



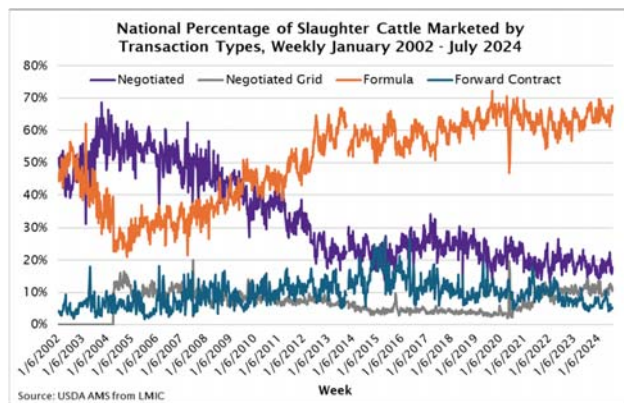
Beef Quality Enhancements: Exploring Market Dynamics & Economic Implications

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Kansas State University
Risk & Profit Conference | August 2024



Cattle Marketing Methods

- **Alternative Marketing Agreements** – alternatives to the cash market such as formula trade or forward contracts
- **Value-Based Marketing** – pricing cattle/carcasses based on quality of product
 - **Grid Pricing Systems** – reward higher quality cattle with *premiums* and *discount* lower quality cattle



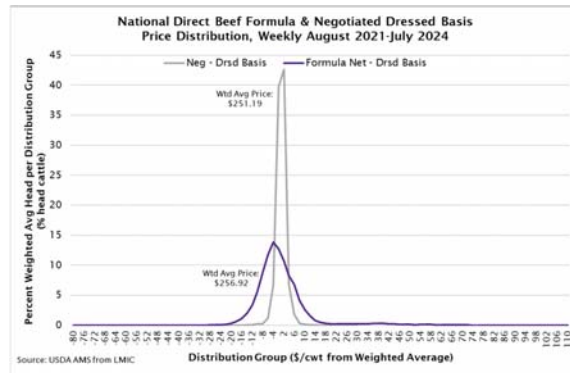
Source: Taylor et. al. (2007)





Economic Importance of Grid Pricing

- 80% of fed cattle purchased in a typical week receive a net dressed price within:
 - \$2/cwt (\$4/cwt range) of weighted average under cash negotiated pricing
 - \$10/cwt (\$20/cwt range) of weighted average under formula pricing



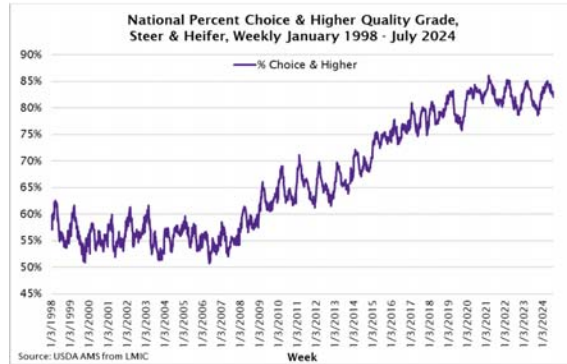
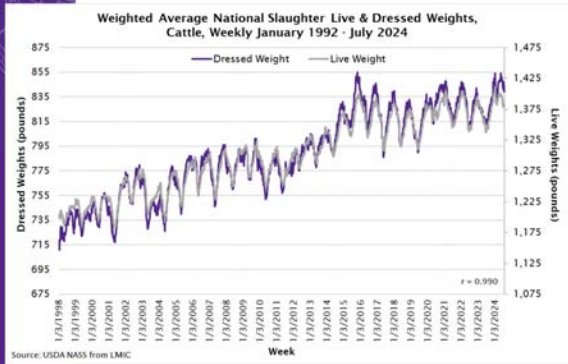
Economic Management Decisions

- Producing higher quality cattle generally increases production costs
 - Greater days on feed
 - Heavier finish weights
 - Opportunity cost
 - Lot turnover



Carcass Weight & Quality Grade

- As cattle have finished to heavier weights, quality grades have generally increased



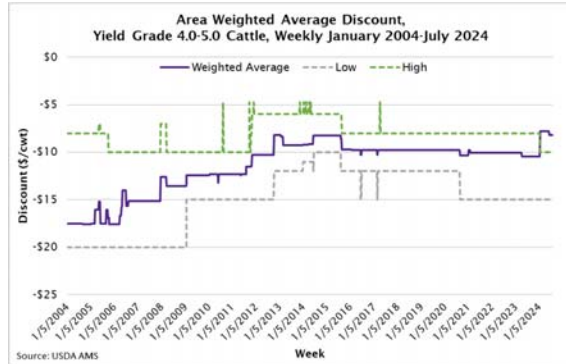
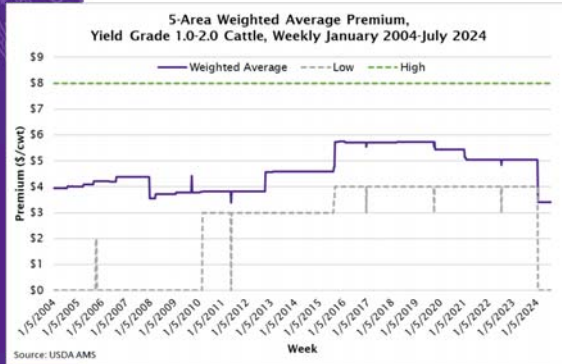
Carcass Weight

- Highest weight group shifted from >1000 lbs to >1050 lbs in 2013
- Reduced discounts for heavy-weight cattle & increased for lightweight cattle



Yield Grade

- Premiums constant for lower YG
- Discounts reduced for YG 4-5



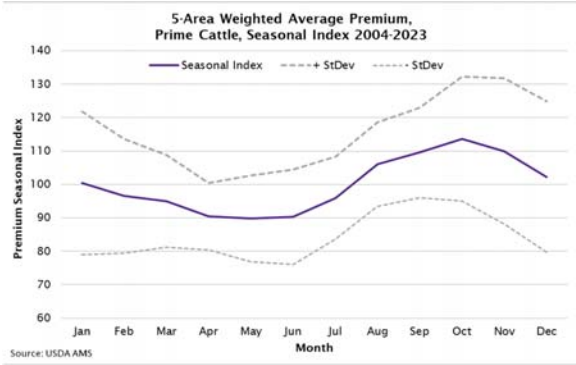
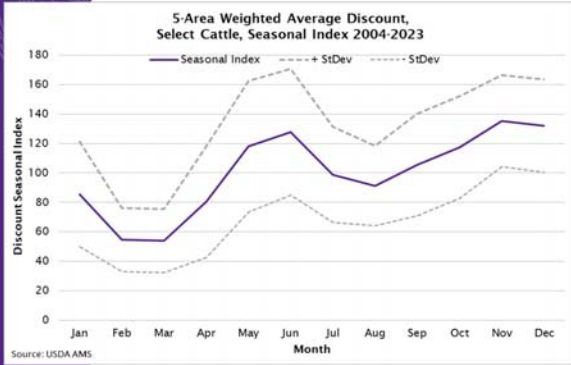
Quality Grade

- Select discounts have increase by >\$10/cwt
- Prime premium averages remain constant with widening range



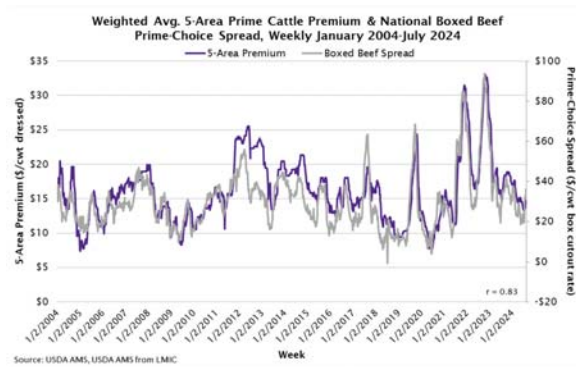
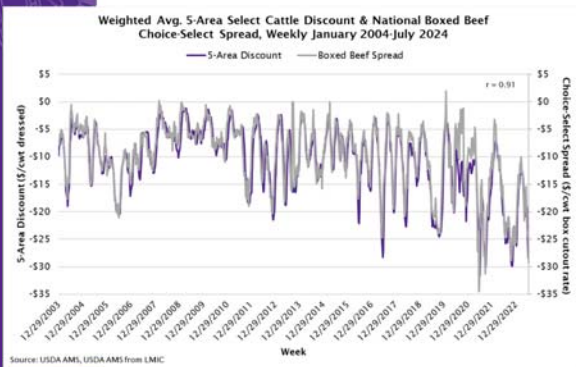
Quality Grade

- Seasonally responsive to supply/demand shifts



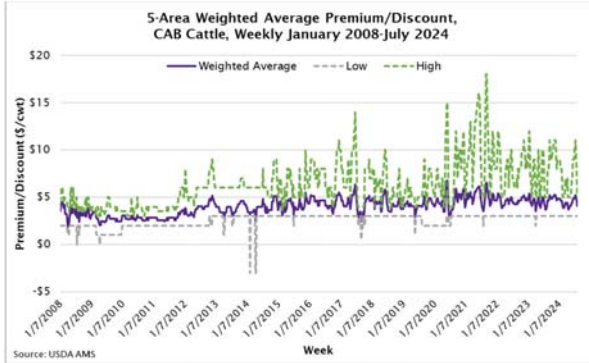
Premiums & Cutout Values

- Quality grade premiums/discounts are closely linked to the wholesale market



Other Premiums

- Opportunity in other desirable traits
 - Certified Angus Beef, All Natural, NHTC, etc.



Where can I find this information?

- NEW! Livestock Mandatory Reporting Live Cattle Data Dashboard
 - Effort to make access to USDA market news info more user-friendly under Packers & Stockyards Act

[Livestock Mandatory Reporting - Live Cattle Dashboard | MMN \(usda.gov\)](https://www.usda.gov/livestock-mandatory-reporting-live-cattle-dashboard)

Livestock Mandatory Reporting - Live Cattle Dashboard

What are Fed Cattle currently bringing?

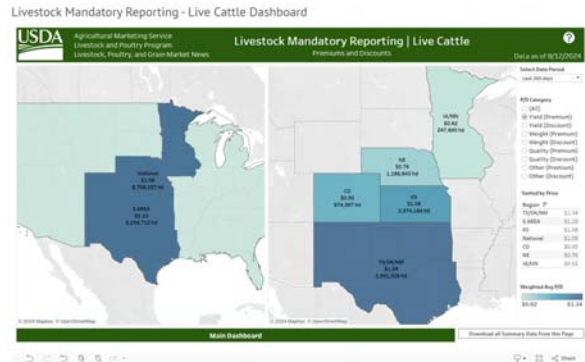
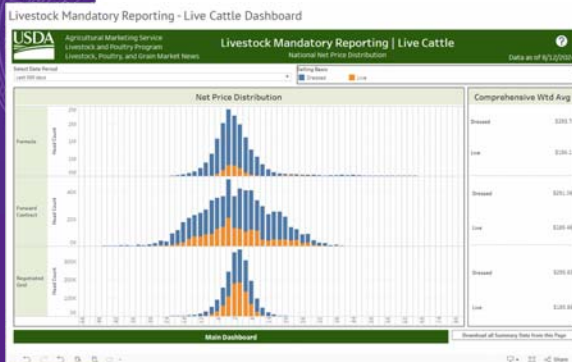
Week	Weighted Average	Low	High
Jul 14	\$197.34	\$197.34	\$197.34
Jul 21	\$197.65	\$197.65	\$197.65
Jul 28	\$196.79	\$196.79	\$196.79
Aug 4	\$196.56	\$196.56	\$196.56
Aug 11	\$196.44	\$196.44	\$196.44

Premiums and Discounts

Wt Category	F	%/cwt	45	46	46.50%	47	48	48.50%	49	50	50.50%	51	52
Yield (Premium)	\$1.30	\$1.88	\$0.88	\$0.88	\$1.00	\$0.88	\$1.00	\$0.88	\$1.00	\$0.88	\$1.00	\$0.88	\$1.00
Weight (Premium)	\$0.43	\$0.55	\$1.46	\$1.09	\$1.19	\$0.89	\$0.89	\$0.89	\$0.89	\$0.89	\$0.89	\$0.89	\$0.89
Weight (Discount)	\$0.82	\$0.87	\$0.82	\$0.64	\$0.88	\$0.84	\$0.84	\$0.84	\$0.84	\$0.84	\$0.84	\$0.84	\$0.84
Quality (Premium)	\$2.06	\$4.48	\$6.42	\$7.38	\$8.25	\$4.34	\$4.47	\$4.47	\$4.47	\$4.47	\$4.47	\$4.47	\$4.47
Quality (Discount)	\$3.14	\$3.73	\$1.92	\$2.35	\$2.60	\$2.48	\$2.48	\$2.48	\$2.48	\$2.48	\$2.48	\$2.48	\$2.48
Other (Premium)	\$8.37	\$4.21	\$7.44	\$11.05	\$8.25	\$6.44	\$6.44	\$6.44	\$6.44	\$6.44	\$6.44	\$6.44	\$6.44
Other (Discount)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Additional Links: [Livestock Mandatory Price Reporting - Data Mart](#) | [My Market News](#) | [Contact Us](#)

Live Cattle Data Dashboard



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Association between AMAs & Cattle Quality

- Cattle & beef quality has seen dramatic improvement with increased AMA use
 - Adapt to meet consumer demand
 - Incentivizing high quality products
- Policy discussions
 - Increasing concerns over price discovery & market transparency

Study Objective: Quantify how fed cattle marketing agreements and formula trade are associated with improved cattle quality.

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Model

- Adapted Schroeder, Tonsor, Coffey (2021) model

$$1) \quad QGIndex_t = \beta_0 + \beta_1 CostofGain_t + \beta_2 HeiferSlaughter_t + \beta_3 Formula\&Grid_t + \beta_4 Forward_t + \beta_5 QTR1 + \beta_6 QTR1 + \beta_7 QTR3 + e_t$$

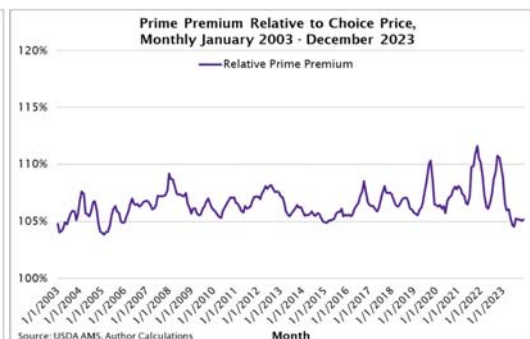
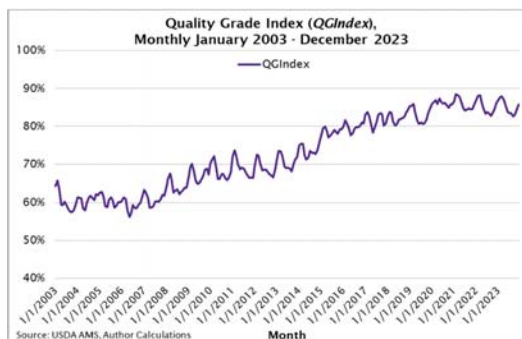
$$2) \quad QGIndex_t = \beta_0 + \beta_1 CostofGain_t + \beta_2 HeiferSlaughter_t + \beta_3 Formula\&Grid_t + \beta_4 Forward_t + \beta_5 PlacementWeight_t + e_t$$

Dependent Variable

$QGIndex_t$ - value-weighted index of the highest quality fed cattle, Choice and Prime, relative to all graded beef, expressed as %

$$QGIndex_t = \left[\frac{(Prime\ Cattle * Relative\ Prime\ Premium) + Choice\ Cattle}{Prime\ Cattle + Choice\ Cattle + Select\ Cattle + Other\ Cattle} \right] * 100$$

$$Relative\ Prime\ Premium = \frac{Prime\ Premium + Choice\ Dressed\ Price}{Choice\ Dressed\ Price}$$



Independent Variables

- **CostofGain_t**: (-), cost incurred to increase the weight of a steer; sensitive to feed conversions, corn, & alfalfa price, \$/cwt
- **HeiferSlaughter_t**: (+), % of federally inspected cattle slaughtered that are heifers
- **Formula&Grid_t**: (+), % of cattle purchased using formula plus negotiated grid pricing
- **Forward_t**: (+), % of cattle purchased in advance of slaughter, base price is CME Live Futures Contract
- **Quarterly Dummies**: QTR4 is default
- **Placement Weight_t**: initial weight of a steer at the time it was placed on a feedlot; seasonal proxy, pounds

Subscript *t* indicates month

Regression Models for Beef Quality Index Model

Independent Variable	Model 1	Model 2
Intercept	9.937 (5.633)	13.185 (7.779)
Cost of Gain	-0.127** (0.015)	-0.129** (0.016)
Heifer Slaughter	0.598** (0.160)	0.900** (0.151)
Formula & Grid Pricing	0.939** (0.032)	0.937** (0.033)
Forward Pricing	0.224** (0.078)	0.448** (0.075)
QTR 1	2.814** (0.648)	
QTR 2	0.699* (0.680)	
QTR 3	-1.972** (0.704)	
Placement Weight		-0.017* (0.007)
R ²	0.8684	0.8484
RMSE	3.606	3.855
Lagged Error	0.779**	0.780**
Observations	252	252
F-value for QTR 1, QTR 2, QTR 3	14.78**	
F-value for Placement Weight		6.37*

Note: Standard errors are in parenthesis
*denotes significance at 5% level
**denotes significance at 1% level

- As formula & grid priced cattle increase by 1 percentage point, the quality index increases by 0.94 percentage points.
- As forward priced cattle increase by 1 percentage point, the quality index increases by 0.22 percentage points.



Conclusions

- Limitations
 - Causation not assured
- Evident marketing agreements and valuation are significantly associated with improved beef quality
 - Increase understanding, mitigate concerns
 - Fulfill consumer demand
- Premiums & discounts continue to adjust with evolving markets
 - Packers continue to incentivize lean cattle while having a greater allowance for heavier carcasses & higher YGs

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QUESTIONS?

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