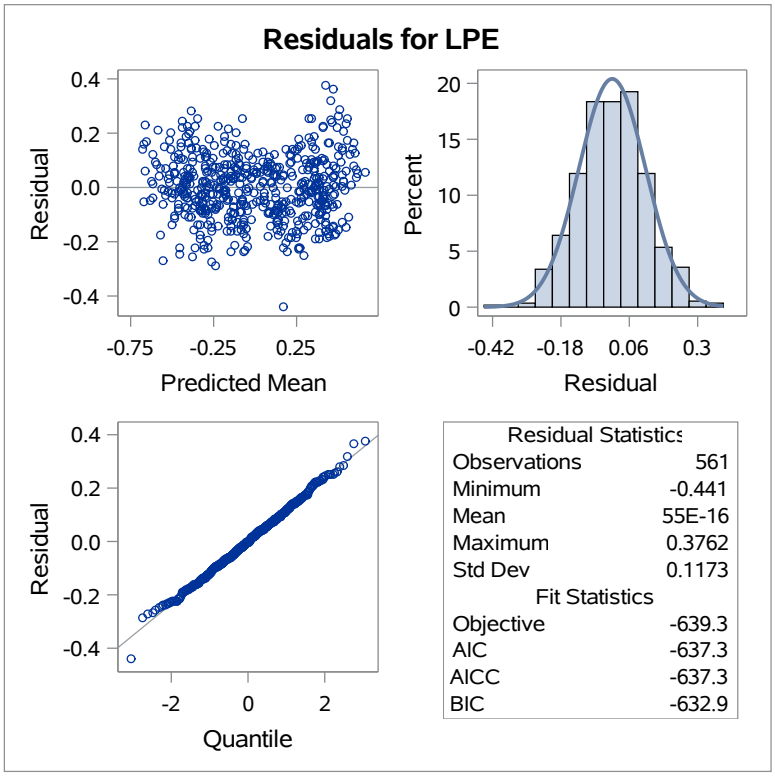
Null Model Likelihood Ratio Test		
DF	**Chi-Square**	**Pr > ChiSq**
0	0.00	1.0000

Solution for Fixed Effects

Effect	Grain commodity	Estimate	Standard Error	DF	t Value	Pr > |t|
HVT		-0.02782	0.005328	546	-5.22	<.0001
PRD		0.000277	0.000080	546	3.49	0.0005
INFL		1.5095	0.1276	546	11.83	<.0001
PWR		-0.3065	0.02562	546	-11.96	<.0001
YEAR		0.002032	0.000341	546	5.96	<.0001
GRN	Barley	-3.4323	0.6791	546	-5.05	<.0001
GRN	Corn	-3.7516	0.6600	546	-5.68	<.0001
GRN	Oats	-3.7391	0.6807	546	-5.49	<.0001
GRN	Sorghum	-3.6019	0.6876	546	-5.24	<.0001
HVT*GRN	Barley	-0.01055	0.006375	546	-1.65	0.0985
HVT*GRN	Corn	0.02770	0.005377	546	5.15	<.0001
HVT*GRN	Oats	0.03718	0.005595	546	6.64	<.0001
HVT*GRN	Sorghum	0	.	.	.	.
PRD*GRN	Barley	-0.00021	0.000132	546	-1.62	0.1061
PRD*GRN	Corn	-0.00026	0.000079	546	-3.35	0.0009
PRD*GRN	Oats	-0.00078	0.000099	546	-7.87	<.0001
PRD*GRN	Sorghum	0	.	.	.	.

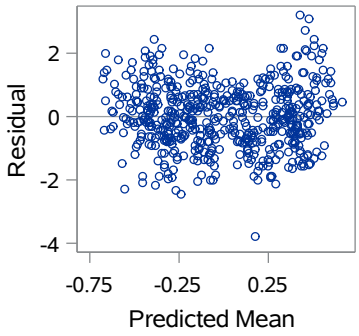
The Mixed Procedure

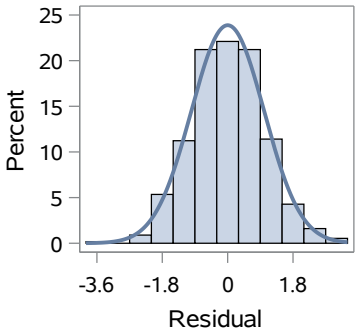
Type 3 Tests of Fixed Effects						
Effect	Num DF	Den DF	Chi-Square	F Value	Pr > ChiSq	Pr > F
HVT	1	546	56.47	56.47	<.0001	<.0001
PRD	1	546	0.64	0.64	0.4255	0.4258
INFL	1	546	139.90	139.90	<.0001	<.0001
PWR	1	546	143.09	143.09	<.0001	<.0001
YEAR	1	546	35.56	35.56	<.0001	<.0001
GRN	4	546	156.56	39.14	<.0001	<.0001
HVT*GRN	3	546	158.24	52.75	<.0001	<.0001
PRD*GRN	3	546	77.94	25.98	<.0001	<.0001

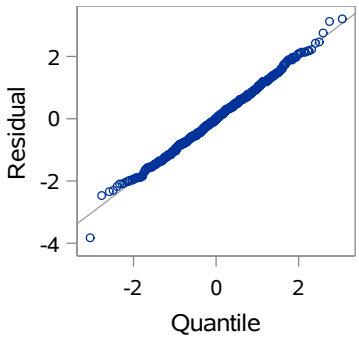


The Mixed Procedure

Studentized Residuals for LPE

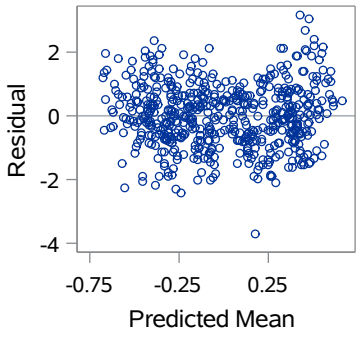


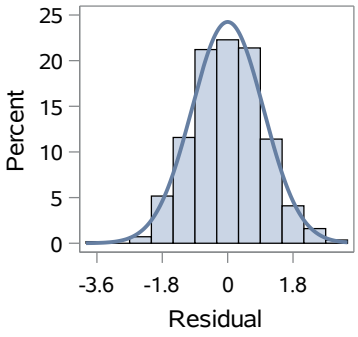


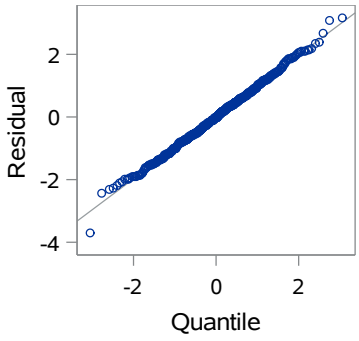


Residual Statistics	
Observations	561
Minimum	-3.806
Mean	0.0011
Maximum	3.2074
Std Dev	1.0024
Fit Statistics	
Objective	-639.3
AIC	-637.3
AICC	-637.3
BIC	-632.9

Pearson Residuals for LPE

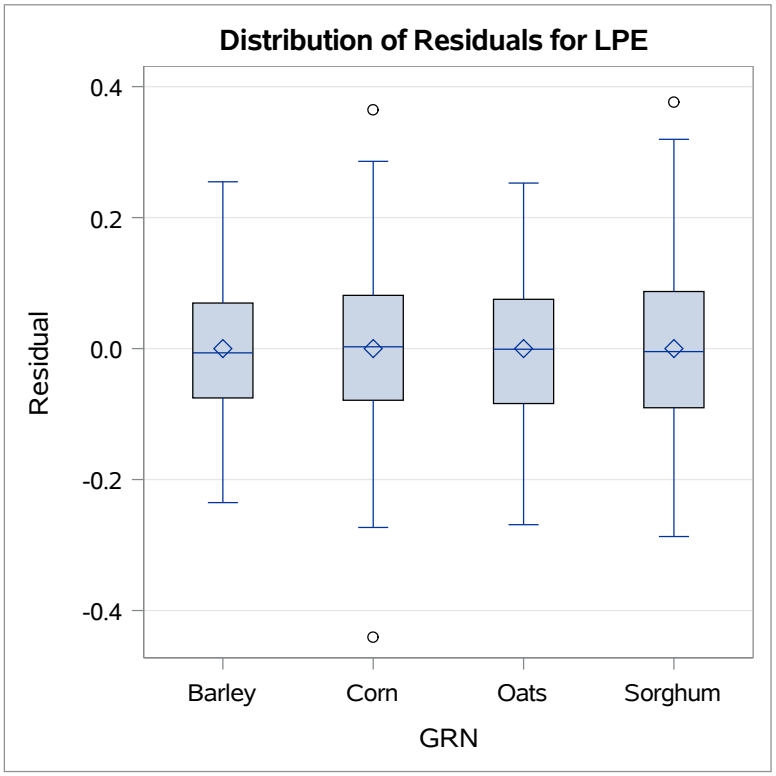






Residual Statistics	
Observations	561
Minimum	-3.71
Mean	46E-15
Maximum	3.1655
Std Dev	0.9874
Fit Statistics	
Objective	-639.3
AIC	-637.3
AICC	-637.3
BIC	-632.9

The Mixed Procedure



The ARIMA Procedure

Name of Variable = LPE	
Mean of Working Series	-0.00575
Standard Deviation	0.356996
Number of Observations	571

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	2476.58	6	<.0001	0.938	0.885	0.847	0.820	0.799	0.777
12	3992.29	12	<.0001	0.749	0.714	0.683	0.642	0.595	0.546
18	4707.73	18	<.0001	0.507	0.473	0.444	0.432	0.427	0.410
24	5112.63	24	<.0001	0.383	0.356	0.331	0.321	0.318	0.306
30	5398.56	30	<.0001	0.306	0.300	0.290	0.280	0.266	0.242

Squared Canonical Correlation Estimates						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	0.8878	0.7955	0.7324	0.6891	0.6556	0.6227
AR 1	0.0015	0.0102	0.0068	0.0017	<.0001	0.0031
AR 2	0.0105	0.0014	0.0003	0.0005	0.0017	0.0006
AR 3	0.0088	0.0002	<.0001	<.0001	<.0001	0.0002
AR 4	0.0042	0.0003	<.0001	<.0001	<.0001	0.0004
AR 5	0.0005	0.0015	<.0001	<.0001	<.0001	<.0001

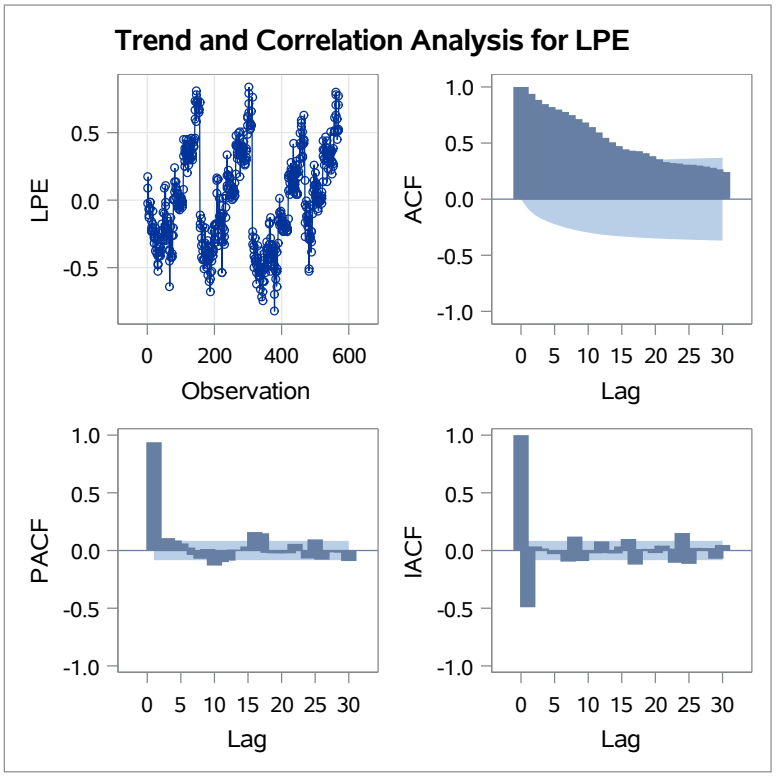
SCAN Chi-Square[1] Probability Values						
Lags	MA 0	MA 1	MA 2	MA 3	MA 4	MA 5
AR 0	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
AR 1	0.3535	0.0160	0.0518	0.3442	0.8713	0.1977
AR 2	0.0141	0.4576	0.7410	0.6440	0.3445	0.6323
AR 3	0.0253	0.7938	0.9309	0.9576	0.9180	0.7918
AR 4	0.1219	0.7449	0.9642	0.9166	0.9379	0.7172
AR 5	0.5935	0.3702	0.9188	0.9428	0.8778	0.9575

The ARIMA Procedure

ARMA(p+d,q) Tentative Order Selection Tests	
SCAN	
p+d	q
2	1
1	2
4	0

(5% Significance Level)

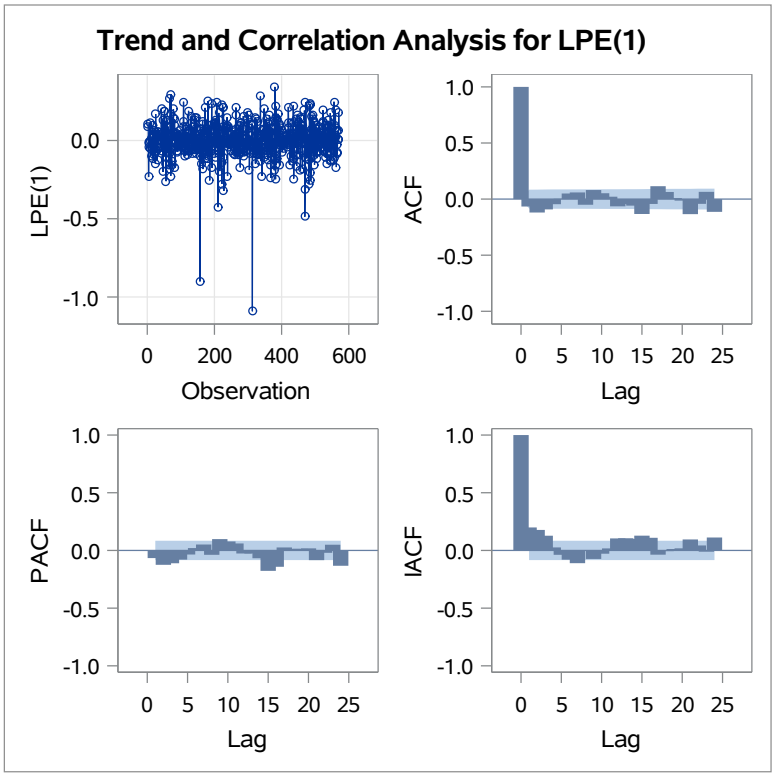
Random Walk with Drift Tests			
Type	Lags	Tau	Pr < Tau
Drift	0	-3.82	0.0001
	1	-3.59	0.0004
	2	-3.15	0.0017
	3	-2.77	0.0057
	4	-2.53	0.0115
	5	-2.44	0.0149
	6	-2.52	0.0118
	7	-2.71	0.0069
	8	-2.61	0.0093
	9	-3.00	0.0028
	10	-3.36	0.0008



The ARIMA Procedure

Name of Variable = LPE	
Period(s) of Differencing	1
Mean of Working Series	0.001385
Standard Deviation	0.121183
Number of Observations	570
Observation(s) eliminated by differencing	1

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	18.22	6	0.0057	-0.066	-0.120	-0.092	-0.046	0.003	0.050
12	29.80	12	0.0030	0.059	-0.051	0.081	0.052	0.021	-0.064
18	54.56	18	<.0001	-0.044	-0.058	-0.133	-0.043	0.115	0.063
24	76.68	24	<.0001	0.009	-0.014	-0.134	-0.042	0.065	-0.114

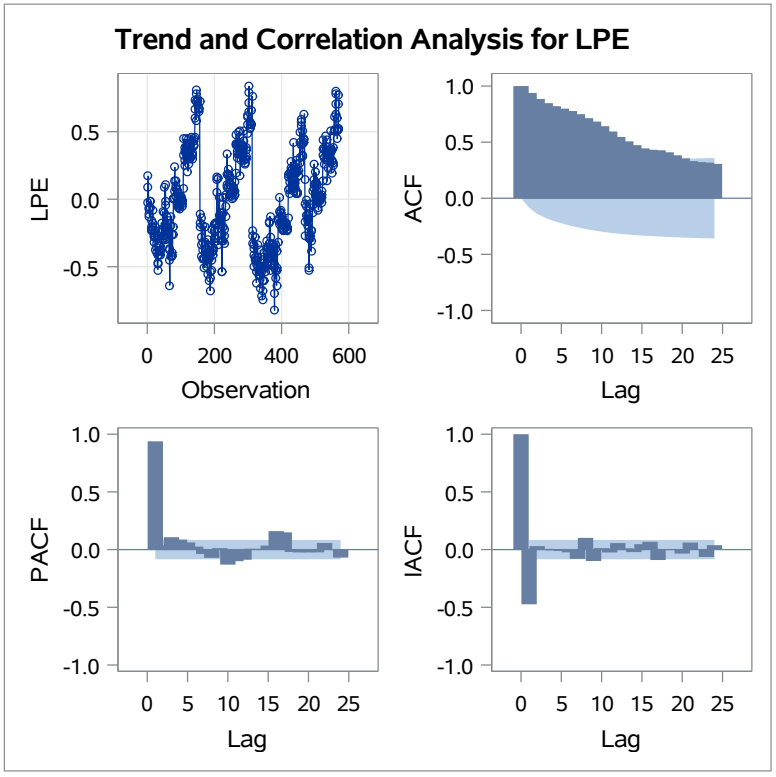


ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
UNIVARIATE SUMMARY OF GRAIN DATA OVER TIME

The ARIMA Procedure

Name of Variable = LPE	
Mean of Working Series	-0.00575
Standard Deviation	0.356996
Number of Observations	571

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	2476.58	6	<.0001	0.938	0.885	0.847	0.820	0.799	0.777
12	3992.29	12	<.0001	0.749	0.714	0.683	0.642	0.595	0.546
18	4707.73	18	<.0001	0.507	0.473	0.444	0.432	0.427	0.410
24	5112.63	24	<.0001	0.383	0.356	0.331	0.321	0.318	0.306



Conditional Least Squares Estimation					
Parameter	Estimate	Standard Error	t Value	Approx Pr > |t|	Lag
MU	0.0031947	0.07355	0.04	0.9654	0
AR1,1	0.94608	0.01410	67.12	<.0001	1

The ARIMA Procedure

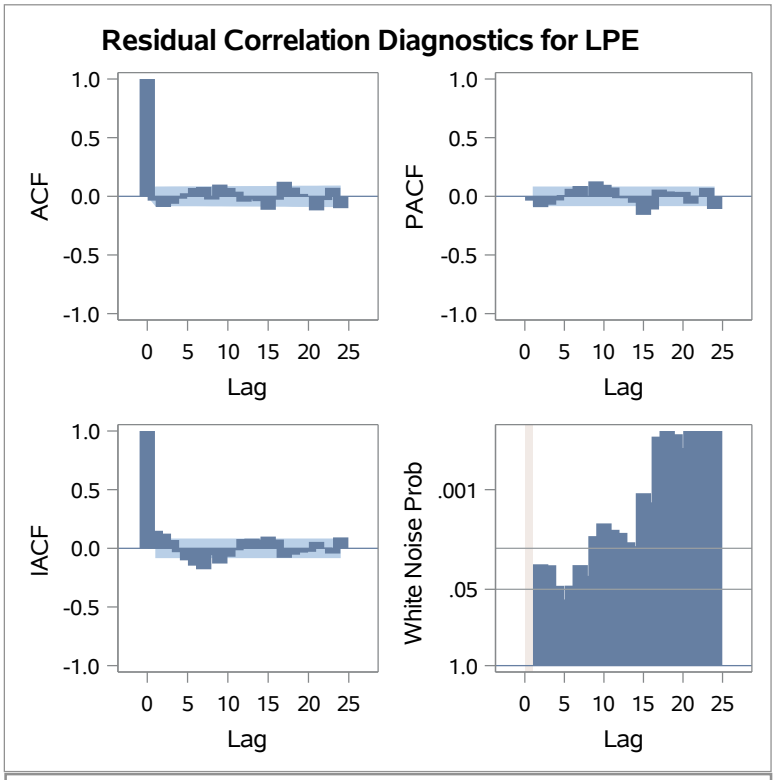
Constant Estimate	0.000172
Variance Estimate	0.014345
Std Error Estimate	0.119771
AIC	-801.094
SBC	-792.399
Number of Residuals	571

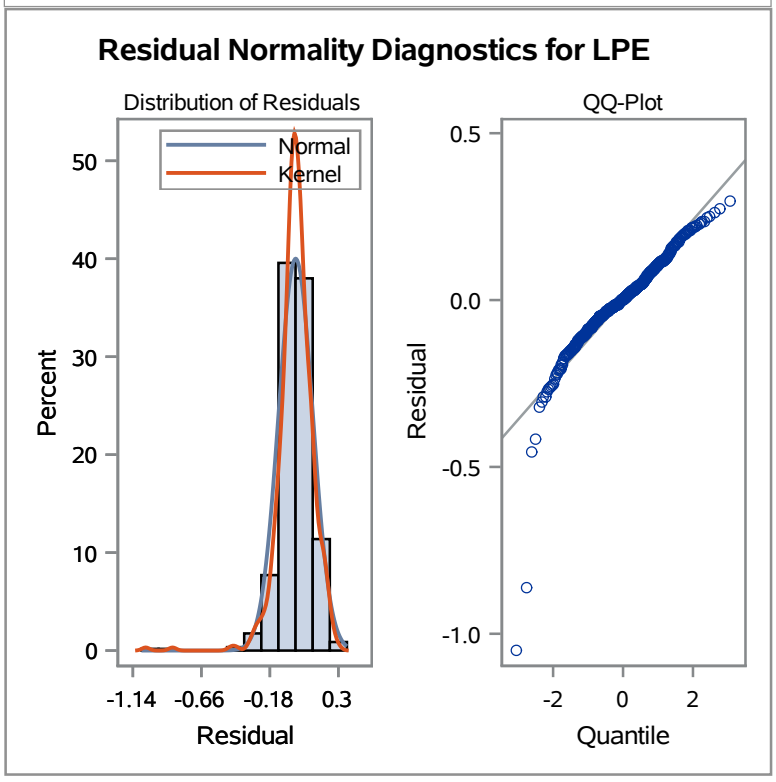
*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates		
Parameter	**MU**	**AR1,1**
MU	1.000	0.024
AR1,1	0.024	1.000

Autocorrelation Check of Residuals									
To Lag	**Chi-Square**	**DF**	**Pr > ChiSq**	**Autocorrelations**					
6	11.44	5	0.0433	-0.037	-0.091	-0.064	-0.020	0.026	0.071
12	26.51	11	0.0054	0.080	-0.027	0.100	0.071	0.040	-0.046
18	48.57	17	<.0001	-0.027	-0.041	-0.115	-0.029	0.124	0.074
24	67.26	23	<.0001	0.021	-0.002	-0.120	-0.032	0.072	-0.101
30	78.22	29	<.0001	0.069	0.018	0.039	0.032	0.099	0.029
36	92.76	35	<.0001	-0.085	0.031	0.042	0.000	-0.081	0.086
42	104.52	41	<.0001	0.089	0.042	-0.027	0.013	-0.088	-0.028
48	113.66	47	<.0001	-0.010	0.009	-0.027	0.095	-0.030	-0.062

The ARIMA Procedure





Model for variable LPE	
Estimated Mean	0.003195

Autoregressive Factors	
Factor 1:	1 - 0.94608 B**(1)

The ARIMA Procedure

Conditional Least Squares Estimation					
Parameter	Estimate	Standard Error	t Value	Approx Pr > |t|	Lag
MU	-0.0049988	0.01680	-0.30	0.7661	0
MA1,1	-0.81098	0.02460	-32.97	<.0001	1

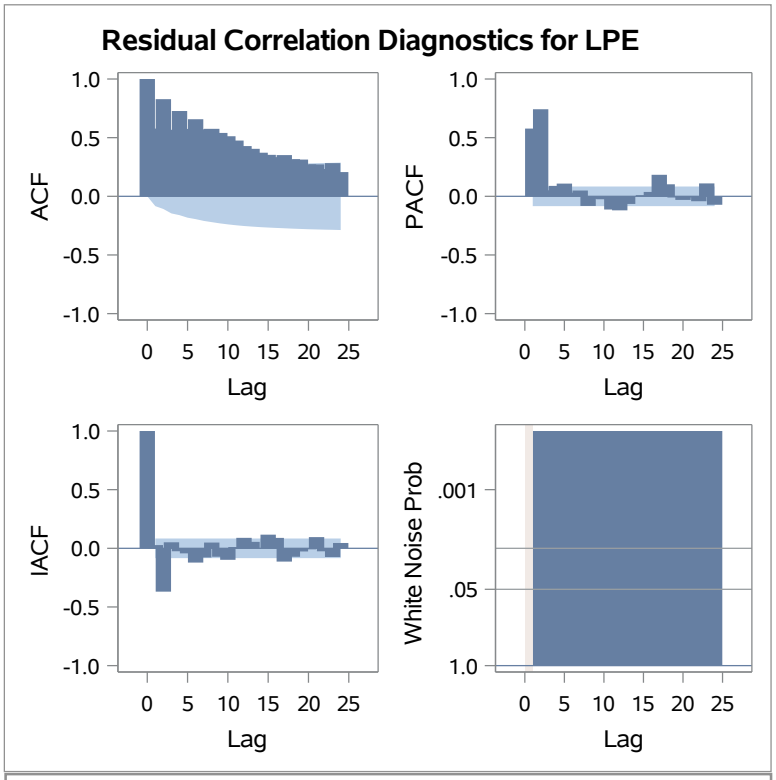
Constant Estimate	-0.005
Variance Estimate	0.049367
Std Error Estimate	0.222187
AIC	-95.4128
SBC	-86.718
Number of Residuals	571

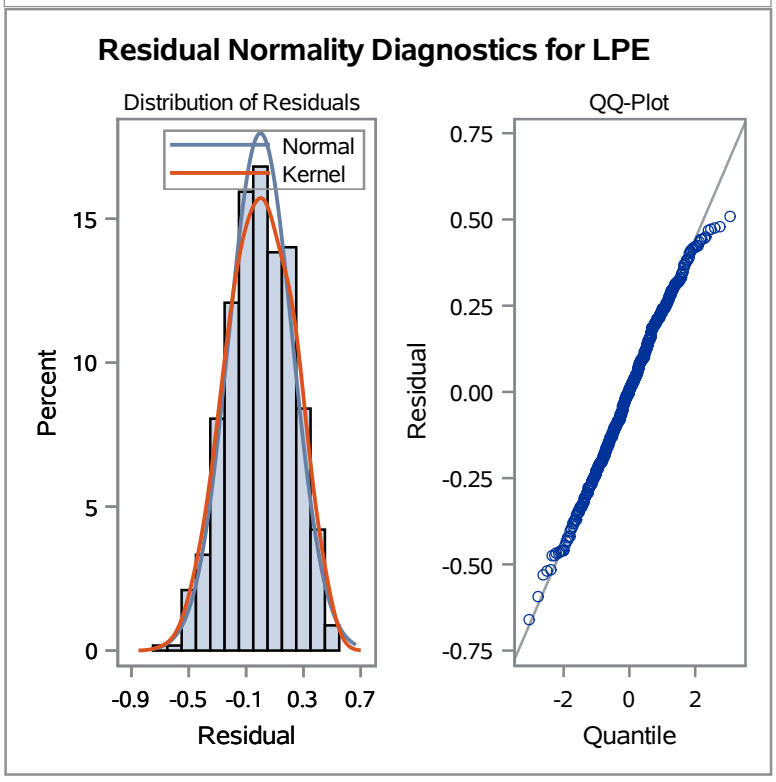
*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates		
Parameter	MU	MA1,1
MU	1.000	-0.001
MA1,1	-0.001	1.000

Autocorrelation Check of Residuals										
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations						
6	1517.00	5	<.0001	0.577	0.828	0.567	0.727	0.575	0.657
12	2461.41	11	<.0001	0.572	0.575	0.540	0.512	0.475	0.428
18	2910.23	17	<.0001	0.405	0.372	0.354	0.334	0.352	0.317
24	3161.99	23	<.0001	0.313	0.272	0.272	0.233	0.283	0.207
30	3351.52	29	<.0001	0.276	0.213	0.251	0.210	0.219	0.197
36	3422.56	35	<.0001	0.156	0.176	0.124	0.151	0.075	0.133
42	3432.49	41	<.0001	0.055	0.090	-0.005	0.035	-0.060	-0.017
48	3479.12	47	<.0001	-0.089	-0.053	-0.116	-0.087	-0.138	-0.155

The ARIMA Procedure





Model for variable LPE	
Estimated Mean	-0.005

Moving Average Factors	
Factor 1:	1 + 0.81098 B**(1)

The ARIMA Procedure

Conditional Least Squares Estimation					
Parameter	Estimate	Standard Error	t Value	Approx Pr > |t|	Lag
MU	0.0060271	0.07622	0.08	0.9370	0
MA1,1	0.05409	0.04446	1.22	0.2243	1
AR1,1	0.95208	0.01418	67.14	<.0001	1

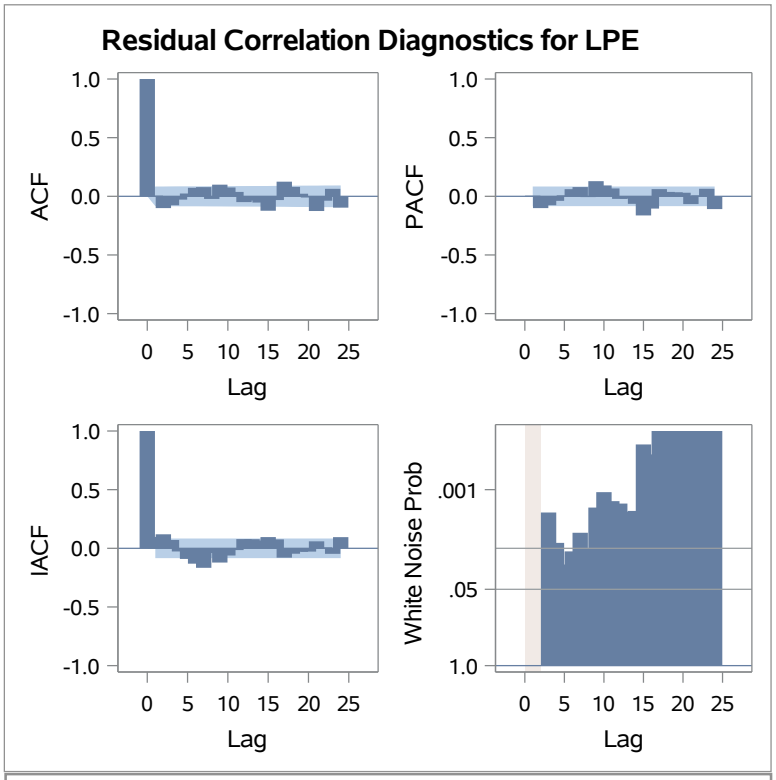
Constant Estimate	0.000289
Variance Estimate	0.014342
Std Error Estimate	0.119758
AIC	-800.226
SBC	-787.184
Number of Residuals	571

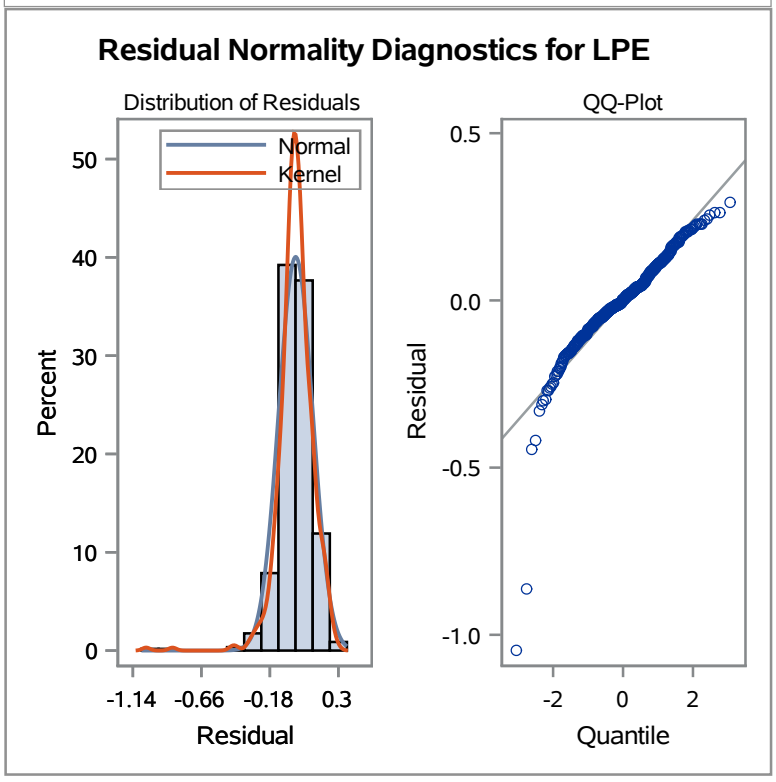
*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates			
Parameter	MU	MA1,1	AR1,1
MU	1.000	0.014	0.032
MA1,1	0.014	1.000	0.332
AR1,1	0.032	0.332	1.000

Autocorrelation Check of Residuals									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	13.00	4	0.0113	0.006	-0.101	-0.076	-0.028	0.024	0.072
12	28.13	10	0.0017	0.078	-0.022	0.099	0.075	0.037	-0.049
18	53.05	16	<.0001	-0.036	-0.053	-0.123	-0.032	0.125	0.080
24	71.61	22	<.0001	0.022	-0.010	-0.125	-0.037	0.064	-0.097
30	82.82	28	<.0001	0.063	0.021	0.040	0.038	0.102	0.029
36	96.92	34	<.0001	-0.084	0.027	0.043	-0.003	-0.078	0.086
42	109.92	40	<.0001	0.096	0.045	-0.025	0.006	-0.090	-0.033
48	118.74	46	<.0001	-0.011	0.008	-0.021	0.094	-0.028	-0.063

The ARIMA Procedure





Model for variable LPE	
Estimated Mean	0.006027

Autoregressive Factors	
Factor 1:	1 - 0.95208 B**(1)

The ARIMA Procedure

Moving Average Factors	
Factor 1:	1 - 0.05409 B**(1)

Conditional Least Squares Estimation					
Parameter	**Estimate**	**Standard Error**	**t Value**	**Approx Pr > |t|**	**Lag**
MU	0.0052664	0.07552	0.07	0.9444	0
AR1,1	0.90917	0.04195	21.67	<.0001	1
AR1,2	0.03932	0.04210	0.93	0.3507	2

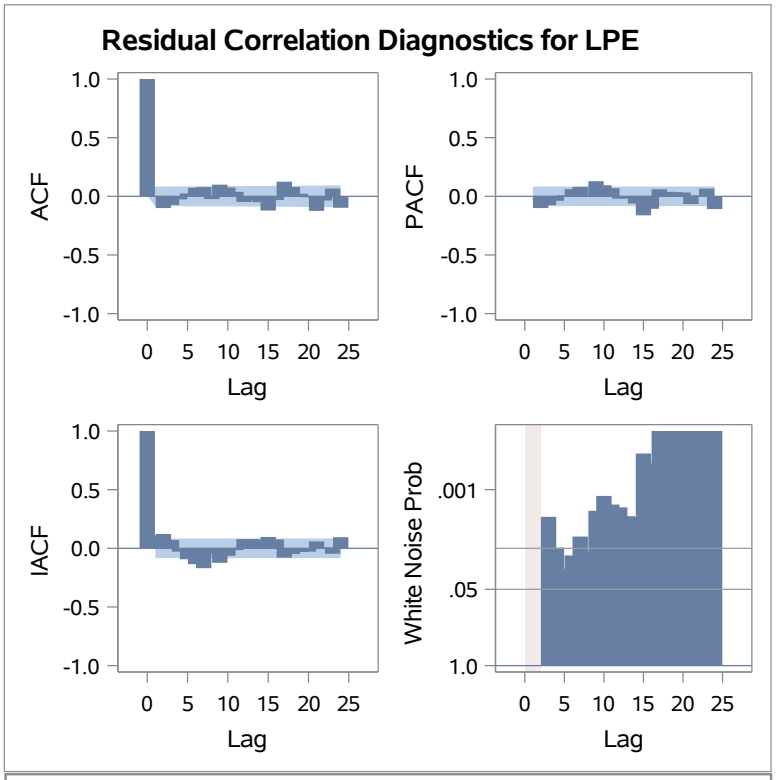
Constant Estimate	0.000271
Variance Estimate	0.014348
Std Error Estimate	0.119785
AIC	-799.97
SBC	-786.927
Number of Residuals	571

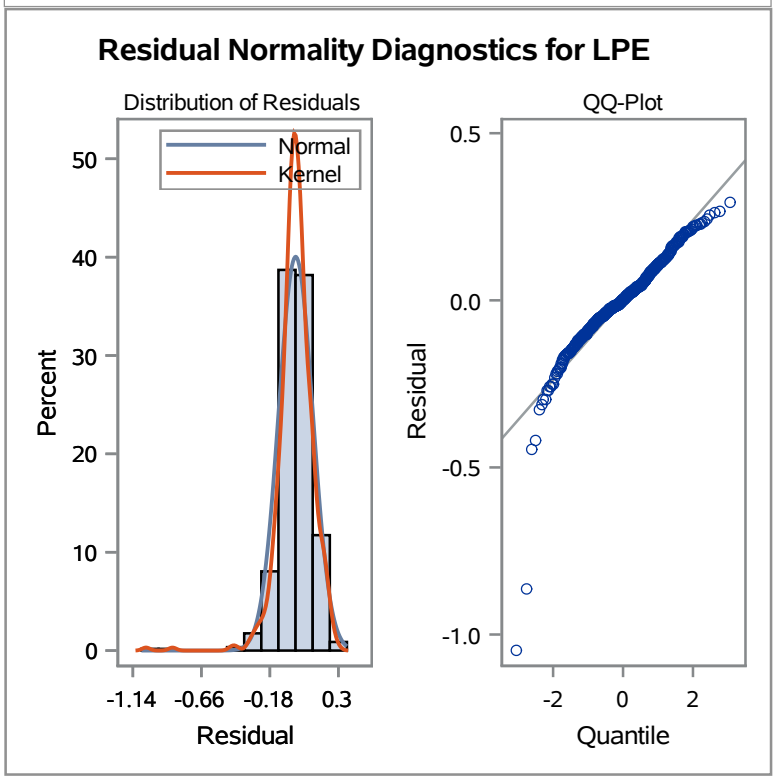
*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates			
Parameter	**MU**	**AR1,1**	**AR1,2**
MU	1.000	-0.003	0.013
AR1,1	-0.003	1.000	-0.942
AR1,2	0.013	-0.942	1.000

Autocorrelation Check of Residuals									
To Lag	**Chi-Square**	**DF**	**Pr > ChiSq**	**Autocorrelations**					
6	12.63	4	0.0132	-0.004	-0.100	-0.073	-0.026	0.024	0.072
12	27.72	10	0.0020	0.078	-0.024	0.099	0.075	0.038	-0.048
18	51.95	16	<.0001	-0.034	-0.050	-0.121	-0.031	0.125	0.079
24	70.50	22	<.0001	0.022	-0.008	-0.124	-0.036	0.066	-0.098
30	81.62	28	<.0001	0.064	0.021	0.039	0.037	0.101	0.028
36	95.87	34	<.0001	-0.084	0.028	0.043	-0.002	-0.079	0.086
42	108.56	40	<.0001	0.095	0.044	-0.026	0.008	-0.089	-0.032
48	117.43	46	<.0001	-0.010	0.008	-0.023	0.094	-0.028	-0.062

The ARIMA Procedure





Model for variable LPE	
Estimated Mean	0.005266

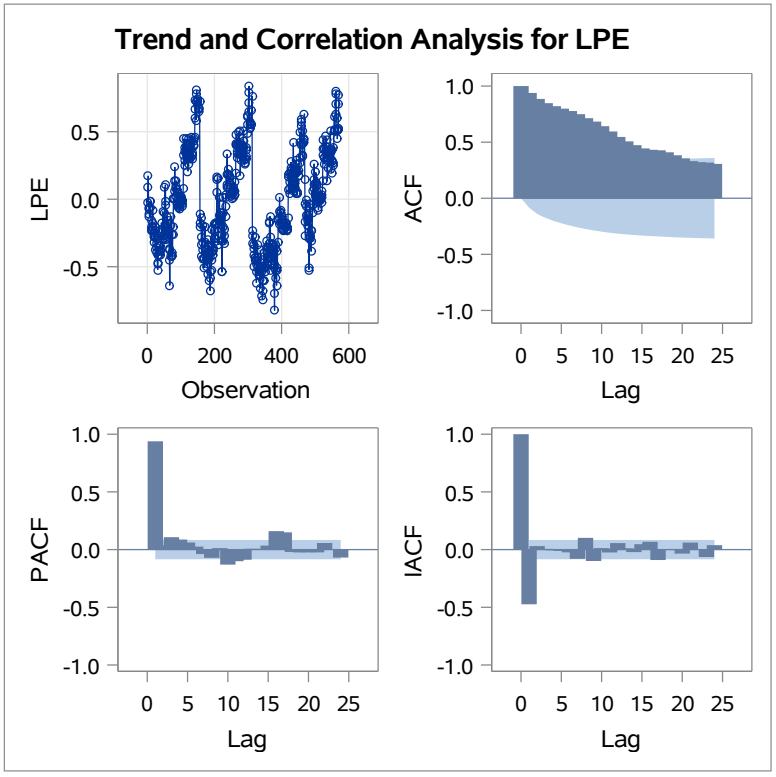
Autoregressive Factors	
Factor 1:	1 - 0.90917 B**(1) - 0.03932 B**(2)

ANALYSIS OF USDA HISTORICAL GRAIN PRICE DATA
UNIVARIATE SUMMARY OF GRAIN DATA OVER TIME

The ARIMA Procedure

Name of Variable = LPE	
Mean of Working Series	-0.00575
Standard Deviation	0.356996
Number of Observations	571

Autocorrelation Check for White Noise									
To Lag	Chi-Square	DF	Pr > ChiSq	Autocorrelations					
6	2476.58	6	<.0001	0.938	0.885	0.847	0.820	0.799	0.777
12	3992.29	12	<.0001	0.749	0.714	0.683	0.642	0.595	0.546
18	4707.73	18	<.0001	0.507	0.473	0.444	0.432	0.427	0.410
24	5112.63	24	<.0001	0.383	0.356	0.331	0.321	0.318	0.306



Conditional Least Squares Estimation					
Parameter	Estimate	Standard Error	t Value	Approx Pr > |t|	Lag
MU	0.0031947	0.07355	0.04	0.9654	0
AR1,1	0.94608	0.01410	67.12	<.0001	1

The ARIMA Procedure

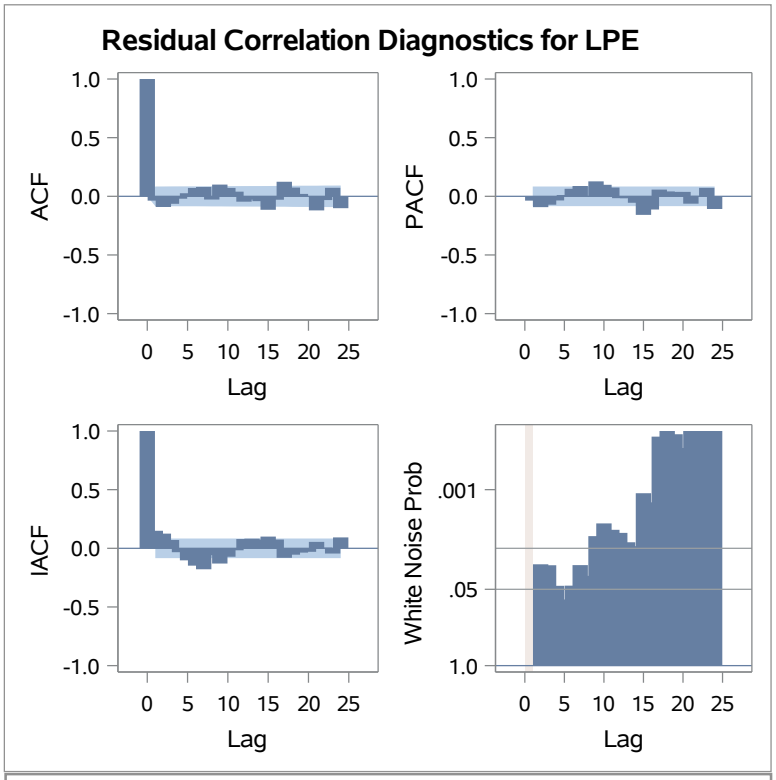
Constant Estimate	0.000172
Variance Estimate	0.014345
Std Error Estimate	0.119771
AIC	-801.094
SBC	-792.399
Number of Residuals	571

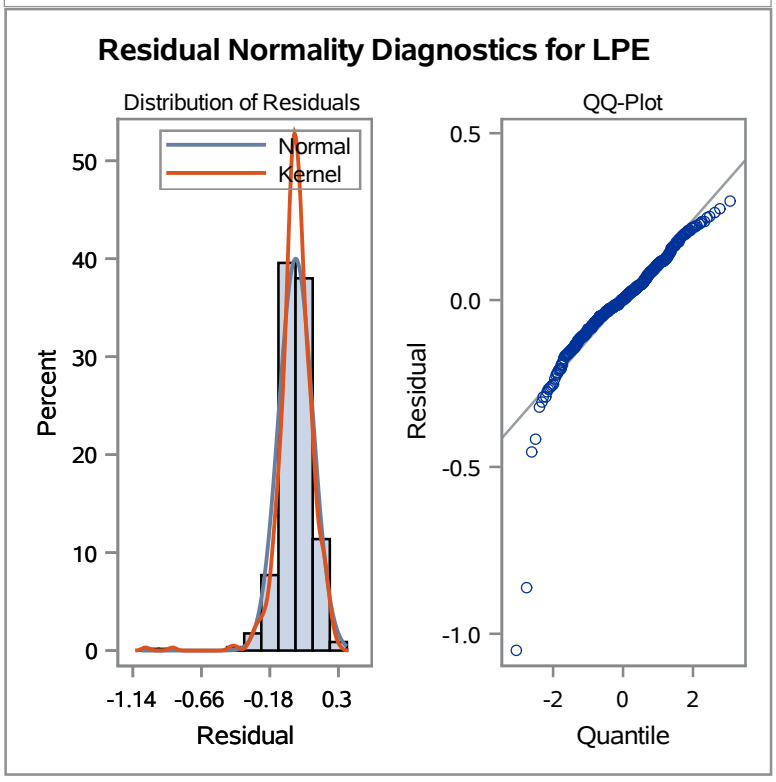
*** AIC and SBC do not include log determinant.**

Correlations of Parameter Estimates		
Parameter	**MU**	**AR1,1**
MU	1.000	0.024
AR1,1	0.024	1.000

Autocorrelation Check of Residuals									
To Lag	**Chi-Square**	**DF**	**Pr > ChiSq**	**Autocorrelations**					
6	11.44	5	0.0433	-0.037	-0.091	-0.064	-0.020	0.026	0.071
12	26.51	11	0.0054	0.080	-0.027	0.100	0.071	0.040	-0.046
18	48.57	17	<.0001	-0.027	-0.041	-0.115	-0.029	0.124	0.074
24	67.26	23	<.0001	0.021	-0.002	-0.120	-0.032	0.072	-0.101
30	78.22	29	<.0001	0.069	0.018	0.039	0.032	0.099	0.029
36	92.76	35	<.0001	-0.085	0.031	0.042	0.000	-0.081	0.086
42	104.52	41	<.0001	0.089	0.042	-0.027	0.013	-0.088	-0.028
48	113.66	47	<.0001	-0.010	0.009	-0.027	0.095	-0.030	-0.062

The ARIMA Procedure





Model for variable LPE	
Estimated Mean	0.003195

Autoregressive Factors	
Factor 1:	1 - 0.94608 B**(1)

The ARIMA Procedure

Outlier Detection Summary	
Maximum number searched	5
Number found	5
Significance used	0.05

Outlier Details				
Obs	**Type**	**Estimate**	**Chi-Square**	**Approx Prob>ChiSq**
312	Additive	0.59958	86.49	<.0001
157	Additive	-0.48612	56.85	<.0001
468	Additive	0.33961	27.75	<.0001
311	Additive	0.29899	21.51	<.0001
313	Additive	-0.29531	20.98	<.0001

Warning: Observation 157 is out of order according to the ID variable T.

Warning: Observation 313 is out of order according to the ID variable T.

Warning: Observation 469 is out of order according to the ID variable T.

Forecasts for variable LPE				
Obs	**Forecast**	**Std Error**	**95% Confidence Limits**	
572	0.7260	0.1198	0.4912	0.9607
573	0.6870	0.1649	0.3638	1.0102
574	0.6501	0.1967	0.2647	1.0356
575	0.6152	0.2213	0.1815	1.0489
576	0.5822	0.2412	0.1095	1.0550
577	0.5510	0.2577	0.0459	1.0561
578	0.5215	0.2716	-0.0109	1.0539
579	0.4935	0.2835	-0.0622	1.0493
580	0.4671	0.2938	-0.1087	1.0429
581	0.4421	0.3026	-0.1511	1.0353

The ARIMA Procedure