Assessing the Cost of Beef Quality Revisited

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Introduction and Objectives

- Forristall et al. (2002) found that marbling was the most important performance and carcass trait determining feedlot profit.
- Prices for corn and cattle have changed
  - 1996-99 were $64.13 and $2.49
  - 2005-08 were $88.87 and $3.04
- Objective: What is the relative importance of performance and carcass traits under the now higher prices?

Data

- Tri-County Steer Carcass Futurity
  - Fourth quarter placements
  - 180-540 days of age
  - 10,384 steers and 3,255 heifers
  - Less variable than industry standard, CV for
    - carcass weight: 11% v. 13%
    - yield grade: 20% v. 31%

Data

- Biological correlations and economic antagonisms
  - HCW: strong positive correlation with REA and ADG
  - ADG: negative correlation to FG
  - MS: positive with FC and FG
- Marbling is less correlated than some variables, but has a positive relationship with ADG, but negative with REA, PW and HT.

Methods

- Standardized prices for feed, feeder cattle and fed cattle.
- Baseline Choice-Select spread = $8
- Typical grid in the industry for determining individual animal value
- Calculate Net Return (NR) per head based on actual performance and carcass data and standardized prices.

Methods

1. Regress variables on NR to determine which factors have the greatest impact.
   - $NR_i = f(FG_i, HCW_i, FC_i, REA_i, KPH_i, MAR_i, PW_i, HC_i)$
   - Separate equations for steers and heifers
2. Repeat at different prices to evaluate sensitivity of results

Methods

- The *regression beta* is the dollar impact on NR of changing a variable by one unit.
- The *standardized beta* is the relative importance of the variable
  - Adjusts for variation
  - Compares apples to apples

Results

Tri-County Steer Carcass Futurity Steers Placed on Feed in Fourth Quarter. Dependent Variable is Net Return per Head

R2 & obs are:	0.78		10,384
Variable	Regression Beta	Std Error	Standardize Beta
Intercept	-649.04	10.20	0.00
Hot Carcass Wt	0.35	0.01	0.25
Fat Cover	-53.67	3.77	-0.08
Ribeye Area	12.10	0.46	0.15
Marbling Score	0.52	0.01	0.42
Feed To Gain	-26.05	0.82	-0.23
Daily Gain	35.82	1.41	0.20
Placement Weight	-0.34	0.01	-0.34
Health treatments	-1.29	0.03	-0.23

Economic value of a one unit change in the independent variable on the net returns for steers and heifers placed in the fourth quarter

Variable	One Unit	Steers	Heifers
Intercept		-649.04	-496.39
Hot Carcass Wt	10 pound	3.50	4.60
Fat Cover	1/10 inch	-5.37	-10.65
Ribeye Area	1 sq. inch	12.10	12.12
Marbling Score	10 degrees	5.17	4.17
Feed To Gain	1/10 pound	-2.61	-2.87
Daily Gain	1/10 pound	3.58	2.15
Placement Weight	10 pound	-3.40	-2.90
Health treatments	1 dollar	-1.29	-1.24

Sensitivity Analysis

- Feed Cost +/- 20%
  - Little impact on MS
  - HCW, FG and PW increasingly important
  - At lower feed cost PW as important as MS
- Base carcass price +/- $10/cwt
  - Little impact on MS
  - HCW only variable to increase in importance
- MS still most important within these ranges

Sensitivity Analysis

- Compared Choice - Select spread at $4, $8, $12 and $16
  - MS increasingly important with wider spreads
  - Other variable decrease in relative importance
- At approximately $6 Choice-Select spread PW is of equal relative importance to MS and is more important at lower spreads

Summary

- Economic antagonisms exist:
  - i.e., higher marbling cattle put on more external fat and require more feed per pound of gain
- Marbling is still the most important performance and carcass trait even with higher corn and cattle prices
- Placement weight become as important as marbling at a Choice-Select spread of approximately $6

Thank you!

A copy of the paper may be found at

www.iowabeefcenter.org