**Variable interactions:**

**Bovines:**

1. **FRB – not significant across all variables**

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=frb

;fcn=bcl(n|#1),bss(n|#1),bsos(n|#1),bcost(n|#1)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 412.0972

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -412.09718

Estimation based on N = 468, K = 5

Inf.Cr.AIC = 834.2 AIC/N = 1.782

Model estimated: Jan 21, 2016, 14:47:04

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -506.1469 .1858 .1743

Response data are given as ind. choices

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.27848\*\*\* .06637 -4.20 .0000 -.40856 -.14839

BSS| .06783 .07783 .87 .3834 -.08470 .22037

BSOS| -.40329\*\*\* .07787 -5.18 .0000 -.55592 -.25066

BCOST| .00292\*\*\* .00026 11.12 .0000 .00240 .00343

SQ| 1.06306\*\*\* .17480 6.08 .0000 .72046 1.40567

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 33 iterations. Status=0, F= 372.6148

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -372.61483

Restricted log likelihood -514.15055

Chi squared [ 13 d.f.] 283.07144

Significance level .00000

McFadden Pseudo R-squared .2752807

Estimation based on N = 468, K = 13

Inf.Cr.AIC = 771.2 AIC/N = 1.648

Model estimated: Jan 21, 2016, 14:47:36

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -514.1506 .2753 .2651

Constants only -506.1469 .2638 .2535

At start values -412.0972 .0958 .0831

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.71960\*\*\* .19591 -3.67 .0002 -1.10358 -.33561

BSS| -.45483\* .23277 -1.95 .0507 -.91106 .00140

BSOS| -.44244\* .26221 -1.69 .0915 -.95637 .07148

BCOST| .00490\*\*\* .00073 6.69 .0000 .00347 .00634

|Nonrandom parameters in utility functions

SQ| 2.53772\*\*\* .41035 6.18 .0000 1.73345 3.34199

|Heterogeneity in mean, Parameter:Variable

BCL:FRB| -.28268 .27425 -1.03 .3027 -.82021 .25485

BSS:FRB| .50676 .32982 1.54 .1244 -.13967 1.15319

BSOS:FRB| -.24258 .39057 -.62 .5345 -1.00807 .52292

BCOS:FRB| .00055 .00063 .88 .3814 -.00069 .00179

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .60188\*\* .25221 2.39 .0170 .10755 1.09621

NsBSS| .95844\*\*\* .23782 4.03 .0001 .49232 1.42456

NsBSOS| 1.60662\*\*\* .27567 5.83 .0000 1.06632 2.14692

NsBCOST| .00208\*\*\* .00048 4.31 .0000 .00114 .00303

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

1. -**Size – not significant**

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=size1

;fcn=bcl(n|#1),bss(n|#1),bsos(n|#1),bcost(n|#1)

;Halton

;pds=4

;pts=50

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 412.0972

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -412.09718

Estimation based on N = 468, K = 5

Inf.Cr.AIC = 834.2 AIC/N = 1.782

Model estimated: Jan 21, 2016, 14:51:10

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -506.1469 .1858 .1743

Response data are given as ind. choices

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.27848\*\*\* .06637 -4.20 .0000 -.40856 -.14839

BSS| .06783 .07783 .87 .3834 -.08470 .22037

BSOS| -.40329\*\*\* .07787 -5.18 .0000 -.55592 -.25066

BCOST| .00292\*\*\* .00026 11.12 .0000 .00240 .00343

SQ| 1.06306\*\*\* .17480 6.08 .0000 .72046 1.40567

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 34 iterations. Status=0, F= 373.8450

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -373.84496

Restricted log likelihood -514.15055

Chi squared [ 13 d.f.] 280.61118

Significance level .00000

McFadden Pseudo R-squared .2728881

Estimation based on N = 468, K = 13

Inf.Cr.AIC = 773.7 AIC/N = 1.653

Model estimated: Jan 21, 2016, 14:51:26

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -514.1506 .2729 .2626

Constants only -506.1469 .2614 .2510

At start values -412.0972 .0928 .0800

Response data are given as ind. choices

Replications for simulated probs. = 50

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.68967\*\*\* .18874 -3.65 .0003 -1.05960 -.31974

BSS| -.28747 .22573 -1.27 .2028 -.72990 .15495

BSOS| -.80604\*\*\* .26385 -3.05 .0023 -1.32317 -.28891

BCOST| .00463\*\*\* .00067 6.87 .0000 .00331 .00595

|Nonrandom parameters in utility functions

SQ| 2.35632\*\*\* .37329 6.31 .0000 1.62467 3.08796

|Heterogeneity in mean, Parameter:Variable

BCL:SIZ| -.21657 .24479 -.88 .3763 -.69636 .26321

BSS:SIZ| .22809 .31556 .72 .4698 -.39039 .84657

BSOS:SIZ| .48585 .36133 1.34 .1788 -.22235 1.19404

BCOS:SIZ| .00056 .00060 .93 .3506 -.00062 .00174

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .41600 .27945 1.49 .1366 -.13171 .96372

NsBSS| .93509\*\*\* .24887 3.76 .0002 .44731 1.42288

NsBSOS| 1.42215\*\*\* .23562 6.04 .0000 .96033 1.88396

NsBCOST| .00197\*\*\* .00041 4.79 .0000 .00116 .00277

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

**3) AMED – Agro mediu**

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=AMED

;fcn=bcl(n|#1),bss(n|#1),bsos(n|#1),bcost(n|#1)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

+------------------------------------------------------+

|WARNING: Bad observations were found in the sample. |

|Found 4 bad observations among 468 individuals. |

|You can use ;CheckData to get a list of these points. |

+------------------------------------------------------+

Normal exit: 5 iterations. Status=0, F= 408.7487

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -408.74870

Estimation based on N = 464, K = 5

Inf.Cr.AIC = 827.5 AIC/N = 1.783

Model estimated: Jan 21, 2016, 14:56:41

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -502.2141 .1861 .1745

Response data are given as ind. choices

Number of obs.= 468, skipped 4 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.29384\*\*\* .06712 -4.38 .0000 -.42540 -.16228

BSS| .03950 .07907 .50 .6174 -.11548 .19447

BSOS| -.37997\*\*\* .07868 -4.83 .0000 -.53418 -.22577

BCOST| .00289\*\*\* .00026 10.98 .0000 .00238 .00341

SQ| 1.07449\*\*\* .17584 6.11 .0000 .72986 1.41913

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 33 iterations. Status=0, F= 369.0343

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -369.03430

Restricted log likelihood -509.75610

Chi squared [ 13 d.f.] 281.44360

Significance level .00000

McFadden Pseudo R-squared .2760571

Estimation based on N = 464, K = 13

Inf.Cr.AIC = 764.1 AIC/N = 1.647

Model estimated: Jan 21, 2016, 14:57:12

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -509.7561 .2761 .2658

Constants only -502.2141 .2652 .2547

At start values -408.7487 .0972 .0843

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 4 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.87893\*\*\* .19614 -4.48 .0000 -1.26337 -.49450

BSS| .04110 .19931 .21 .8366 -.34955 .43175

BSOS| -.58314\*\* .23249 -2.51 .0121 -1.03882 -.12746

BCOST| .00522\*\*\* .00072 7.23 .0000 .00380 .00663

|Nonrandom parameters in utility functions

SQ| 2.30322\*\*\* .37763 6.10 .0000 1.56308 3.04336

|Heterogeneity in mean, Parameter:Variable

BCL:AME| .18801 .25388 .74 .4590 -.30960 .68561

BSS:AME| -.68040\*\* .32157 -2.12 .0344 -1.31068 -.05013

BSOS:AME| .25373 .37881 .67 .5030 -.48872 .99617

BCOS:AME| -.00121\* .00065 -1.88 .0607 -.00248 .00005

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .46034\* .24744 1.86 .0628 -.02464 .94532

NsBSS| .84277\*\*\* .24275 3.47 .0005 .36699 1.31855

NsBSOS| 1.46764\*\*\* .26422 5.55 .0000 .94978 1.98550

NsBCOST| .00213\*\*\* .00049 4.36 .0000 .00117 .00308

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

**4)** **Benefit -** **benefits of the conservation scheme**

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=benefit1,benefit3

;fcn=bcl(n|#01),bss(n|#00),bsos(n|#10),bcost(n|#01)

;Halton

;pds=4

;pts=50

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 412.0972

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -412.09718

Estimation based on N = 468, K = 5

Inf.Cr.AIC = 834.2 AIC/N = 1.782

Model estimated: Jan 21, 2016, 15:15:50

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -506.1469 .1858 .1752

Response data are given as ind. choices

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.27848\*\*\* .06637 -4.20 .0000 -.40856 -.14839

BSS| .06783 .07783 .87 .3834 -.08470 .22037

BSOS| -.40329\*\*\* .07787 -5.18 .0000 -.55592 -.25066

BCOST| .00292\*\*\* .00026 11.12 .0000 .00240 .00343

SQ| 1.06306\*\*\* .17480 6.08 .0000 .72046 1.40567

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 20 iterations. Status=0, F= 364.6843

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -364.68429

Restricted log likelihood -514.15055

Chi squared [ 12 d.f.] 298.93253

Significance level .00000

McFadden Pseudo R-squared .2907052

Estimation based on N = 468, K = 12

Inf.Cr.AIC = 753.4 AIC/N = 1.610

Model estimated: Jan 21, 2016, 15:16:00

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -514.1506 .2907 .2815

Constants only -506.1469 .2795 .2701

At start values -393.8108 .0740 .0619

Response data are given as ind. choices

Replications for simulated probs. = 50

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.86202\*\*\* .17242 -5.00 .0000 -1.19997 -.52408

BSS| -.22059 .17668 -1.25 .2118 -.56689 .12570

BSOS| .76787 .47564 1.61 .1064 -.16437 1.70011

BCOST| .00482\*\*\* .00069 7.01 .0000 .00347 .00616

|Nonrandom parameters in utility functions

SQ| 2.44241\*\*\* .39007 6.26 .0000 1.67789 3.20692

|Heterogeneity in mean, Parameter:Variable

BCL:BEN| 0.0 .....(Fixed Parameter).....

BCL0:BEN| .74394\* .45035 1.65 .0985 -.13872 1.62660

BSS:BEN| 0.0 .....(Fixed Parameter).....

BSS0:BEN| 0.0 .....(Fixed Parameter).....

BSOS:BEN| -1.48333\*\*\* .51621 -2.87 .0041 -2.49509 -.47156

BSO0:BEN| 0.0 .....(Fixed Parameter).....

BCOS:BEN| 0.0 .....(Fixed Parameter).....

BCO0:BEN| .00347\*\*\* .00123 2.81 .0049 .00105 .00589

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .44683\* .25988 1.72 .0855 -.06252 .95619

NsBSS| 1.09543\*\*\* .29497 3.71 .0002 .51729 1.67357

NsBSOS| 1.42261\*\*\* .24881 5.72 .0000 .93496 1.91026

NsBCOST| .00204\*\*\* .00050 4.11 .0000 .00107 .00301

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

Fixed parameter ... is constrained to equal the value or

had a nonpositive st.error because of an earlier problem.

-----------------------------------------------------------------------------

**5)** **Age**

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=age1,age3

;fcn=bcl(n|#01),bss(n|#00),bsos(n|#00),bcost(n|#10)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 412.0972

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -412.09718

Estimation based on N = 468, K = 5

Inf.Cr.AIC = 834.2 AIC/N = 1.782

Model estimated: Jan 21, 2016, 15:20:50

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -506.1469 .1858 .1761

Response data are given as ind. choices

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.27848\*\*\* .06637 -4.20 .0000 -.40856 -.14839

BSS| .06783 .07783 .87 .3834 -.08470 .22037

BSOS| -.40329\*\*\* .07787 -5.18 .0000 -.55592 -.25066

BCOST| .00292\*\*\* .00026 11.12 .0000 .00240 .00343

SQ| 1.06306\*\*\* .17480 6.08 .0000 .72046 1.40567

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 18 iterations. Status=0, F= 372.0546

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -372.05464

Restricted log likelihood -514.15055

Chi squared [ 11 d.f.] 284.19182

Significance level .00000

McFadden Pseudo R-squared .2763702

Estimation based on N = 468, K = 11

Inf.Cr.AIC = 766.1 AIC/N = 1.637

Model estimated: Jan 21, 2016, 15:21:07

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -514.1506 .2764 .2678

Constants only -506.1469 .2649 .2562

At start values -400.8946 .0719 .0609

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.97357\*\*\* .21312 -4.57 .0000 -1.39129 -.55585

BSS| -.19294 .17022 -1.13 .2570 -.52656 .14068

BSOS| -.49767\*\* .19865 -2.51 .0122 -.88701 -.10833

BCOST| .00562\*\*\* .00076 7.36 .0000 .00412 .00711

|Nonrandom parameters in utility functions

SQ| 2.54057\*\*\* .40834 6.22 .0000 1.74023 3.34091

|Heterogeneity in mean, Parameter:Variable

BCL:AGE| 0.0 .....(Fixed Parameter).....

BCL0:AGE| .29384 .27624 1.06 .2875 -.24759 .83526

BSS:AGE| 0.0 .....(Fixed Parameter).....

BSS0:AGE| 0.0 .....(Fixed Parameter).....

BSOS:AGE| 0.0 .....(Fixed Parameter).....

BSO0:AGE| 0.0 .....(Fixed Parameter).....

BCOS:AGE| -.00199\*\* .00087 -2.29 .0222 -.00370 -.00028

BCO0:AGE| 0.0 .....(Fixed Parameter).....

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .56486\*\* .26303 2.15 .0318 .04934 1.08038

NsBSS| 1.00805\*\*\* .24153 4.17 .0000 .53466 1.48144

NsBSOS| 1.64184\*\*\* .28041 5.86 .0000 1.09225 2.19143

NsBCOST| .00219\*\*\* .00050 4.41 .0000 .00121 .00316

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

Fixed parameter ... is constrained to equal the value or

had a nonpositive st.error because of an earlier problem.

-----------------------------------------------------------------------------

**6) Education level of respondents**

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=edu1,edu3

;fcn=bcl(n|#00),bss(n|#00),bsos(n|#10),bcost(n|#01)

;Halton

;pds=4

;pts=50

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 412.0972

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -412.09718

Estimation based on N = 468, K = 5

Inf.Cr.AIC = 834.2 AIC/N = 1.782

Model estimated: Jan 21, 2016, 15:25:34

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -506.1469 .1858 .1761

Response data are given as ind. choices

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.27848\*\*\* .06637 -4.20 .0000 -.40856 -.14839

BSS| .06783 .07783 .87 .3834 -.08470 .22037

BSOS| -.40329\*\*\* .07787 -5.18 .0000 -.55592 -.25066

BCOST| .00292\*\*\* .00026 11.12 .0000 .00240 .00343

SQ| 1.06306\*\*\* .17480 6.08 .0000 .72046 1.40567

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 20 iterations. Status=0, F= 370.6182

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -370.61818

Restricted log likelihood -514.15055

Chi squared [ 11 d.f.] 287.06473

Significance level .00000

McFadden Pseudo R-squared .2791641

Estimation based on N = 468, K = 11

Inf.Cr.AIC = 763.2 AIC/N = 1.631

Model estimated: Jan 21, 2016, 15:25:44

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -514.1506 .2792 .2706

Constants only -506.1469 .2678 .2591

At start values -397.7543 .0682 .0571

Response data are given as ind. choices

Replications for simulated probs. = 50

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.89122\*\*\* .17757 -5.02 .0000 -1.23925 -.54319

BSS| -.25888 .18138 -1.43 .1535 -.61438 .09662

BSOS| -.05563 .27659 -.20 .8406 -.59773 .48647

BCOST| .00540\*\*\* .00075 7.21 .0000 .00393 .00687

|Nonrandom parameters in utility functions

SQ| 2.56210\*\*\* .41085 6.24 .0000 1.75684 3.36736

|Heterogeneity in mean, Parameter:Variable

BCL:EDU| 0.0 .....(Fixed Parameter).....

BCL0:EDU| 0.0 .....(Fixed Parameter).....

BSS:EDU| 0.0 .....(Fixed Parameter).....

BSS0:EDU| 0.0 .....(Fixed Parameter).....

BSOS:EDU| -.82046\*\* .38125 -2.15 .0314 -1.56769 -.07323

BSO0:EDU| 0.0 .....(Fixed Parameter).....

BCOS:EDU| 0.0 .....(Fixed Parameter).....

BCO0:EDU| -.00158 .00213 -.74 .4582 -.00575 .00259

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .53751\*\* .24880 2.16 .0307 .04987 1.02515

NsBSS| 1.10516\*\*\* .28361 3.90 .0001 .54930 1.66102

NsBSOS| 1.66501\*\*\* .28454 5.85 .0000 1.10732 2.22270

NsBCOST| .00233\*\*\* .00051 4.56 .0000 .00133 .00334

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

Fixed parameter ... is constrained to equal the value or

had a nonpositive st.error because of an earlier problem.

-----------------------------------------------------------------------------

**7) Income**

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=tin1

;fcn=bcl(n|#1),bss(n|#1),bsos(n|#1),bcost(n|#1)

;Halton

;pds=4

;pts=50

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 412.0972

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -412.09718

Estimation based on N = 468, K = 5

Inf.Cr.AIC = 834.2 AIC/N = 1.782

Model estimated: Jan 21, 2016, 15:27:17

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -506.1469 .1858 .1743

Response data are given as ind. choices

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.27848\*\*\* .06637 -4.20 .0000 -.40856 -.14839

BSS| .06783 .07783 .87 .3834 -.08470 .22037

BSOS| -.40329\*\*\* .07787 -5.18 .0000 -.55592 -.25066

BCOST| .00292\*\*\* .00026 11.12 .0000 .00240 .00343

SQ| 1.06306\*\*\* .17480 6.08 .0000 .72046 1.40567

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 39 iterations. Status=0, F= 367.4798

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -367.47979

Restricted log likelihood -514.15055

Chi squared [ 13 d.f.] 293.34152

Significance level .00000

McFadden Pseudo R-squared .2852681

Estimation based on N = 468, K = 13

Inf.Cr.AIC = 761.0 AIC/N = 1.626

Model estimated: Jan 21, 2016, 15:27:36

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -514.1506 .2853 .2752

Constants only -506.1469 .2740 .2637

At start values -412.0972 .1083 .0957

Response data are given as ind. choices

Replications for simulated probs. = 50

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.70797\*\*\* .20644 -3.43 .0006 -1.11258 -.30337

BSS| -.19702 .21660 -.91 .3630 -.62155 .22752

BSOS| -.63429\*\* .24950 -2.54 .0110 -1.12330 -.14527

BCOST| .00461\*\*\* .00069 6.65 .0000 .00325 .00597

|Nonrandom parameters in utility functions

SQ| 2.40815\*\*\* .40015 6.02 .0000 1.62387 3.19243

|Heterogeneity in mean, Parameter:Variable

BCL:TIN| -.43677 .26580 -1.64 .1003 -.95772 .08418

BSS:TIN| .01470 .32906 .04 .9644 -.63025 .65964

BSOS:TIN| .45166 .37087 1.22 .2233 -.27523 1.17855

BCOS:TIN| .00120\* .00064 1.89 .0589 -.00005 .00245

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .46065 .39103 1.18 .2388 -.30576 1.22706

NsBSS| .96302\*\*\* .22848 4.21 .0000 .51521 1.41084

NsBSOS| 1.52368\*\*\* .24453 6.23 .0000 1.04442 2.00295

NsBCOST| .00196\*\*\* .00042 4.70 .0000 .00114 .00277

--------+--------------------------------------------------------------------

**8) Why maintain rare breeds – (M5) not significant (none of the variables)**

**9) Why keep cross breeds – (Q6)**

**Sheep:**

1. **FRB – Not significant**
2. **Q2Size - Not significant**
3. **Q12AMED – agri-environment schemes**

|-> CALC;Ran(12345)$

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=AMED

;fcn=bcl(n|#1),bss(n|#1),bsos(n|#1),bcost(n|#1)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 273.1932

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -273.19321

Estimation based on N = 324, K = 5

Inf.Cr.AIC = 556.4 AIC/N = 1.717

Model estimated: Jan 21, 2016, 15:49:34

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -347.1816 .2131 .1970

Response data are given as ind. choices

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.47738\*\*\* .08947 -5.34 .0000 -.65274 -.30203

BSS| -.23923\*\* .11079 -2.16 .0308 -.45638 -.02209

BSOS| -.29663\*\*\* .10514 -2.82 .0048 -.50269 -.09056

BCOST| .05477\*\*\* .00677 8.09 .0000 .04151 .06803

SQ| .98557\*\*\* .22452 4.39 .0000 .54551 1.42563

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 32 iterations. Status=0, F= 245.5640

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -245.56402

Restricted log likelihood -355.95038

Chi squared [ 13 d.f.] 220.77273

Significance level .00000

McFadden Pseudo R-squared .3101173

Estimation based on N = 324, K = 13

Inf.Cr.AIC = 517.1 AIC/N = 1.596

Model estimated: Jan 21, 2016, 15:49:53

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -355.9504 .3101 .2960

Constants only -347.1816 .2927 .2782

At start values -273.1932 .1011 .0827

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 81 groups

Fixed number of obsrvs./group= 4

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -1.09735\*\*\* .25149 -4.36 .0000 -1.59027 -.60443

BSS| -.31266 .22177 -1.41 .1586 -.74732 .12200

BSOS| -.68484\*\* .30705 -2.23 .0257 -1.28665 -.08302

BCOST| .09826\*\*\* .01607 6.11 .0000 .06676 .12976

|Nonrandom parameters in utility functions

SQ| 2.20823\*\*\* .45049 4.90 .0000 1.32527 3.09118

|Heterogeneity in mean, Parameter:Variable

BCL:AME| .38493 .32733 1.18 .2396 -.25663 1.02649

BSS:AME| -.60731\* .35290 -1.72 .0853 -1.29898 .08436

BSOS:AME| .61466 .46266 1.33 .1840 -.29214 1.52146

BCOS:AME| -.02466\* .01259 -1.96 .0501 -.04934 .00001

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .68030\*\* .28090 2.42 .0154 .12975 1.23085

NsBSS| .34182 .39926 .86 .3919 -.44072 1.12436

NsBSOS| 1.46334\*\*\* .28259 5.18 .0000 .90947 2.01720

NsBCOST| .02368\*\* .01122 2.11 .0349 .00168 .04567

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

1. **Q17 Quantity – Quantity of rare breeds demanded – Not significant**

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1. **Q18Benefits – Benefits of the scheme**

|-> CALC;Ran(12345)$

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=benefit1,benefit3

;fcn=bcl(n|#00),bss(n|#00),bsos(n|#11),bcost(n|#10)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 273.1932

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -273.19321

Estimation based on N = 324, K = 5

Inf.Cr.AIC = 556.4 AIC/N = 1.717

Model estimated: Jan 21, 2016, 17:09:23

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -347.1816 .2131 .1983

Response data are given as ind. choices

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.47738\*\*\* .08947 -5.34 .0000 -.65274 -.30203

BSS| -.23923\*\* .11079 -2.16 .0308 -.45638 -.02209

BSOS| -.29663\*\*\* .10514 -2.82 .0048 -.50269 -.09056

BCOST| .05477\*\*\* .00677 8.09 .0000 .04151 .06803

SQ| .98557\*\*\* .22452 4.39 .0000 .54551 1.42563

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 21 iterations. Status=0, F= 231.9402

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -231.94022

Restricted log likelihood -355.95038

Chi squared [ 12 d.f.] 248.02032

Significance level .00000

McFadden Pseudo R-squared .3483917

Estimation based on N = 324, K = 12

Inf.Cr.AIC = 487.9 AIC/N = 1.506

Model estimated: Jan 21, 2016, 17:09:35

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -355.9504 .3484 .3361

Constants only -347.1816 .3319 .3193

At start values -262.2353 .1155 .0988

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 81 groups

Fixed number of obsrvs./group= 4

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -1.03863\*\*\* .22054 -4.71 .0000 -1.47089 -.60638

BSS| -.51712\*\*\* .18159 -2.85 .0044 -.87303 -.16121

BSOS| 1.96612\*\*\* .62270 3.16 .0016 .74565 3.18659

BCOST| .12238\*\*\* .02232 5.48 .0000 .07863 .16613

|Nonrandom parameters in utility functions

SQ| 2.25949\*\*\* .45670 4.95 .0000 1.36438 3.15460

|Heterogeneity in mean, Parameter:Variable

BCL:BEN| 0.0 .....(Fixed Parameter).....

BCL0:BEN| 0.0 .....(Fixed Parameter).....

BSS:BEN| 0.0 .....(Fixed Parameter).....

BSS0:BEN| 0.0 .....(Fixed Parameter).....

BSOS:BEN| -2.91223\*\*\* .70232 -4.15 .0000 -4.28877 -1.53570

BSO0:BEN| -1.07771 .82439 -1.31 .1911 -2.69349 .53807

BCOS:BEN| -.03749\*\* .01655 -2.27 .0235 -.06993 -.00505

BCO0:BEN| 0.0 .....(Fixed Parameter).....

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .74302\*\*\* .27970 2.66 .0079 .19482 1.29123

NsBSS| .37244 .39708 .94 .3483 -.40583 1.15071

NsBSOS| 1.12505\*\*\* .26642 4.22 .0000 .60288 1.64722

NsBCOST| .02431\*\* .01127 2.16 .0311 .00221 .04641

1. **Q19Gend – gender of respondents – not significant**
2. **Q20age – Not significant**

|-> CALC;Ran(12345)$

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=age1,age2

;fcn=bcl(n|#00),bss(n|#00),bsos(n|#01),bcost(n|#00)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 273.1932

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -273.19321

Estimation based on N = 324, K = 5

Inf.Cr.AIC = 556.4 AIC/N = 1.717

Model estimated: Jan 21, 2016, 17:22:03

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -347.1816 .2131 .2008

Response data are given as ind. choices

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.47738\*\*\* .08947 -5.34 .0000 -.65274 -.30203

BSS| -.23923\*\* .11079 -2.16 .0308 -.45638 -.02209

BSOS| -.29663\*\*\* .10514 -2.82 .0048 -.50269 -.09056

BCOST| .05477\*\*\* .00677 8.09 .0000 .04151 .06803

SQ| .98557\*\*\* .22452 4.39 .0000 .54551 1.42563

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 17 iterations. Status=0, F= 248.3372

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -248.33717

Restricted log likelihood -355.95038

Chi squared [ 10 d.f.] 215.22642

Significance level .00000

McFadden Pseudo R-squared .3023264

Estimation based on N = 324, K = 10

Inf.Cr.AIC = 516.7 AIC/N = 1.595

Model estimated: Jan 21, 2016, 17:22:13

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -355.9504 .3023 .2914

Constants only -347.1816 .2847 .2735

At start values -270.1810 .0808 .0664

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 81 groups

Fixed number of obsrvs./group= 4

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -1.03867\*\*\* .23425 -4.43 .0000 -1.49779 -.57956

BSS| -.55329\*\*\* .19164 -2.89 .0039 -.92889 -.17769

BSOS| -.78443\*\* .34238 -2.29 .0220 -1.45547 -.11338

BCOST| .09631\*\*\* .01646 5.85 .0000 .06405 .12856

|Nonrandom parameters in utility functions

SQ| 2.34589\*\*\* .47446 4.94 .0000 1.41596 3.27582

|Heterogeneity in mean, Parameter:Variable

BCL:AGE| 0.0 .....(Fixed Parameter).....

BCL0:AGE| 0.0 .....(Fixed Parameter).....

BSS:AGE| 0.0 .....(Fixed Parameter).....

BSS0:AGE| 0.0 .....(Fixed Parameter).....

BSOS:AGE| 0.0 .....(Fixed Parameter).....

BSO0:AGE| .77125\* .46079 1.67 .0942 -.13189 1.67439

BCOS:AGE| 0.0 .....(Fixed Parameter).....

BCO0:AGE| 0.0 .....(Fixed Parameter).....

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .76355\*\*\* .29614 2.58 .0099 .18312 1.34398

NsBSS| .41937 .34881 1.20 .2292 -.26428 1.10302

NsBSOS| 1.54156\*\*\* .30596 5.04 .0000 .94189 2.14123

NsBCOST| .02870\*\* .01127 2.55 .0109 .00661 .05079

1. **Q21Edu – education level of respondents**

|-> CALC;Ran(12345)$

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=edu1,edu3

;fcn=bcl(n|#00),bss(n|#00),bsos(n|#10),bcost(n|#10)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 273.1932

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -273.19321

Estimation based on N = 324, K = 5

Inf.Cr.AIC = 556.4 AIC/N = 1.717

Model estimated: Jan 21, 2016, 17:26:04

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -347.1816 .2131 .1995

Response data are given as ind. choices

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.47738\*\*\* .08947 -5.34 .0000 -.65274 -.30203

BSS| -.23923\*\* .11079 -2.16 .0308 -.45638 -.02209

BSOS| -.29663\*\*\* .10514 -2.82 .0048 -.50269 -.09056

BCOST| .05477\*\*\* .00677 8.09 .0000 .04151 .06803

SQ| .98557\*\*\* .22452 4.39 .0000 .54551 1.42563

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 18 iterations. Status=0, F= 246.4253

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -246.42532

Restricted log likelihood -355.95038

Chi squared [ 11 d.f.] 219.05013

Significance level .00000

McFadden Pseudo R-squared .3076976

Estimation based on N = 324, K = 11

Inf.Cr.AIC = 514.9 AIC/N = 1.589

Model estimated: Jan 21, 2016, 17:26:15

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -355.9504 .3077 .2957

Constants only -347.1816 .2902 .2780

At start values -269.0255 .0840 .0682

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 81 groups

Fixed number of obsrvs./group= 4

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.99130\*\*\* .22428 -4.42 .0000 -1.43088 -.55171

BSS| -.54625\*\*\* .18713 -2.92 .0035 -.91301 -.17949

BSOS| .02808 .30876 .09 .9275 -.57707 .63324

BCOST| .10311\*\*\* .01787 5.77 .0000 .06809 .13813

|Nonrandom parameters in utility functions

SQ| 2.30250\*\*\* .47259 4.87 .0000 1.37624 3.22877

|Heterogeneity in mean, Parameter:Variable

BCL:EDU| 0.0 .....(Fixed Parameter).....

BCL0:EDU| 0.0 .....(Fixed Parameter).....

BSS:EDU| 0.0 .....(Fixed Parameter).....

BSS0:EDU| 0.0 .....(Fixed Parameter).....

BSOS:EDU| -.84511\* .44600 -1.89 .0581 -1.71925 .02904

BSO0:EDU| 0.0 .....(Fixed Parameter).....

BCOS:EDU| -.01931 .01253 -1.54 .1233 -.04386 .00525

BCO0:EDU| 0.0 .....(Fixed Parameter).....

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .74302\*\* .31638 2.35 .0189 .12292 1.36312

NsBSS| .41066 .36103 1.14 .2553 -.29694 1.11826

NsBSOS| 1.52766\*\*\* .31027 4.92 .0000 .91954 2.13578

NsBCOST| .02440\*\* .01148 2.13 .0335 .00190 .04690

1. **Q23 – Tinc – income level of respondents**

|-> CALC;Ran(12345)$

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=tin1

;fcn=bcl(n|#0),bss(n|#1),bsos(n|#0),bcost(n|#1)

;Halton

;pds=4

;pts=100

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

Normal exit: 5 iterations. Status=0, F= 273.1932

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -273.19321

Estimation based on N = 324, K = 5

Inf.Cr.AIC = 556.4 AIC/N = 1.717

Model estimated: Jan 21, 2016, 17:29:30

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -347.1816 .2131 .1995

Response data are given as ind. choices

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.47738\*\*\* .08947 -5.34 .0000 -.65274 -.30203

BSS| -.23923\*\* .11079 -2.16 .0308 -.45638 -.02209

BSOS| -.29663\*\*\* .10514 -2.82 .0048 -.50269 -.09056

BCOST| .05477\*\*\* .00677 8.09 .0000 .04151 .06803

SQ| .98557\*\*\* .22452 4.39 .0000 .54551 1.42563

--------+--------------------------------------------------------------------

Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 21 iterations. Status=0, F= 246.5958

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -246.59579

Restricted log likelihood -355.95038

Chi squared [ 11 d.f.] 218.70917

Significance level .00000

McFadden Pseudo R-squared .3072186

Estimation based on N = 324, K = 11

Inf.Cr.AIC = 515.2 AIC/N = 1.590

Model estimated: Jan 21, 2016, 17:29:42

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -355.9504 .3072 .2953

Constants only -347.1816 .2897 .2775

At start values -263.1390 .0629 .0467

Response data are given as ind. choices

Replications for simulated probs. = 100

Halton sequences used for simulations

RPL model with panel has 81 groups

Fixed number of obsrvs./group= 4

Number of obs.= 324, skipped 0 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -1.01808\*\*\* .21366 -4.77 .0000 -1.43685 -.59932

BSS| -.30326 .20870 -1.45 .1462 -.71231 .10579

BSOS| -.37208 .23976 -1.55 .1207 -.84199 .09783

BCOST| .08573\*\*\* .01600 5.36 .0000 .05436 .11710

|Nonrandom parameters in utility functions

SQ| 2.26487\*\*\* .45996 4.92 .0000 1.36336 3.16637

|Heterogeneity in mean, Parameter:Variable

BCL:TIN| 0.0 .....(Fixed Parameter).....

BSS:TIN| -.61645\* .33279 -1.85 .0640 -1.26870 .03581

BSOS:TIN| 0.0 .....(Fixed Parameter).....

BCOS:TIN| .01647 .01323 1.24 .2132 -.00946 .04240

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .71545\*\* .30502 2.35 .0190 .11762 1.31328

NsBSS| .18387 .50323 .37 .7148 -.80244 1.17018

NsBSOS| 1.58448\*\*\* .29015 5.46 .0000 1.01581 2.15316

NsBCOST| .02650\*\* .01226 2.16 .0307 .00247 .05053

1. **Q5 – why maintain rare breeds – data missing**
2. **Q6 – why keep cross breeds - data missing**

**Final model analysis – covariates (bovines)**

|-> CALC;Ran(12345)$

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl= size1, size2, AMED, Quant1, Quant2, Quant3,Benefit1, Benefit2, Benefit3,age2, age3,Edu1, Edu2, tin2, Q6K2, Q6K3, Q6K4

;fcn=bcl(n|#00100110000000000),bss(n|#00000000000000000),bsos(n|#00000000000001000),bcost(n|#11000101000000000)

;Halton

;pds=4

;pts=1000

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

+------------------------------------------------------+

|WARNING: Bad observations were found in the sample. |

|Found 36 bad observations among 468 individuals. |

|You can use ;CheckData to get a list of these points. |

+------------------------------------------------------+

Normal exit: 5 iterations. Status=0, F= 379.0919

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -379.09190

Estimation based on N = 432, K = 5

Inf.Cr.AIC = 768.2 AIC/N = 1.778

Model estimated: Dec 23, 2015, 15:03:41

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -469.1181 .1919 .1757

Response data are given as ind. choices

Number of obs.= 468, skipped 36 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.10132\*\*\* .02801 -3.62 .0003 -.15622 -.04642

BSS| .02314 .08286 .28 .7801 -.13927 .18554

BSOS| -.36128\*\*\* .08261 -4.37 .0000 -.52319 -.19937

BCOST| .00301\*\*\* .00028 10.89 .0000 .00247 .00355

SQ| .42662\* .25621 1.67 .0959 -.07554 .92879

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Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

-----------------------------------------------------------------------------

Normal exit: 27 iterations. Status=0, F= 328.5036

-----------------------------------------------------------------------------

Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -328.50364

Restricted log likelihood -474.60051

Chi squared [ 17 d.f.] 292.19373

Significance level .00000

McFadden Pseudo R-squared .3078312

Estimation based on N = 432, K = 17

Inf.Cr.AIC = 691.0 AIC/N = 1.600

Model estimated: Dec 23, 2015, 15:10:33

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -474.6005 .3078 .2939

Constants only -469.1181 .2997 .2857

At start values -457.8098 .2824 .2680

Response data are given as ind. choices

Replications for simulated probs. =1000

Halton sequences used for simulations

RPL model with panel has 117 groups

Fixed number of obsrvs./group= 4

Number of obs.= 468, skipped 36 obs

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| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.07308 .07610 -.96 .3369 -.22223 .07608

BSS| -.20657 .18334 -1.13 .2599 -.56591 .15277

BSOS| -.09626 .33636 -.29 .7747 -.75552 .56300

BCOST| .00833 .00563 1.48 .1388 -.00270 .01937

|Nonrandom parameters in utility functions

SQ| .41038 .46131 .89 .3737 -.49379 1.31454

|Heterogeneity in mean, Parameter:Variable

BCL:SIZ| 0.0 .....(Fixed Parameter).....

BCL0:SIZ| 0.0 .....(Fixed Parameter).....

BCL:AME| -.11060\*\* .05502 -2.01 .0444 -.21844 -.00275

BCL:QUA| 0.0 .....(Fixed Parameter).....

BCL0:QUA| 0.0 .....(Fixed Parameter).....

BCL1:QUA| -.36831\*\* .17037 -2.16 .0306 -.70224 -.03438

BCL:BEN| -.22624\*\*\* .07287 -3.10 .0019 -.36906 -.08342

BCL0:BEN| 0.0 .....(Fixed Parameter).....

BCL1:BEN| 0.0 .....(Fixed Parameter).....

BCL:AGE| 0.0 .....(Fixed Parameter).....

BCL0:AGE| 0.0 .....(Fixed Parameter).....

BCL:EDU| 0.0 .....(Fixed Parameter).....

BCL0:EDU| 0.0 .....(Fixed Parameter).....

BCL:TIN| 0.0 .....(Fixed Parameter).....

BCL:Q6K| 0.0 .....(Fixed Parameter).....

BCL0:Q6K| 0.0 .....(Fixed Parameter).....

BCL1:Q6K| 0.0 .....(Fixed Parameter).....

BSS:SIZ| 0.0 .....(Fixed Parameter).....

BSS0:SIZ| 0.0 .....(Fixed Parameter).....

BSS:AME| 0.0 .....(Fixed Parameter).....

BSS:QUA| 0.0 .....(Fixed Parameter).....

BSS0:QUA| 0.0 .....(Fixed Parameter).....

BSS1:QUA| 0.0 .....(Fixed Parameter).....

BSS:BEN| 0.0 .....(Fixed Parameter).....

BSS0:BEN| 0.0 .....(Fixed Parameter).....

BSS1:BEN| 0.0 .....(Fixed Parameter).....

BSS:AGE| 0.0 .....(Fixed Parameter).....

BSS0:AGE| 0.0 .....(Fixed Parameter).....

BSS:EDU| 0.0 .....(Fixed Parameter).....

BSS0:EDU| 0.0 .....(Fixed Parameter).....

BSS:TIN| 0.0 .....(Fixed Parameter).....

BSS:Q6K| 0.0 .....(Fixed Parameter).....

BSS0:Q6K| 0.0 .....(Fixed Parameter).....

BSS1:Q6K| 0.0 .....(Fixed Parameter).....

BSOS:SIZ| 0.0 .....(Fixed Parameter).....

BSO0:SIZ| 0.0 .....(Fixed Parameter).....

BSOS:AME| 0.0 .....(Fixed Parameter).....

BSOS:QUA| 0.0 .....(Fixed Parameter).....

BSO0:QUA| 0.0 .....(Fixed Parameter).....

BSO1:QUA| 0.0 .....(Fixed Parameter).....

BSOS:BEN| 0.0 .....(Fixed Parameter).....

BSO0:BEN| 0.0 .....(Fixed Parameter).....

BSO1:BEN| 0.0 .....(Fixed Parameter).....

BSOS:AGE| 0.0 .....(Fixed Parameter).....

BSO0:AGE| 0.0 .....(Fixed Parameter).....

BSOS:EDU| 0.0 .....(Fixed Parameter).....

BSO0:EDU| 0.0 .....(Fixed Parameter).....

BSOS:TIN| -.79717\* .43705 -1.82 .0682 -1.65377 .05944

BSOS:Q6K| 0.0 .....(Fixed Parameter).....

BSO0:Q6K| 0.0 .....(Fixed Parameter).....

BSO1:Q6K| 0.0 .....(Fixed Parameter).....

BCOS:SIZ| -.00243 .00561 -.43 .6651 -.01341 .00856

BCO0:SIZ| -.00294 .00561 -.52 .6007 -.01393 .00806

BCOS:AME| 0.0 .....(Fixed Parameter).....

BCOS:QUA| 0.0 .....(Fixed Parameter).....

BCO0:QUA| 0.0 .....(Fixed Parameter).....

BCO1:QUA| .00353\* .00195 1.81 .0708 -.00030 .00736

BCOS:BEN| 0.0 .....(Fixed Parameter).....

BCO0:BEN| -.00185\* .00107 -1.73 .0843 -.00395 .00025

BCO1:BEN| 0.0 .....(Fixed Parameter).....

BCOS:AGE| 0.0 .....(Fixed Parameter).....

BCO0:AGE| 0.0 .....(Fixed Parameter).....

BCOS:EDU| 0.0 .....(Fixed Parameter).....

BCO0:EDU| 0.0 .....(Fixed Parameter).....

BCOS:TIN| 0.0 .....(Fixed Parameter).....

BCOS:Q6K| 0.0 .....(Fixed Parameter).....

BCO0:Q6K| 0.0 .....(Fixed Parameter).....

BCO1:Q6K| 0.0 .....(Fixed Parameter).....

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .13380\*\*\* .04530 2.95 .0031 .04501 .22259

NsBSS| .93364\*\*\* .24518 3.81 .0001 .45310 1.41418

NsBSOS| 1.73314\*\*\* .30341 5.71 .0000 1.13847 2.32781

NsBCOST| .00153\*\*\* .00054 2.84 .0046 .00047 .00259

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Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

Fixed parameter ... is constrained to equal the value or

had a nonpositive st.error because of an earlier problem.

**Final model analysis – covariates (sheep)**

|-> CALC;Ran(12345)$

|-> NLOGIT

;lhs=choice

;choices=alt1,alt2,alt3

;rpl=AMED,Benefit1,Benefit2,edu1,edu3,q5m1,q5m2,q5m3,q5m4,q5m5,q5m6,q5m7,q6k1,q6k2,q6k3

;fcn=bcl(n|#100000000000000),bss(n|#000000000000000),bsos(n|#010000000000000),bcost(n|#000000000100000)

;Halton

;pds=4

;pts=1000

;Model:

U(alt1)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt2)=bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost/

U(alt3)=sq+bcl\*cl+bss\*ss+bsos\*sos+bcost\*cost$

+------------------------------------------------------+

|WARNING: Bad observations were found in the sample. |

|Found 192 bad observations among 324 individuals. |

|You can use ;CheckData to get a list of these points. |

+------------------------------------------------------+

Normal exit: 6 iterations. Status=0, F= 101.0037

-----------------------------------------------------------------------------

Start values obtained using MNL model

Dependent variable Choice

Log likelihood function -101.00367

Estimation based on N = 132, K = 5

Inf.Cr.AIC = 212.0 AIC/N = 1.606

Model estimated: Dec 23, 2015, 16:49:06

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

Constants only -141.3567 .2855 .2514

Response data are given as ind. choices

Number of obs.= 324, skipped 192 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

BCL| -.18756\*\*\* .06120 -3.06 .0022 -.30751 -.06762

BSS| -.36244\* .20508 -1.77 .0772 -.76439 .03952

BSOS| -.03111 .19580 -.16 .8738 -.41487 .35266

BCOST| .07482\*\*\* .01280 5.85 .0000 .04974 .09990

SQ| .24055 .52866 .46 .6491 -.79561 1.27670

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Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

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Normal exit: 23 iterations. Status=0, F= 87.62119

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Random Parameters Logit Model

Dependent variable CHOICE

Log likelihood function -87.62119

Restricted log likelihood -145.01682

Chi squared [ 12 d.f.] 114.79127

Significance level .00000

McFadden Pseudo R-squared .3957861

Estimation based on N = 132, K = 12

Inf.Cr.AIC = 199.2 AIC/N = 1.509

Model estimated: Dec 23, 2015, 16:51:13

R2=1-LogL/LogL\* Log-L fncn R-sqrd R2Adj

No coefficients -145.0168 .3958 .3670

Constants only -141.3567 .3801 .3506

At start values -109.9710 .2032 .1653

Response data are given as ind. choices

Replications for simulated probs. =1000

Halton sequences used for simulations

RPL model with panel has 81 groups

Fixed number of obsrvs./group= 4

Number of obs.= 324, skipped 192 obs

--------+--------------------------------------------------------------------

| Standard Prob. 95% Confidence

CHOICE| Coefficient Error z |z|>Z\* Interval

--------+--------------------------------------------------------------------

|Random parameters in utility functions

BCL| -.15136\* .08711 -1.74 .0823 -.32209 .01937

BSS| -.37249 .25619 -1.45 .1460 -.87462 .12964

BSOS| 1.08764\*\* .51828 2.10 .0359 .07182 2.10346

BCOST| .13333\*\*\* .02903 4.59 .0000 .07643 .19023

|Nonrandom parameters in utility functions

SQ| .36823 .69996 .53 .5988 -1.00367 1.74012

|Heterogeneity in mean, Parameter:Variable

BCL:AME| -.22716\*\* .08908 -2.55 .0108 -.40176 -.05255

BCL:BEN| 0.0 .....(Fixed Parameter).....

BCL0:BEN| 0.0 .....(Fixed Parameter).....

BCL:EDU| 0.0 .....(Fixed Parameter).....

BCL0:EDU| 0.0 .....(Fixed Parameter).....

BCL:Q5M| 0.0 .....(Fixed Parameter).....

BCL0:Q5M| 0.0 .....(Fixed Parameter).....

BCL1:Q5M| 0.0 .....(Fixed Parameter).....

BCL2:Q5M| 0.0 .....(Fixed Parameter).....

BCL3:Q5M| 0.0 .....(Fixed Parameter).....

BCL4:Q5M| 0.0 .....(Fixed Parameter).....

BCL5:Q5M| 0.0 .....(Fixed Parameter).....

BCL:Q6K| 0.0 .....(Fixed Parameter).....

BCL0:Q6K| 0.0 .....(Fixed Parameter).....

BCL1:Q6K| 0.0 .....(Fixed Parameter).....

BSS:AME| 0.0 .....(Fixed Parameter).....

BSS:BEN| 0.0 .....(Fixed Parameter).....

BSS0:BEN| 0.0 .....(Fixed Parameter).....

BSS:EDU| 0.0 .....(Fixed Parameter).....

BSS0:EDU| 0.0 .....(Fixed Parameter).....

BSS:Q5M| 0.0 .....(Fixed Parameter).....

BSS0:Q5M| 0.0 .....(Fixed Parameter).....

BSS1:Q5M| 0.0 .....(Fixed Parameter).....

BSS2:Q5M| 0.0 .....(Fixed Parameter).....

BSS3:Q5M| 0.0 .....(Fixed Parameter).....

BSS4:Q5M| 0.0 .....(Fixed Parameter).....

BSS5:Q5M| 0.0 .....(Fixed Parameter).....

BSS:Q6K| 0.0 .....(Fixed Parameter).....

BSS0:Q6K| 0.0 .....(Fixed Parameter).....

BSS1:Q6K| 0.0 .....(Fixed Parameter).....

BSOS:AME| 0.0 .....(Fixed Parameter).....

BSOS:BEN| -1.52372\*\*\* .58086 -2.62 .0087 -2.66219 -.38525

BSO0:BEN| 0.0 .....(Fixed Parameter).....

BSOS:EDU| 0.0 .....(Fixed Parameter).....

BSO0:EDU| 0.0 .....(Fixed Parameter).....

BSOS:Q5M| 0.0 .....(Fixed Parameter).....

BSO0:Q5M| 0.0 .....(Fixed Parameter).....

BSO1:Q5M| 0.0 .....(Fixed Parameter).....

BSO2:Q5M| 0.0 .....(Fixed Parameter).....

BSO3:Q5M| 0.0 .....(Fixed Parameter).....

BSO4:Q5M| 0.0 .....(Fixed Parameter).....

BSO5:Q5M| 0.0 .....(Fixed Parameter).....

BSOS:Q6K| 0.0 .....(Fixed Parameter).....

BSO0:Q6K| 0.0 .....(Fixed Parameter).....

BSO1:Q6K| 0.0 .....(Fixed Parameter).....

BCOS:AME| 0.0 .....(Fixed Parameter).....

BCOS:BEN| 0.0 .....(Fixed Parameter).....

BCO0:BEN| 0.0 .....(Fixed Parameter).....

BCOS:EDU| 0.0 .....(Fixed Parameter).....

BCO0:EDU| 0.0 .....(Fixed Parameter).....

BCOS:Q5M| 0.0 .....(Fixed Parameter).....

BCO0:Q5M| 0.0 .....(Fixed Parameter).....

BCO1:Q5M| 0.0 .....(Fixed Parameter).....

BCO2:Q5M| 0.0 .....(Fixed Parameter).....

BCO3:Q5M| -.03993\* .02358 -1.69 .0904 -.08615 .00628

BCO4:Q5M| 0.0 .....(Fixed Parameter).....

BCO5:Q5M| 0.0 .....(Fixed Parameter).....

BCOS:Q6K| 0.0 .....(Fixed Parameter).....

BCO0:Q6K| 0.0 .....(Fixed Parameter).....

BCO1:Q6K| 0.0 .....(Fixed Parameter).....

|Distns. of RPs. Std.Devs or limits of triangular

NsBCL| .00274 .13549 .02 .9839 -.26281 .26829

NsBSS| .04158 1.52871 .03 .9783 -2.95463 3.03779

NsBSOS| .70055\* .36276 1.93 .0535 -.01044 1.41154

NsBCOST| .03906\*\* .01652 2.36 .0181 .00667 .07145

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Note: \*\*\*, \*\*, \* ==> Significance at 1%, 5%, 10% level.

Fixed parameter ... is constrained to equal the value or

had a nonpositive st.error because of an earlier problem.

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