一、Cropland 案例——stata 语言实现

（1） Linear Regression

. reg percentcultivated temperature

Source	SS	df	MS		Number of obs	=	3,144
					F(1, 3142)	=	20514.88
Model	52.2458281	1	52.2458281		Prob > F	=	0.0000
Residual	8.00182005	3,142	.002546728		R-squared	=	0.8672
					Adj R-squared	=	0.8671
Total	60.2476482	3,143	.019168835		Root MSE	=	.05047

percentcul~d	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
temperature	-.0334939	.0002338	-143.23	0.000	-.0339524	-.0330353
_cons	1.288381	.0038339	336.05	0.000	1.280864	1.295899

（2） Linear Regression with target transform

. gen p=percentcultivated

. gen eps=1e-4

. replace p=p-eps if p==1

. gen z=log(p/(1-p))

. reg z temperature

Source	SS	df	MS		Number of obs	=	3,144
					F(1, 3142)	=	5872.70
Model	1886.8896	1	1886.8896		Prob > F	=	0.0000
Residual	1009.51964	3,142	.32129842		R-squared	=	0.6515
					Adj R-squared	=	0.6513
Total	2896.40923	3,143	.921542868		Root MSE	=	.56683

z	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
temperature	-.2012855	.0026266	-76.63	0.000	-.2064355	-.1961355
_cons	4.508615	.0430635	104.70	0.000	4.42418	4.59305

二、Cropchoice 案例——STATA 实现

. gen eps=1e-4

. gen p1=noncrop/field

. drop p1

. gen p1=noncrop/ fields

. gen p2=corn/ fields

. gen p3=wheat/ fields

. gen p4=rice/ fields

. replace p1=p1+eps if p1==0

      (36 real changes made)

. replace p2=p2+eps if p2==0

      (0 real changes made)

. replace p3=p3+eps if p3==0

      (25 real changes made)

. replace p4=p4+eps if p4==0
          (29 real changes made)

. gen z1=log(p2)-log(p1)
. reg z1 temperature rainfall

Source	SS	df	MS		Number of obs	=	3,144
					F(2, 3141)	=	2742.97
Model	3178.95704	2	1589.47852		Prob > F	=	0.0000
Residual	1820.12426	3,141	.579472861		R-squared	=	0.6359
					Adj R-squared	=	0.6357
Total	4999.0813	3,143	1.59054448		Root MSE	=	.76123

z1	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
temperature	-.1407884	.0037159	-37.89	0.000	-.1480742	-.1335025
rainfall	.0426863	.0005902	72.33	0.000	.0415292	.0438435
_cons	.6437842	.0625304	10.30	0.000	.5211796	.7663888

. gen z2=log(p3)-log(p1)
. reg z2 temperature rainfall

Source	SS	df	MS		Number of obs	=	3,144
					F(2, 3141)	=	2342.52
Model	3924.57031	2	1962.28516		Prob > F	=	0.0000
Residual	2631.16197	3,141	.837682894		R-squared	=	0.5986
					Adj R-squared	=	0.5984
Total	6555.73229	3,143	2.08582001		Root MSE	=	.91525

z2	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
temperature	-.2894399	.0044677	-64.78	0.000	-.2981999	-.2806799
rainfall	.0293353	.0007096	41.34	0.000	.027944	.0307266
_cons	2.856269	.0751821	37.99	0.000	2.708858	3.00368

. gen z3=log(p4)-log(p1)
. reg z3 temperature rainfall

Source	SS	df	MS		Number of obs	=	3,144
					F(2, 3141)	=	3225.44
Model	6035.50281	2	3017.7514		Prob > F	=	0.0000
Residual	2938.74969	3,141	.935609581		R-squared	=	0.6725
					Adj R-squared	=	0.6723
Total	8974.2525	3,143	2.85531419		Root MSE	=	.96727

z3	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
temperature	-.0262285	.0047217	-5.55	0.000	-.0354863	-.0169706
rainfall	.0583486	.0007499	77.81	0.000	.0568782	.0598189
_cons	-3.687245	.0794552	-46.41	0.000	-3.843035	-3.531456