

Data analysis and Empirical Output

1. Unit root test at level

Variable	Model	Unit Root Test	
		ADF	PP
Dryland	Intercept	-0.9038	-1.4030
	Trend and Intercept	-0.9538	-2.0089
	None	-1.5207	-1.6578*
Irrigation	Intercept	-2.4065	-2.3861
	Trend and Intercept	-1.6832	-1.4937
	None	-1.9266*	-1.9412*
Rainfall	Intercept	-5.8205***	-5.8192***
	Trend and Intercept	-5.8763***	-5.8721***
	None	-0.4746	-0.7776
Local Procurement	Intercept	-1.3074	-1.3074
	Trend and Intercept	-2.6584	-2.7355
	None	-1.3752	-1.4269
DL_{rev}	Intercept	-1.4409	-4.3115***
	Trend and Intercept	-5.3544***	-5.3926***
	None	0.1788	-0.9897
Irr_{Rev}	Intercept	-0.8644	-0.9693
	Trend and Intercept	-3.9831**	-3.8648**
	None	0.9926	1.3690
WMZ_{Rev}	Intercept	1.7837	0.5725
	Trend and Intercept	-2.7548	-2.2317
	None	3.4090	1.9325
Suns_{Rev}	Intercept	-3.4370**	-3.4716**
	Trend and Intercept	-4.04405**	-4.8064***
	None	0.4705	0.3931

Asterisks ***, **, * denote statistical significance at 1%,5% and 10% levels respectively

2. Unit root tests at first difference

Variable	Model	Unit Root Tests	
		ADF	PP
$\Delta Dryland$	Intercept	-5.6412***	-5.1478***
	Trend and Intercept	-5.4464***	-5.2975***
	None	-5.5755***	-5.0150***
$\Delta Irrigation$	Intercept	-5.5838***	-5.5837***
	Trend and Intercept	-6.2438***	-6.3121***
	None	-5.5887***	-5.5891***
$\Delta Rainfall$	Intercept	-7.1704***	-10.3195***
	Trend and Intercept	-7.1089***	-10.1373***
	None	-7.2928***	-10.4896***
$\Delta Local Procurement$	Intercept	-5.8232***	-5.8222***
	Trend and Intercept	-5.7218***	-5.7213***
	None	-5.8142***	-5.8127***
ΔDL_{Rev}	Intercept	-11.6450***	-18.3162***
	Trend and Intercept	-5.0350***	-30.9748***
	None	-11.7705***	-16.7767***
ΔIrr_{Rev}	Intercept	-5.2128***	-17.9056***
	Trend and Intercept	-5.1756***	-17.3712***
	None	-8018***	-7.9557***
ΔWMZ_{t-1}	Intercept	-2.7878*	-4.4554***
	Trend and Intercept	-3.4828*	-4.5540***
	None	-4.6190***	-4.3710***
$\Delta Suns_{t-1}$	Intercept	-7.4293***	-7.5402***
	Trend and Intercept	-7.2537***	-7.3844***
	None	-7.4581***	-7.3989***

Asterisks ***, **, * denote statistical significance at 1%, 5% and 10% levels respectively

3. Automatic lag selection - dryland ARDL

Model	DL	DLRev	WMZRev	SunsRev	Local Procurement	Rain	AIC
1	1	2	1	2	2	1	249.7390
2	1	2	2	2	2	1	251.4329
3	1	2	1	2	2	2	251.7240
4	2	2	0	2	2	1	251.9408
5	1	2	2	2	2	2	252.2947

4. Automatic lag selection - irrigation ARDL

Model	Irr	IrrLRev	WMZRev	SunsRev	Local Procurement	AIC
1	1	2	2	2	2	209.3491
2	2	2	2	2	2	211.3491
3	1	2	2	2	1	214.0586
4	2	2	2	1	1	214.3822
5	1	2	1	1	1	219.3552

5. Dryland ARDL (1,2,1,2,2,1)

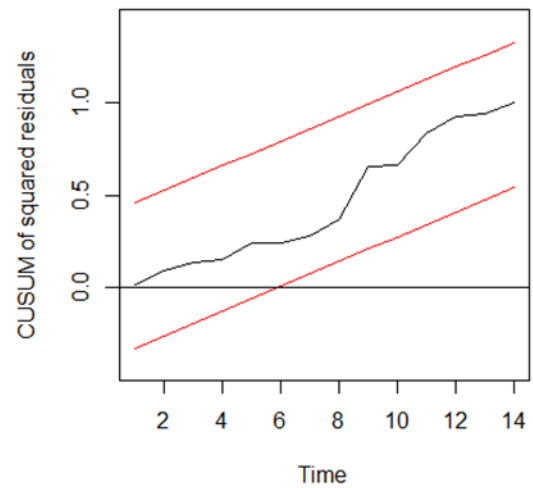
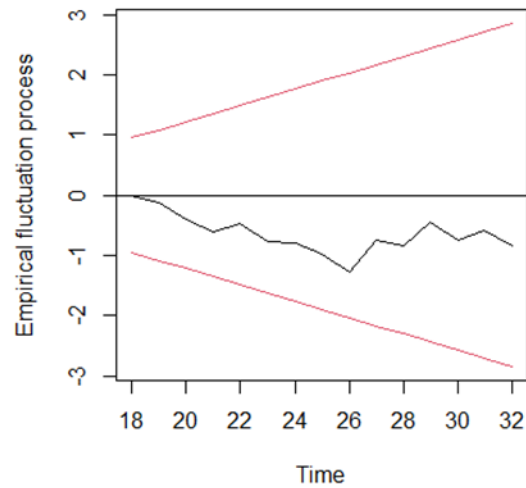
ΔDL	Coefficient	T-statistic
Intercept (c)	104.6131	3.33***
Long Run		
DL_{Rev}	0.0193	1.19
WMZ_{Rev}	-0.0207	-1.30
$Suns_{Rev}$	-0.0878	-2.88**
Local Procurement	-1.4927	-1.22
Rain	0.1294	0.62
Short Run		
DL_{Rev}		
ΔDL_{Rev}	-0.0068	-1.50
$\Delta DL_{Rev,t-1}$	-0.0060	-1.72
WMZ_{Rev}		
ΔWMZ_{Rev}	0.0069	1.52
$Suns_{Rev}$		
$\Delta Suns_{Rev}$	0.0109	2.25***
$\Delta Suns_{Rev,t-1}$	0.0089	2.28***
Local Procurement		
$\Delta Local\ Procurement$	0.8496	3.04***
$\Delta Local\ Procurement_{t-1}$	0.7066	2.13***
Rain		
$\Delta Rain$	-0.1255	-2.38***
Adjustment (θ)	-0.3063	-2.52***

ECM stability diagnostic tests - dryland

Test	Test Statistic	p-Value	Conclusion
Breusch-Godfrey	0.0086	0.92	No serial correlation up to order 1
Breusch-Pagan	19.17	0.51	Fail to reject the null hypothesis of homoscedasticity
Ljung-Box	0.0207	0.89	No serial correlation

Shapiro-Wilk	0.9304	0.01	Reject the null hypothesis of normality of residuals at 5%
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CUSUM and CUSUMQ plots – dryland



— Recursive residuals — 5% limits

6. Irrigation ARDL (1,2,2,2,2)

ΔIrr	Coefficient	T-statistic
Intercept (c)	24.055	2.35***
Long Run		
Irr_{Rev}	0.0023	1.05
WMZ_{Rev}	-0.0071	-0.87
$Suns_{Rev}$	-0.0150	-1.82
Local Procurement	0.0823	0.25
Short Run		
Irr_{Rev}		
ΔIrr_{Rev}	-0.0008	-1.03
$\Delta Irr_{Rev,t-1}$	-0.0005	-0.81
WMZ_{Rev}		
ΔWMZ_{Rev}	0.0048	1.58
$\Delta WMZ_{Rev,t-1}$	0.0059	2.52***
$Suns_{Rev}$		
$\Delta Suns_{Rev}$	-0.0011	0.32
$\Delta Suns_{Rev,t-1}$	0.0009	0.41
Local Procurement		
$\Delta Local\ Procurement$	0.3631	2.27***
$\Delta Local\ Procurement_{t-1}$	0.3193	2.03*
Adjustment (θ)	-0.4586	-2.75***

ECM stability diagnostic tests - irrigation

Test	Test Statistic	p-Value	Conclusion
Breusch-Godfrey	0.2867	0.60	No serial correlation up to order 1
Breusch-Pagan	12.15	0.59	Fail to reject the null hypothesis of homoscedasticity
Ljung-Box	0.23	0.63	No autocorrelation
Shapiro-Wilk	0.98	0.89	Residuals are normally distributed

CUSUM and CUSUMQ plots - irrigation

