

Demand study:

Quality Builds Future

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People in the cattle business, especially those with cow-calf herds, are enjoying per-head income levels unimaginable even a few years ago.

A glance at the corn market may remind them things can change, but a University of Missouri (MU) white paper says they can take action now to stay on a higher profit plane.

“Should Beef Quality Grade be a Priority?” That’s the title of a master’s thesis by Jillian Steiner and economist Scott Brown, which says quality drives the beef industry and holds the key to maintaining price strength (see www.cabpartners.com/news/research.php).

Elasticity of demand and price flexibility are two economic measures that point to USDA Prime and premium-Choice brands as “luxuries” in some sense of the word. Yet, as beef herds rebuild, producers who aim for the premium targets are more likely to find buyers at higher prices in the future, the paper says.

It scrutinizes the *Certified Angus Beef*® (CAB®) brand’s position in the market and calculates specific elasticity figures that indicate the brand leaves economic footprints more similar to Prime than Choice.

Introducing the study during a fall field day at Thompson Research Center, Spickard, Mo., Brown asked a series of questions.

“What does today’s consumer demand from a beef product? All decisions are easy with record prices,” he says, “but what are you doing today that makes sure you can



Above: “With greater production driving down the price of pork and chicken, we can expect a stronger substitution impact on Select than on the higher quality grades,” Jillian Steiner says.



take advantage of market volatilities five to 10 years down the road?”

Noting that the 87.7-million-head U.S. cattle inventory at the start of 2014 was the smallest since 1951, Steiner and Brown say drought and erratic markets delayed expansion. As that phase now begins, “Genetics, production and management decisions made in the near term will determine the future success of the beef industry.”

More importantly, producers must strive to sustain and improve beef demand, “the ultimate factor driving the size” of the cattle industry. There is much research on beef demand, but not on “disaggregating”

Table 1: Beef demand by quality grade

	Prime quantity	Branded/Choice quantity	Select quantity
Constant	-2.65	-3.17	0.83
Prime price	-2.33**	0.25	0.30
Branded/Choice price***	1.53	-1.04	0.13
Select price	1.18	0.22	-1.24*
Competing meats price ^a	0.21	0.24	0.30
Income***	1.34	0.03	1.26
1st Quarter	-0.14*	0.00	-0.08
2nd Quarter	-0.29**	0.04	0.07
3rd Quarter	-0.21**	-0.06	0.03
Trend***	0.16**	0.07**	-0.05**
R-squared	0.70	0.65	0.74

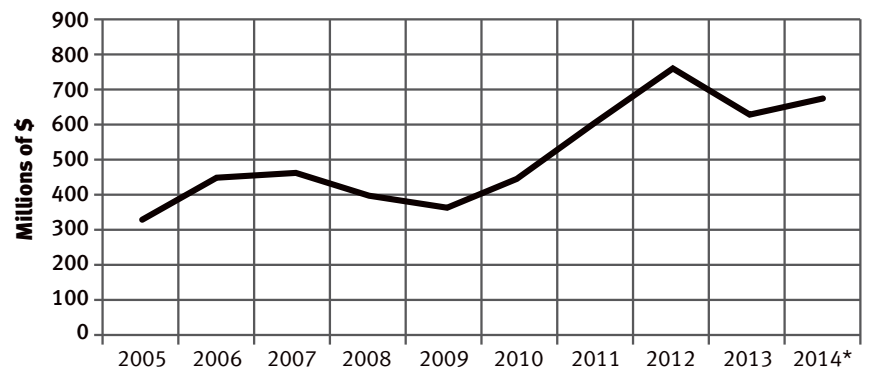
^aCompeting meats price is the weighted average of pork and chicken prices.

* and ** indicate significance at the 5% and 1% levels, respectively.

*** Wide variability within Choice likely affected data in these categories.

Fig. 1: Value added to U.S. beef production through quality premiums

Consumers have shown a willingness to pay premiums for higher-quality beef, and producing a greater supply of higher-quality product will increase the value added by beef quality, an already significant contribution to the beef industry.



2014 value estimated from eight months of data.

Table 2: Annual change in demand if trend continues through 2020, millions of lb.

A logarithmic trend applied from 2007 to 2013 is significant across each beef quality category, suggesting additional factors are increasing demand for Prime, CAB and Branded/Choice beef and decreasing demand for Select beef.

	Prime	Branded/Choice	Select	CAB
2015	2.00	34.68	-12.59	11.68
2016	1.86	32.05	-11.52	10.86
2017	1.74	29.80	-10.62	10.16
2018	1.64	27.86	-9.84	9.54
2019	1.55	26.16	-9.17	9.01
2020	1.47	24.67	-8.58	8.53
Total	10.26	175.23	-62.32	59.78

for Beef

Left: "What does today's consumer demand from a beef product? All decisions are easy with record prices," MU's Scott Brown says, "but what are you doing today that makes sure you can take advantage of market volatilities five to 10 years down the road?"

it by quality grade, the paper says. A 1966 study showed each grade has its own demand pattern, and 2001 work examined seasonal elasticities by grade, but there was no comprehensive analysis.

Empirical estimates of own-price, cross-price and income elasticities for Prime, CAB, USDA-branded Choice (including CAB) and Select should help determine the best production focus, the paper says. It made use of 10 years of USDA monthly load data and CAB company data to find answers.

Brown, noting a projected 2.5-billion-pound increase in pork and poultry supplies in 2015, says cattle producers would do well to shift production to

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quality grades that consumers do not readily abandon for other proteins.

Steiner quoted a number for Prime own-price elasticity of -2.33, which is also the number for Prime's cross-price elasticity vs. other categories (see Table 1).

"Prime, CAB and Choice have a lower cross-price elasticity than Select,

which means price changes there have a smaller impact on the quantity of Select consumed," she explains, noting the same is true in comparison to pork and chicken.

"With greater production driving down the price of pork and chicken, we can expect a stronger substitution impact on

Select than on the higher quality grades," Steiner says.

Prime is affected least by a drop in the price of competing proteins, having only two-thirds of the tendency for substitution as Select.

Looking next at income elasticities, she explains that demand for all beef tends to increase with consumer income, but the increase is higher for the top end of

quality. In particular, the paper says a 1% rise in income should mean a 1.63% increase in demand for the CAB brand, which was the most responsive to this measure of elasticity among all beef quality levels studied (see Table 3).

High-quality beef has seen a positive demand shift for several years, Brown says.

"Consumers over time are increasing their demand for high-quality beef beyond what can be described by price and income data," he says. "Those trends are not just projecting the future, but have been in effect for some time."

Supplies of Prime and CAB have been increasing to the point that more and more consumers have an opportunity to experience the taste.

Table 3: CAB® demand

	CAB® quantity
Constant	10.64
Prime price	0.39*
Brand price	-2.26
Choice price	1.33
Competing meats price ^a	0.28*
Income	1.63**
1st quarter	0.02
2nd quarter	0.06**
3rd quarter	0.05**
Trend	0.14**
R-squared	0.90

^aCompeting meats price is the weighted average of Select beef, pork and chicken prices.

* and ** indicate significance at the 5% and 1% levels, respectively.

"In economic language, we'd say you don't understand the added utility of high-quality beef until you've had the opportunity to consume it," Brown says.

When all aspects of demand are projected out to 2020, the logarithmic trend shows "an impact of 10.6 million pounds more Prime demanded, 175.23 million pounds more Branded/Choice (60 million of that CAB), but 62.32 million fewer pounds of Select demanded."

Brown noted that the combined USDA Branded/Choice category includes CAB, which follows a positive trend of 0.14. That's much closer to Prime's 0.16, indicating some of the lower-Choice product is likely following a negative trend to arrive at the average of 0.07.

"The Choice grade category is very broad relative to the differences in quality that exist across it," Brown says. "The upper end includes product very near to Prime, while the lower end is more like Select."

As a category, he estimates premium beef has added \$4.5 billion to the beef economy in the nine years from 2005 through 2013, including \$630 million of that in 2013.



Editor's Note: Steve Suther is director of industry information for Certified Angus Beef LLC.