

**Affect or Information? Labeling Policy and Consumer Valuation of
rBST Free and Organic Characteristics of Milk
(expanded abstract)**

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Couched in a labeling policy framework, we answer the question of whether affect (emotion) has an impact on consumers' valuation of rBST free and organic characteristics of milk. Labels are an appropriate policy tool when consumer preferences differ, costs and benefits are borne by the consumer, standards can be established, no political consensus on regulation exists, and information is clear and concise (Golan, et al., 2000). In the case of labeling the process attributes of rBST free and organic, both of which signal that milk has been produced without the use of rBST, most of these characteristics are present. Premiums charged in the marketplace and an identified demand for the rBST and organic process attributes indicate that the costs and benefits are borne by the consumer and that consumer preferences differ. The FDA has developed labeling standards for both the rBST and organic attributes (FDA, 2001; Pickrell, 2002). No political consensus exists on the regulation of either rBST free or organic attributes, and there continues to be a debate over the labeling of these attributes among industry and consumer groups.

Using two years of consumer survey data and a hedonic model (Shi and Price, 1998), we estimate elasticities and marginal effects of affect and other demographic variables.

Table 1: Descriptive Statistics

VARIABLE	DEFINITION	ALL	2001	2004
Price	Price of gallon equivalent of milk	3.29 (1.16)	3.20 (1.09)	3.40 (1.20)
HALFGAL	1= half gallon	.25 (.43)	.23 (.43)	.27 (.44)
QUART	1= quart	.59 (.24)	.58 (.23)	.60 (.24)
ORGANIC	1= organic	.61 (.24)	.41 (.20)	.75 (.26)
RBSTFREE	1= labeled rBST free	.56 (.5)	.46 (.50)	.63 (.48)
SALE	1= on sale	.11 (.32)	.82 (.28)	.13 (.34)
STOREBR	1= store brand	.15 (.36)	.19 (.39)	.12 (.33)
OPPOSE	1= oppose use of rBST in milk production	.60 (.46)	.78 (.41)	.52 (.49)
COLL	1= Bachelor's degree or higher	.36 (.48)	.38 (.49)	.35 (.48)
URBAN	1= urban resident	.26 (.44)	.37 (.48)	.18 (.39)
INLOW	1= income < \$20,000 per year	.12 (.33)	.13 (.34)	.11 (.32)
INHIGH	1= income > \$60,000 per year	.25 (.43)	.22 (.41)	.27 (.44)
FEMALE	1= female	.55 (.5)	.56 (.50)	.55 (.50)
HAVEKID	1= children present	.40 (.49)	.45 (.50)	.37 (.48)
N		707	292	415

Table 2. Parameter Estimates

Variable	Definition	2001 (unrestricted)			2004 (restricted)		
		Semi-log	Box Cox		Semi-log	Box Cox	
		B and η^1	B	η^1	B and η	B	η
Constant	intercept	.97*** (.03)	.79*** (.05)	1.31	.98*** (.03)	.87*** (.05)	1.14
HALFGAL	1= half gallon	.33*** (.02)	.20*** (.04)	.33	.35*** (.02)	.27*** (.04)	.36
QUART	1= quart	.71*** (.04)	.39*** (.08)	.66	.55*** (.04)	.40*** (.06)	.53
STOREBR	1= store brand	-.06** (.03)	-.04** (.02)	-.07	-.02 (.03)	-.02 (.02)	-.02
SALE	1= on sale	-.11** (.03)	-.08*** (.02)	-.13	-.12*** (.03)	-.10*** (.02)	.13
RBSTFREE	1= labeled rBST free	-.09 (.06)	-.05 (.04)	-.08	.10*** (.03)	.08*** (.02)	.11
ORGANIC	1= labeled organic	.23 (.16)	.17** (.09)	.28	.25*** (.08)	.17** (.07)	.22
COLL	1= Bachelor's degree or higher	.03 (.03)	.02 (.02)	.03	-.03 (.03)	-.02 (.02)	-.03
URBAN	1= urban residence	.02 (.02)	.01 (.01)	.02	-.02 (.03)	-.02 (.03)	-.03
INCLW	1= income < \$20,000 per year	-.01 (.03)	-.01 (.02)	-.02	.14*** (.04)	.11*** (.04)	.15
INCHIGH	1= income > \$60,000 per year	-.00 (.03)	-.00 (.02)	-.00	.05 (.04)	.04 (.03)	.05
FEMALE	1= female	-.03 (.02)	-.01 (.01)	-.02	.02 (.03)	.02 (.02)	.03
HAVEKID	1= children present	.05** (.02)	.03** (.02)	.05	-.00 (.03)	-.01 (.02)	-.01
OPPOSE	1= oppose use of rBST	.00 (.02)	.00 (.01)	.00	-----	-----	
ORCOLL	Interaction- effect of college on organic	.15 (.13)	.05 (.07)	.08	-.09 (.08)	-.05 (.06)	-.07
ORURBAN	Interaction—effect of urban on organic	.08 (.16)	.02 (.09)	.03	.15 (.11)	.11 (.08)	.15
ORINCL	Interaction—effect of low income on organic	.09 (.13)	.02 (.08)	.04	-.05 (.13)	-.03 (.10)	-.04
ORINCH	Interaction—effect of high income on organic	.11 (.12)	.06 (.07)	.10	-.18** (.07)	-.12** (.06)	-.16
ORFEM	Interaction—effect of being female on organic	-.05 (.12)	-.02 (.07)	-.03	.22*** (.08)	.15** (.06)	.20
ORKID	Interaction—effect of kids in household on organic	.13 (.16)	.01 (.09)	.02	.25*** (.08)	.17** (.07)	.22
FRCOLL	Interaction- effect of college on rBST free	-.02 (.04)	-.02 (.02)	-.03	-.03 (.04)	-.02 (.03)	-.03
FRURBAN	Interaction—effect of urban on rBST free	.03 (.04)	.02 (.02)	.03	.02 (.04)	.02 (.03)	.03
FRINCL	Interaction—effect of low income on rBST free	-.08 (.06)	-.04 (.03)	-.07	-.12** (.06)	-.09** (.04)	-.12
FRINCH	Interaction—effect of high income on rBST free	-.00 (.05)	.00 (.03)	-.00	-.08** (.04)	-.06** (.03)	-.08
FRFEM	Interaction—effect of being female on rBST free	.05 (.04)	.03 (.02)	.05	-.05 (.04)	-.04 (.03)	-.05
FRKID	Interaction—effect of kids in household on rBST free	-.10*** (.04)	-.06** (.02)	-.10	.01 (.04)	.02 (.02)	.03
FROPOSE	Interaction—effect of attitude on rBST free	.15** (.06)	.09** (.04)	.15	-----	-----	
Lambda		-----	-.44*** (.14)		-----	-.23** (.11)	
Sigma-sq.		-----	.00*** (.00)		-----	.01*** (.00)	
n		292			415		
R ²		.77		.99	.73		.99

*p<=.05, **p<=.01, ***p<.01 ¹ η = elasticity. Note, for the semi-log specification the B coefficient = elasticity; for the Box Cox specification the elasticity was calculated as $\partial \log y / \partial \log x = \beta(x) / (y^\lambda)$

Findings indicate that while in 2001 affect did impact value, by 2004 its contribution was zero. These results point to the possibility that labels provide an informational signal, not an emotional one.

The question asked in this study is whether labels may provide affective information that leads to consumers placing a higher value on the rBST characteristic because they “feel” it is superior to milk produced without rBST. Using two different empirical specifications, we find very similar results. Our hedonic specification is robust in terms of consistency of results across estimation methods. In 2001, affect did play a role in consumer valuation of the attribute rBST free. The characteristic had an estimated value of \$.47 per average gallon equivalent. In 2004, this was not the case. Thus, by 2004 labels may have simply signaled the fact that a given container of milk is rBST free and did not mislead a consumer into feeling that it is somehow “better,” and therefore worth more, than milk produced using rBST. The reinforcement of FDA guidelines for labeling that occurred in 2003 may well have had the desired effect of making sure labeling information was clear and consistent. Providing consumers with clear information is an important component of our economic system. The market “works” when consumers can choose between similar alternatives and can identify the bundle of attributes that best maximizes their satisfaction. Meeting consumer demand for the rBST free attribute can only occur if there is a signal, for example in the form of a label, that communicates to the consumer the attributes of milk. Without the label, a segment of consumers must put forth effort to research before the point of purchase which brands of milk contain the rBST free attribute. They must complete an external search which may include calling or writing a company, or conducting other research. Then, they must store this information and retrieve it at the point of sale. In the situation where most consumers purchase a wide variety of grocery items in a single trip, retrieving this information clearly puts an additional burden on the search process when compared to a point of purchase label that signals the rBST free attribute.

Therefore, continuing to use voluntary guidelines for labeling products with gm ingredients with follow up and enforcement when needed by the FDA seems to be an efficient way to handle the current situation in which many consumers wish to be informed about the manner in which their food is produced (gm is a process) in addition to the currently mandated labeling laws with respect to nutrient content. In fact, in 2001 78 percent of our sample was opposed to gm ingredients in food. While a smaller percentage remained opposed in 2004 (52 percent), a majority of consumers remained opposed.

The findings of this study are important at several levels. For proponents of labeling, the evidence points to a movement toward rBST free and organic labels as an informational signal instead of one associated with affective feelings. In so much that, at the point of purchase, the label is the only indicator of the rBST attribute, it appears that the labels are no longer triggering consumers to place a higher value on milk based on their “feelings.” Given that a significant portion of consumers (78 percent in 2001 and 52 percent in 2004) are opposed to gm ingredients in their foods, these results are important for the marketplace.

The findings also point out that there are demographic segments willing to pay a premium for these non-nutrient attributes, controlling for affect, including women, households with children and middle income consumers. For farmers, the findings give an indication that there are niche markets for rBST free and organic milk and a premium associated with that market. The production and marketing chain can use this information to develop value added niches for an industry that has been struggling to remain viable and profitable. Using FDA guidelines, producers can label their milk, knowing that a certain segment of the population places a monetary value on the rBST free attribute. Of course, because milk is sold on a local/regional basis, research must be conducted in other regions of the U.S. to identify the magnitude of that value for various geographic regions in order to ascertain whether the value added to the product is worth the cost of labeling and marketing the rBST free attribute.

The marketplace may well be moving toward fulfilling all five criteria for using labeling as a policy tool to communicate the process attributes rBST and organic, *including* clear and concise information in *addition* to differences in consumer preferences, consumers paying more for the attribute or lack of, established standards, and a continuation of no political consensus on the regulation of labeling. Labels may indeed be providing the appropriate signals to segments of consumers whose preferences indicate they value these attributes.

Einsiedel’s (2000) assertion that labeling is impossible because it impossible to meet the needs of all parties appears to be mediated by the fact that the FDA’s enforcement of their own labeling guidelines has paved the way for clearer informational messages that do not mislead consumers into making decisions based on their emotions.

The conclusions of this study support the idea that more information in the marketplace helps consumers to make decisions that maximize their utility.

References

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