No. 61

BSE and Generic Promotion of Beef: An Analysis for 'Quality from Bavaria'*

by

Roland HERRMANN*, Stephanie KRISCHIK-BAUTZ**

and Stanley R. THOMPSON***

Giessen, Columbus, October 2000

* Senior authorship is not assigned. This research was initiated when S. R. Thompson was a guest professor at the Department for Agricultural Policy and Market Research, University of Giessen. We would like to thank the "Deutsche Forschungsgemeinschaft" for the support of this guest professorship. Thanks are also due to the Bavarian government for financial support of the project and Dr. Richard Balling, in particular, for his support. We are also grateful to Sven Anders who participated as a co-author of a first German report on this research.

** Prof. Roland Herrmann and Dipl.oec.troph. Stephanie Krischik-Bautz, Department for Agricultural Policy and Market Research, University of Giessen, Senckenbergstrasse 3, D-35390 Giessen, Germany.

*** Prof. Stanley R. Thompson, Department of Agricultural, Environmental and Development Economics, The Ohio State University, Columbus, OH, USA.

The "Discussion Papers in Agricultural Economics" are edited by: Institut für Agrarpolitik und Marktforschung, University of Giessen, Senckenbergstr. 3, D-35390 Giessen, Germany.
Tel.: +49 (0)6 41/99-3 70 20, Fax: +49 (0)6 41/99-3 70 29.

1 Introduction

In 1995 the government-financed Bavarian beef promotion program was initiated to arrest many years of declining beef consumption. During the four year period 1995-98, some 3 to 4 million DM were spent annually to bolster the demand for Bavarian beef. The promotion theme was "Quality from Bavaria". Of course, both producers and the Bavarian government are interested in assessing the economic effectiveness of their demand expanding efforts. In March 1996 the British Secretary of State for Health announced a possible link between Bovine Spongiform Encephalopathy (BSE) and a new variant of the deadly Creutzfeld-Jakob disease (nv-CJD) in March 1996. Reports of this food safety concern resulted in heightened consumer awareness of the potential dangers of consuming beef [BECKER (2000)]. Bavarian producers, wishing to distance themselves from this safety concern, continued to differentiate their product by promoting safe quality beef from Bavaria. Thus, what transpired over this period was an aggressive on-going *demand expansion* effort through the "Quality from Bavaria" program concurrent with the *demand contraction* event of BSE. In this paper we will attempt to evaluate the economic impact of both of these events individually and in aggregate. While a rich literature exists on the evaluation of generic (non-brand) promotion programs [e.g., KINNUCAN, THOMPSON and CHANG (1992); FORKER and WARD (1993)] we know of no study that has simultaneously examined the economics of generic promotion and food safety.

First, we provide some background information regarding the "Quality from Bavaria" program together with the chronology and nature of the BSE issue. Second, we present our analytical framework of analysis. We use monthly survey data to econometrically estimate the effect of both promotion expenditures and the impact of BSE information on Bavarian beef demand. Using these statistical estimates we compute benefit-cost ratios of the promotion program and assess the welfare impacts for producers and consumers. Finally, we offer some conclusions regarding promotion program effectiveness and the impact of BSE on beef consumption.

2 Background

2.1 BSE Crisis

BSE was first detected in England in September 1985; with its formal identification taking place in November 1986. The British Government reacted with a feed ban in July 1988 (no meat and bone meal in ruminant feeds) and, in December 1989, a ban on specified bovine offal for human consumption. Despite the ban the disease entered other countries. In 1989, first cases were

identified in Ireland, followed by Portugal in 1990 and France in 1991. In the United Kingdom the epidemic peaked in 1992 with nearly 40,000 cases; and declined thereafter.

With the March 1996 announcement of a possible link between BSE and nv-CJD by the British Secretary of State for Health the European Union immediately responded with a community ban on British beef and derived product exports. The United Kingdom responded with a selective culling program. From 1997 to present media headlines reported discussions about lifting the export ban on British beef and on Traceability and Labelling. Since 1995 seventy people in Great Britain died from nv-CJD [AGE (2000), Europa-Nachrichten 4].

Throughout Europe and especially in Germany consumers voiced concern about acquiring nv-CJD from beef. European consumers were found to be highly fearful of BSE and that "highly anxious persons" lowered their beef consumption very strongly [GLITSCH (2000)]. In response, many countries and regions introduced their own systems of identification and labelling to support regional producers and ensure consumers of safe meat.

2.2 The Program for Beef "Quality from Bavaria: Guaranteed Origin"

The Traceability and Labelling Program "Quality from Bavaria: Guaranteed Origin" was established and released in 1985 by the Bavarian Ministry for Nutrition, Agriculture and Forestry. During the first years the program was used only for seed products and breeding cattle. However, due to the consumer concerns about BSE, in Ocober 1994 the program for cattle and beef was introduced in October 1994. The aim of this latter program is "to re-establish and increase confidence of the strongly insecure consumer especially in Bavarian meat" [BSTMELF (1999), p.10].

The Bavarian Ministry for Nutrition, Agriculture and Forestry is the license owner of the program. It disseminates program information and is responsible for program advertising through (1) daily newspapers, public magazines, radio, posters and infoscreens, (2) sales promotion in stores and shops and (3) publicity flyers and other advertising media [BSTMELF (1996), p.8]. In the period 1994 to 1998, the expenditure on all mentioned advertising media amounted to 3 million DM per year, with some two thirds spent on the first advertising category. The "Bayerische Fleischprüfring e.V." (a Bavarian meat controlling institution), has oversight responsibility for quality and test regulations. In addition, the institution authorizes "right of use" to participating firms of the meat sector and trading enterprises. All participants, except at the slaughterhouse level, must contractually commit with the test responsible institution [BSTMELF (1996), p.5].

Program participation requirement are stipulated. Farmers must join the program "Offene Stalltür (Open Stable-Door)" of the Bavarian farmers association and meet specified quality requirements. In this context, program spot checks are carried out to test for animal health and welfare, as well as the responsible handling and use of medicine. Livestock are mandated to be born, raised and fattened in Bavaria.

Livestock trade and the slaughter business is strictly bound to separate program beef from non-program beef. At all market levels, the certificate of origin must be provided. Butchers and other retailers are asked to clearly define the origin of meat sold [BSTMELF (1998), p. 6]. The share of program cattle of all cattle slaughtered was 2% in 1994, 38% between 1996 and 1997 and 45% in 1998 (own calculations with data from the "Fleischprüfring", October 27, 1999 and the STATBUA).

3 Analytical Framework

The analysis of the relationship between BSE and generic beef promotion addresses two questions:

(i) To what extent has generic promotion shifted the demand curve for beef and was this shift sufficient to compensate for the – most likely opposite – effect of BSE on beef demand?

(ii) What are the private and social welfare impacts which can be attributed to the promotion program "Quality from Bavaria"?

Our answer to the first question is based on an econometric model of beef demand, which includes among other things advertising expenditures and a BSE information measure as explanatory variables. The construction of the BSE information variable will be discussed below. Conventional wisdom is that generic advertising elasticities for meat are low, typically below 0.1. Nevertheless, coefficients of this magnitude have been found to be statistically significant. We will test whether this conventional wisdom is also confirmed in the EU under the influence of the BSE Crisis.

The following theoretical model is posited:

$$(1) \qquad q_C^D = q_C^D\left(p^R, p_S^R, Y_C^R, A_C^R, T, I_{BSE}, D_{SEA}\right),$$

where q_C^D is the per-capita quantity of beef demanded, p^R is the real beef price, p_S^R is the real price of substitutes in demand, Y_C^R is real per-capita income, A_C^R is real generic advertising expenditures per capita, T is a trend variable, I_{BSE} is a measure of BSE information, and D_{SEA} are seasonal dummy variables. Pork and poultry meat were considered as possible substitutive goods. The expected first derivatives are:

$$\partial q_C^D / \partial p^R < 0; \quad \partial q_C^D / \partial p_S^R > 0; \quad \partial q_C^D / \partial Y_C^R > 0;$$
$$\partial q_C^D / \partial A_C^R > 0; \quad \partial q_C^D / \partial T < 0, \quad \textit{and} \quad \partial q_C^D / \partial I_{BSE} < 0.$$

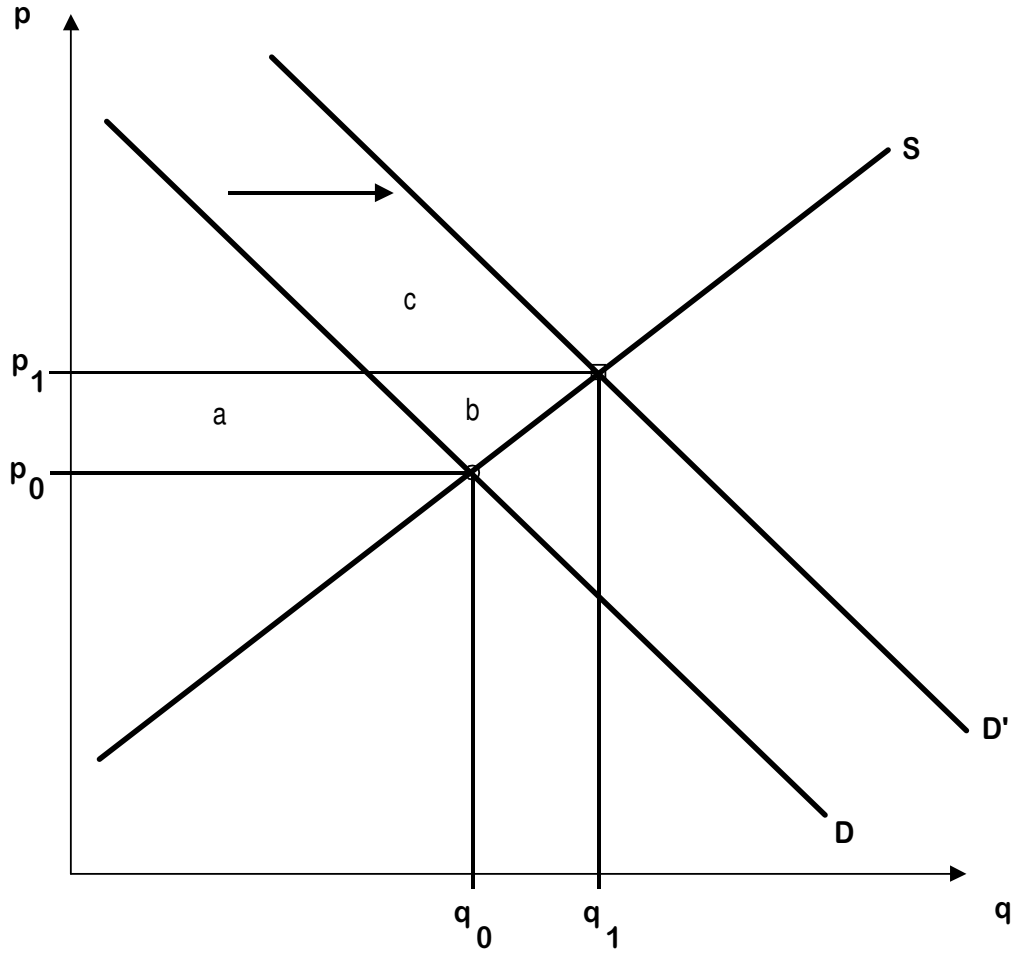
Economic theory suggests that the quantity of beef demanded will increase when the beef price decreases there prices of substitutive goods increase and consumer income increases. As far as generic promotion is successful, higher advertising expenditures will induce a higher demand. In the context of BSE and increasing health concerns over red meat, a preferential change in demand against beef can be expected. This is the reason for the expected negative coefficient of the trend variable as well as for the BSE-information variable. Furthermore, the expected seasonality of beef demand is captured by seasonal dummies. Typically, below-average consumption occurs in summer and above-average in winter, particularly in December.

The second question focuses on welfare impacts. Elements of a welfare analysis enter into the benefit-cost ratio of generic promotion. This benefit-cost ratio is typically defined in the promotion literature as the ratio of the marginal producer benefits to the cost of promotion [ALSTON et al. (1997), p. 39]. In many cases, benefit-cost ratios above unity have been found.

However benefit-cost ratios compiled this way do not constitute a comprehensive welfare analysis when all allocative and redistributive effects within society are considered. This broader conceptual framework is illustrated with Figures 1 and 2. These figures differ according to assumption made about the financing of the generic promotion activity.

Figure 1 depicts the impact of generic promotion on price, quantity and welfare when *promotion is financed by government*.

Figure 1: Economic Impacts of Government-Financed Generic Promotion

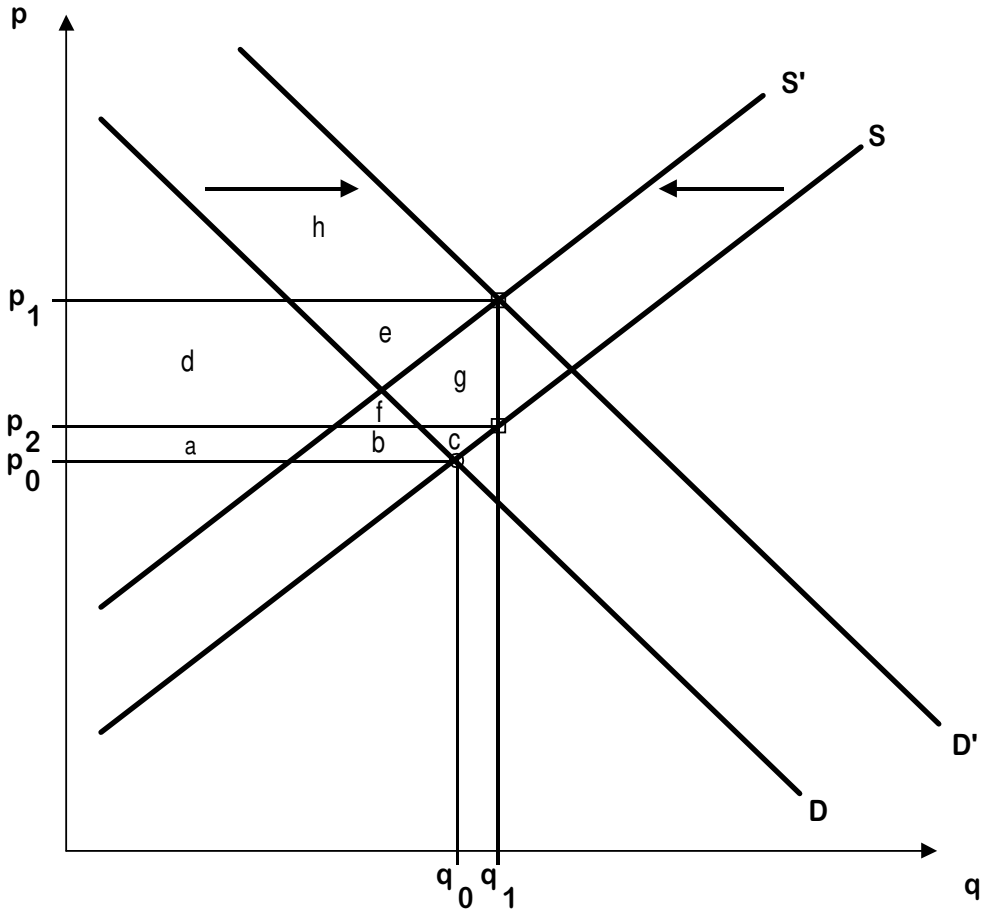


Without generic promotion, the equilibrium between supply (S) and demand (D) leads to a price p_0 and a quantity demanded of q_0. Successful generic promotion shifts demand to the right (from D to D'), and the new market equilibrium is a higher price p_1 and a higher quantity q_1. The willingness to pay by consumers is increased and, hence, consumer surplus increases by area c, but due to the higher market price it is reduced by area a. The net welfare effect for consumers is area (c-a). Producers realize a gain in producer surplus by area (a+b). From the government's point of view, a welfare loss arises due to the expenditures on advertising (A). The net societal welfare effect – consumers, producers and the government – is given by area (b+c-A); it can be positive or negative. The net welfare impact is a different criterion for success of generic promotion than the benefit-cost ratio discussed above. According to Figure 1, (a+b)/A is the computed benefit-cost ratio. For producers alone, this ratio would be infinite as they do not contribute to the financing of A. In a more comprehensive benefit-cost ratio, the net gains to consumers and producers would be related to the additional advertising expenditures. This yields a social cost-benefit ratio (b+c)/A.

As an extension, Figure 2 incorporates the case in which *producers incur the advertising costs*, rather than the government, via a per-unit tax. In this case, we not only have a rightward shift of the demand function (from D to D'), but also an upward shift of the supply curve (from S to S') as producer marginal costs are raised by generic promotion. In so far as demand shifts more than supply, producers gain from generic promotion. Price increases from p_0 to p_1 and quantity rises from q_0 to q_1. Producers, however, receive only a net price p_2 after deducting the "advertising fee" $(p_1 - p_2)$. Producer surplus rises by area (a+b+c). Consumers gain, following the higher willingness to pay, area h but lose (a+b+d+f) due to the price increase. Their net welfare change is now (h-a-b-d-f). No welfare effect arises now for the government, as no governmental expenditures are involved. The aggregate welfare impact for consumers, producers and the government is now (c+h-d-f) and it can be positive or negative as in Figure 1.

The benefit-cost ratio amounts to (a+b+c+d+e+f+g)/(d+e+f+g). It is positive in Figure 2 and contains the additional producer surplus in the numerator, including the "advertising fee" (d+e+f+g), which has to be earned on the market at least in order to gain from promotion. A social-cost benefit ratio, based on additional producer and consumer surplus, would be (c+e+g+h)/(d+e+f+g).

Figure 2: Economic Impacts of Producers-Financed Generic Promotion



The existing "Quality from Bavaria" program can be characterized by a mixture between Figures 1 and 2. Advertising expenditures are financed by the Bavarian State and, thus, represents the situation of Figure 1. However, marginal costs of producers may rise as they agree to a mandated quality control system that would likely induce additional costs. These costs, however, are not available for this empirical analysis. Therefore, we start from the situation of Figure 1 and we interpret the computed gains in producer surplus as maximum values.

A simultaneous market model is the basic approach for an analysis of the price, quantity and welfare impacts of the "Quality from Bavaria" program. The following stylized model is used:

(2) $q^D = q^D(p, A)$ (demand function),

(3) $q^S = q^S(p)$ (supply function) and,

(4) $q^s = q^D$ (market equilibrium),

where q^D (q^S) is the demand (supply) quantity, A stands for advertising expenditures, and p is the price of beef. All variables will refer to the Bavarian beef market. Total differentiation of equations (2) to (4), a reformulation of the model in relative changes (indicated by ^) and solving for $\hat{p}$ yields the relative price effect of generic promotion:

(5) $$\hat{p} = \frac{1}{\varepsilon^S - \varepsilon^D} \cdot \varepsilon_A \cdot \hat{A}\,.$$

ε^S (ε^D) is the price elasticity of supply (demand) and ε_A the elasticity of demand with regard to advertising expenditures. The full price effect of dropping the program "Quality from Bavaria" can be derived by setting $\hat{A} = -1$. This implies that advertising expenditures under the program are reduced at once to zero.

From the price effects of generic promotion, we can derive the effects on demand and supply. Total differentiation and reformulation of equations (2) and (3) yields

(6) $$\hat{q}^D = \varepsilon^D \cdot \hat{p} + \varepsilon_A \cdot \hat{A}$$

and

(7) $$\hat{q}^S = \varepsilon^S \cdot \hat{p}\,.$$

If equation (5) is considered in (6) and (7), we get

(6') = (7') $$\hat{q}^D = \hat{q}^S = \varepsilon_A \cdot \hat{A} \cdot \left(\frac{\varepsilon^S}{\varepsilon^S - \varepsilon^D} \right)$$

The relative effects on prices and quantities can be utilized then to measure impacts of generic promotion on consumer expenditures and on economic welfare, as illustrated in Figure 1.

4 Empirical Results

4.1 Data

Mean values from monthly household panel data covering the time period 1995-98 were used.[1] For the econometric estimation extensive data work was necessary to get valid measures of the dependent and independent variables.

The dependent variable was the per-capita consumption of beef in kg in Bavaria (q_C^D). Beef consumption only accounts for fresh beef consumed not including ground meat. The average level of monthly fresh beef consumption during the time period was around 250 grams per capita.

Prices were also taken from the panel and calculated using expenditures and quantities and deflated by the Bavarian consumer price index for food products [BAYSTAT (1999), p. 19]. Preliminary model estimation results indicated that unlike the price of poultry the price of pork was not a strong substitute for beef. The estimation therefore was limited to the price of beef (p_B) and the substitute poultry (p_P; specifically we used the ratio of the price of beef and poultry ($p_{ratio} = p_B/p_P$). The panel participants average monthly expenditures were 13.06 DM for beef and 6.75 DM/kg for poultry: the relation between the price of beef and poultry was around 2:1.

The deflated per-capita income in Bavaria in DM per month (Y_C^R) was calculated as follows. The GfK collects sociodemographic and income data over all panel participants which includes the average net income on a basis of income classes once a year. These data are converted using household size and the number of households to derive a net per-capita income. The Christmas Allowance and other non-regular gratifications are not included but we know that most panel households are recipients of these gratifications. For this reason the income variable for December was adjusted accordingly.[2] This new income variable was deflated by the Bavarian consumer price index [BAYSTAT (1999), p. 6]. The average deflated net per-capita income than was around 1400 DM per month.

[1] The chosen data for beef consumption were obtained from the GfK-panel. The GfK is a German Society for consumer research, which is recording monthly bought amounts (quantities, prices) of fresh beef per household. It was possible to get separate Bavarian data. On average, 703 Bavarian households with altogether 1725 persons participated in the panel.

[2] The Christmas Allowance is typically paid in late November or early December and available for consumption in December. Although it amounts in gross terms to a thirteenth monthly income, we chose a multiplicator of 1.5 to compute the December income from the "normal" monthly income. The rationale is that self-employed persons,

Data for monthly advertising expenditures were available from the Bavarian Ministry for Nutrition, Agriculture and Forestry. They include expenditures on information in print media, radio, infoscreens, posters and on point of sale promotions. The advertising variable was deflated and lagged by one month ($A^{R}_{C,-1}$). To compute real advertising expenditures, an advertising index was created. The calculation followed the Laspeyres index on the 1995 basis with "Quartalsdaten der Bruttoaufwendungen und Werbevolumina … " by Nielsen Marketing Research S+P [NO AUTHOR (1999), p. 89]. Major advertising media (newspapers, public journals, specialist journals, radio and posters) were considered. On a monthly average, 2.5 Pfennig were spent per Bavarian citizen on advertising.

The trend variable (T) accounts for the change in beef consumption over time. The change in consumer preferences from "red meat" (beef, pork) to "white meat" (poultry) with regard to health aspects is independent from the short-run effects of the BSE Crisis.

Previous studies on the consumption of livestock products point out that information on nutrition and health has a significant influence on the demand of meat products [BROWN and SCHRADER (1990); ECKERT (1998); GIERE, HERRMANN and BÖCHER (1997); HOFF and CLAES (1997)]. Following ECKERT (1998), we analyzed the short-run effects of the BSE Crisis on beef consumption. An information index (I_{BSE}) was created which contained the numbers of articles in the journal "Agra-Europe" dealing with the BSE Crisis. The weekly articles of "Agra-Europe" were reviewed for: (1) reports of new BSE cases in Germany or the case that meat from Ireland, Great Britain or Switzerland entered the German market, (2) reports or news of any BSE infected cattle imports into an EU-country, (3) news of possible transfer of BSE among men or a relationship between CJD and BSE and (4) other reports mentioning BSE. The absolute number of all four categories was totaled for each month to create the variable I_{BSE}.

Seasonal effects on beef consumption were proxied by dummy variables for the months May to August (D_{May}, D_{June}, D_{July}, D_{Aug}) in which the consumption is below average. The influence of Christmas was covered by the December dummy variable (D_{Dec}).

4.2 Econometric Results

Results from three alternative specifications of equation (1) are shown in Table 1. Since we use data from a German household panel, we assume that the relatively small number of households in our sample will not affect current prices. Hence, the current price of both beef and poultry (substitute) are treated as exogenous; hence, single-equation estimation is appropriate. Among

---

who are in the sample, do not receive this gratification. Moreover, the net income gain of the beneficiaries from the Christmas Allowance is limited by progressive income taxation.

several alternative functional forms we fitted to the data, the linear-log form was selected as best. This particular functional form allows for the possibility of diminishing marginal returns from increased advertising expenditure.

Models 1 and 2 are specified the same except for the definition of income. Model 2 differs from Model 1 only in that the annual average income variable is replaced by a binary December variable. This implies another explanation of the December peak in per-capita beef consumption. It is not the seasonal income increase but a higher preference for more expensive meats in the Holiday Season which drives the rising beef consumption in this model. On the other hand, Model 3 is the same as Model 1 except it is estimated over a one-year shorter time period, as a check for parameter stability after the program had been operating for a year. We also explored the effect of lagged values of both advertising expenditures and a cumulative measure of the BSE information variable. As a result, we found the current value of the BSE information variable and the one-period lagged value of advertising performed best.

The statistical estimates are shown in Table 1. As discussed above, demand theory suggests a negative own-price effect while we expect a positive influence of the price of the substitute, consumer income and advertising expenditures. We further expect information on BSE to negatively impact the quantity of beef demanded while the trend variable is included to capture longer-run changes in consumer tastes and preferences. We also expect beef consumption to be less in the summer months than in the winter months *ceteris paribus*. As shown in Table 1, all of our parameter estimates had the expected direction of influence and were significantly different from zero. Moreover, each model explains over 80 percent of the variation in beef consumption and the Durbin-Watson statistic suggests the lack of serial correlation.

Table 1. Bavarian Beef Demand Model Estimates

Model 1: 1995-98

$$\hat{q}_C^D = \underset{}{-1.342} + \underset{(6.36)}{0.247}\ln Y_C^R \underset{(-2.61)}{-0.169}\ln \mathrm{p}_{\mathrm{ratio}} \underset{(1.99)}{+0.0106}\ln A_{C,-1}^R \underset{(-4.46)}{-0.0018}T \underset{(-3.74)}{-0.0021}\ \mathrm{I}_{\mathrm{BSE}}$$
$$\underset{(-4.54)}{} \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$$

$$\underset{(-4.11)}{-0.0631}\mathrm{D}_{\mathrm{May}} \underset{(-3.87)}{-0.0642}\mathrm{D}_{\mathrm{June}} \underset{(-4.28)}{-0.0642}\mathrm{D}_{\mathrm{July}} \underset{(-5.43)}{-0.0831}\mathrm{D}_{\mathrm{Aug}};\quad \overline{R}^2 = 0.82 \text{ and } \mathrm{DW} = 2.11.$$

Model 2: 1995-98; income is replaced by $\mathrm{D}_{\mathrm{Dec}}$

$$\hat{q}_C^D = 0.437 - 0.165\ \ln \mathrm{p}_{\mathrm{ratio}} + 0.0108\ \ln A_{C,-1}^r - 0.0018T - 00022\ \mathrm{I}_{\mathrm{BSE}} - 0.0637\ \mathrm{D}_{\mathrm{May}}$$
$$(8.73)\ (-2.55) \qquad (2.03) \qquad (-4.40)\ \ (-3.86) \qquad (-4.14)$$

$$-00651\ \mathrm{D}_{\mathrm{June}} - 00656\ \mathrm{D}_{\mathrm{July}} - 0.0847\ \mathrm{D}_{\mathrm{Aug}} + 0.0990\ \mathrm{D}_{\mathrm{Dec}};\quad \overline{R}^2 = 0.82 \text{ and } \mathrm{DW} = 2.10.$$
$$(-3.92) \qquad (-4.37) \qquad (-5.20) \qquad (6.34)$$

Model 3: 1996-98; variable specification same as Model 1

$$\hat{q}_C^D = -1.247 + 0.230\ \ln Y_C^r - 0.156\ \ln \mathrm{p}_{\mathrm{ratio}} + 0.0153\ \ln A_{C,-1}^R - 0.0018T - 0.0027\ \mathrm{I}_{\mathrm{BSE}}$$
$$(-3.79)\ (5.18) \qquad (-2.12) \qquad (1.99) \qquad (-2.66) \quad (-3.43)$$

$$0.0528\ \mathrm{D}_{\mathrm{May}} - 0.0754\ \mathrm{D}_{\mathrm{June}} - 0.0649\ \mathrm{D}_{\mathrm{July}} - 0.0810\ \mathrm{D}_{\mathrm{Aug}};\quad \overline{R}^2 = 0.80 \text{ and } \mathrm{DW} = 1.80$$
$$(-2.87) \qquad (-3.80) \qquad (-3.72) \qquad (-4.66)$$

Note: $\overline{R}^2$ is the adjusted coefficient of determination, DW is the Durbin-Watson statistic, and the values in parentheses are the computed t-values. ^ stands for estimated variables. All variables are defined as explained in the text. Time indices are omitted for convenience.

Source: Authors' computations.

Table 2. Estimated Short-Run Beef Demand Elasticities[a)]

	Beef-Poultry Price Ratio	Income	Advertising	BSE
Model 1	-0.667	0.975	0.042	-0.074
Model 2	-0.652	n. a.	0.043	-0.077
Model 3	-0.636	0.942	0.063	-0.116

a) Evaluated at mean values.

Source: Authors' computations.

The computed demand elasticities are reported in Table 2. The price ratio (beef to poultry) elasticity has the expected negative sign. That is, as the price of beef increases the quantity of beef demanded decreases while, on the other hand, as the price of poultry increases the quantity demanded increases. The income elasticity of demand was found to be inelastic, but very closely to unity. The advertising elasticities are similar across all three models. These estimates are comparable with those found in other studies which show beef advertising elasticities typically ranging from 0.01 to 0.03 [ALSTON, CHALFANT and PIGGOTT (1995); BRESTER and SCHROEDER (1995); CRANFIELD and GODDARD (1995); PIGGOTT et al. (1996); CAPPS (1989)]. Finally, the negative effect of increased BSE information is highly significant and uniform among the three models.

As stated above, Models 1 and 2 were designed to capture the increase in December beef consumption differently. However, due to multicollinearity, we could not statistically distinguish

between the income effect and the higher consumer preference for beef in December. We also found little change with the shorter sample period. Among the three models, however, we found remarkable parameter stability over the three alternative specifications. Based on theoretical expectations and our statistical diagnosis, Model 1 is selected as best. We now examine Model 1 in more detail.

In Model 1, the advertising program "Quality from Bavaria" is shown to have a positive impact on the demand for beef. A one-sided hypothesis test showed that we cannot reject the null hypothesis that the estimated advertising parameter is greater than zero. Thus, we assert a high degree of confidence in our advertising elasticity estimate of 0.042.

In order to reduce the degree of multicollinearity among the two price series, we defined a single variable as the ratio of beef to poultry price. The parameter estimate for this variable was economically plausible and statistically significant. If either the beef price increases by one percent or the poultry price (substitute) decreases by one percent, the quantity demanded of beef will fall by 0.667 percent; it is price inelastic. The income elasticity of 0.975 was computed from the income series that includes the "Christmas Allowance" which is an important component of December beef demand.

Bavarian beef demand is trending downward as proxied by the negative coefficient on the trend variable. Holding other things constant, we estimate a monthly decline in per-capita beef demand of 1.8 grams; most likely due to consumer preferences moving away from "red meat". Finally, actual media reports of BSE adversely impacted the demand for beef. Again, holding other things constant, a one-report increase in "Agra-Europe" of BSE information will result in a 2.1 gram per month decrease in per capita beef demand. This informational elasticity is -0.074. Clearly, declining consumer preferences and adverse information of the safety of the food supply, have contributed to a rapid deterioration of per-capita beef consumption. Our results show that beef promotion worked against this decline.

Unfortunately, it cannot be derived from Tables 1 and 2 directly whether promotion was successful in offsetting the BSE- and preference-induced inward shift of the demand curve. Such conclusions can be drawn, however, by simulating per-capita demand for the hypothetical situations without generic promotion, without BSE information and without preferential changes as indicated by the trend variable. The findings are summarized in Table 3.

It is reported in Table 3 that generic promotion under "Quality from Bavaria" has raised per-capita beef demand of the average Bavarian consumer by 2%. Although being successful in that sense, the promotion-induced demand shift could not compensate for the negative impacts of BSE information and preferential changes against beef. On average for 1995-98, BSE

information has caused a stronger decline of per-capita demand, i.e. by 6.9%. The preferential change in the same period, by –15.2%, was even stronger. BSE information and preferential changes have diminished the individual consumer's demand by 20.2%. Compared with these strong market changes against beef, the impacts of generic promotion are rather limited.

It must be borne in mind that Table 3 is based on panel information about a group of Bavarian consumers. We have regarded these selected consumers as price-takers and have not yet incorporated the price effects which may arise from demand shifts. This latter issue will be addressed in the next section.

Table 3: Impacts of BSE Information, Preferential Changes and Generic Promotion on Demand for Fresh Beef of Individual Consumers in Bavaria, 1995-98[a)]

Variable	**Per-capita Consumption (grams per month)**
Benchmark situation[a)]	253.2
Without generic promotion	248.2
Without BSE information	272.1
Without preferential changes	298.5
Without BSE information and preferential changes	317.4
Variable	**Percentage Change of Consumption Due to …**
Generic Promotion	+2.0%
BSE information	-6.9%
Preferential changes	-15.2%
BSE information and preferential changes	-20.2%

a) The benchmark situation is estimated as per-capita demand according to Model 1 in Table 1. All other values are computed by dropping the A, I_{BSE} and T variables in that equation respectively.

Source: Authors' computations.

4.3 Welfare Analysis

Which welfare impacts were induced by "Quality from Bavaria" and which cost-benefit ratio can be attributed to the program? In order to answer this question, impacts of "Quality from Bavaria" on market prices, supply and demand must be measured. Prices, quantities and advertising expenditures during the program period were available for the period 1995-98. Based on equations (5) and (7), hypothetical prices and quantities were computed for the non-program situation. A synthetic approach was applied for the price elasticity of supply. In a comprehensive supply analysis for German agriculture, GRINGS (1985) computed values for ε^S in the beef

sector between 0.2 and 0.3. We utilized the mean value of 0.25 for our analysis. We calculated the *program* effects on prices, quantities, expenditures and earnings compared with the *non-program* situation. Table 4 presents the results.

The average price for beef in the years 1995 to 1998 was raised by the program from 12.60 to 13.20 DM/kg, i.e. by 4.8%. Despite rising prices, beef consumption was also increased due to "Quality from Bavaria" by 1.2%. The price- and quantity-increasing effects of the program caused higher consumer expenditures for beef in Bavaria: 479.4 rather than 452.4 mill. DM. Expenditures, and earnings accordingly, were thus raised by 6.0%.

Table 4: Impacts of the Program "Quality from Bavaria" on Prices, Quantities, Expenditures and Earnings, Bavarian Beef Market, 1995-98

Year	Impacts		
	a) Price Effects:		
	Price Levels in the Situations		Price Effects
	with Program [DM/kg]	without Program [DM/kg]	of the Program [%]
1995	13.04	12.44	+4.8
1996	12.93	12.34	+4.8
1997	13.38	12.77	+4.8
1998	13.46	12.84	+4.8
∅ 1995-98	13.20	12.60	+4.8
	b) Effects on Supply and Demand:		
	Demand Levels in the Situations		Quantity Effects
	with Program [mt]	without Program [mt]	of the Program [%]
1995	39,652.64	39,198.60	+1.2
1996	34,757.12	34,359.13	+1.2
1997	37,155.75	36,730.30	+1.2
1998	33,807.27	33,420.16	+1.2
∅ 1995-98	36,343.20	35,927.10	+1.2
	c) Effects on Consumer Expenditures and Producer Earnings:		
	Levels of Expenditures and Earnings in the Situations		Expenditure Effects
	with Program [Mill. DM]	without Program [Mill. DM]	of the Program [%]
1995	517.070	487.631	+6.0
1996	449.410	423.992	+6.0
1997	497.144	469.046	+6.0
1998	455.046	429.115	+6.0
∅ 1995-98	479.667	452.446	+6.0

Source: Authors' computations based on the method explained in Section 3 and data from GfK (1999, 2000) and BALLING (1999).

Based on the impacts of "Quality from Bavaria" on prices and quantities, the welfare effects of the program were also calculated following the illustration in Figure 1. Table 5 presents the

results. The welfare effect for consumers was positive and amounted to 20.4 mill. DM on average for the years 1995-98. Bavarian beef producers realized a welfare gain of 21.9 mill. DM in the same period. The estimation revealed a similar magnitude of welfare gains on the supply and the demand side. Very high impacts occurred in 1995, the year following the program' s introduction. In the major year of the BSE crisis, welfare effects for consumers and producers ranged lower, but remained clearly positive.

If additional advertising expenditures of 3.7 million DM annually are subtracted, a positive welfare impact of 38.5 mill. DM remains on average for 1995-98. The net welfare effect in the year 1996 is clearly below average, due to lower welfare gains by producers and consumers and higher advertising expenditures. The highest net welfare gains occurred in 1995.

Cost-benefit ratios of generic promotion are also shown in Table 5. If we relate the average gain in producer surplus to the advertising expenditures for the 1995-98 period, a cost-benefit ratio of 6.35 is found. If the ratio between the aggregate welfare gains for producers and consumers and the advertising expenditures is computed, the resulting cost-benefit ratio is even larger, 12.27 over the same period. The latter termed the "social" cost benefit ratio is nearly double the amount of the "private" cost-benefit ratio. It can be seen how strongly the calculated cost-benefit ratios are affected by the choice of the method.

Table 5: Welfare Impacts of the Program "Quality from Bavaria", Bavarian Beef Market, 1995-98

Impacts (1000 DM)	**Year**				
	1995	**1996**	**1997**	**1998**	**∅ 1995-98**
Welfare Impacts for Consumers, Bavarian Beef Market[a)]	+22,069	+19,054	+21,063	+19,439	+20,406
Welfare Impacts for Producers, Bavarian Beef Market[b)]	+23,655	+20,389	+22,535	+20,841	+21,855
Budgetary Impacts of the Program in Bavaria[c)]	-2,899	-5,677	-3,262	-3,097	-3,734
Net Welfare Impacts of the Program[d)]	+42,826	+33,766	+40,336	+37,183	+38,528
Benefit-Cost Ratio A[e)]	8.16	3.59	6.91	6.73	6.35
Benefit-Cost Ratio B[f)]	15.77	6.95	13.37	13.01	12.27

a) This corresponds to area (c-a) in Figure 1.- b) This corresponds to area (a+b) in Figure 1.- c) Computed as advertising expenditures in the program "Quality from Bavaria".- d) This corresponds to area (b+c) in Figure 1.- e) "Private" benefit-cost ratio: Welfare impacts for producers on the Bavarian beef market divided by advertising expenditures under "Quality from Bavaria".- f) "Social" benefit-cost ratio: Net welfare impact of the program on producers and consumers divided by advertising expenditures under the program.
Source: Authors' computations.

In summary, our quantitative analysis shows that an unambiguous welfare gain from advertising occurred for Bavarian consumers and producers, which more than compensates for the expenditures of the Bavarian State for the program "Quality from Bavaria". It has to be borne in mind, however, that these welfare gains are maximum gains. One reason is that additional marginal costs from the mandated program' s quality control provisions are not covered. The computed program effects on producer surplus do not incorporate a probably small-upward shift in the supply curve. Additionally, the cost-benefit ratio B is based on an analysis of the beef market alone and impacts of the program on consumer surplus on other markets are not analyzed in Table 5. It is remarkable that one main result of the U.S. studies on generic promotion is confirmed here for EU environment. That is, despite the very low advertising elasticity, generic promotion under "Quality from Bavaria" has had a strong positive impact for consumers and producers. The cost-benefit ratios are clearly above unity.

5 Summary and Conclusions

Quantitative analyses on the economic impacts of generic promotion have mainly concentrated on the U. S., Canada and Australia. Similar European case studies are rare, although EU efforts to increase food demand by generic promotion are strong given increasing consumer concerns on food safety. This holds particularly for beef in the context of BSE. Therefore, it was the objective of this analysis to evaluate an imported EU generic promotion program, "Quality from Bavaria". Based on econometric estimates, we evaluated the demand expansion nature generic promotion relative to the demand contraction of BSE. Welfare implications of "Quality from Bavaria" were additionally investigated. Major results of the analysis are as follows:

1. The advertising expenditures under "Quality from Bavaria" increased consumer demand for Bavarian beef and the cost-benefit ratio of the program turned out to be well above unity.
2. Despite this success of the program, the demand effects of food-safety concerns as measured by BSE information were stronger. Hence, generic promotion could only compensate partly the inward shift in per-capita beef demand induced by BSE information and preferential changes.
3. Although the EU market for beef has been affected much more by the BSE Crisis than the U. S. market, it is striking that the advertising elasticities of demand are similar for Bavarian consumers to U. S. consumers in earlier studies. The elasticity coefficient in this study is 0.04, and statistically different from zero.

The findings of this study cannot be generalized for Europe. The program "Quality from Bavaria" stresses, like similar programs in other states, regional orientation. The image of

Bavaria as a food-producing region is very positive and it might well be that other regions will have different experiences in promoting food demand of a regional origin.

References

AGE: Agra-Europe, Zahl der Creutzfeld-Jakob-Toten steigt deutlich. Agra-Europe 33/00, August 14, 2000, Europa-Nachrichten 4.

ALSTON, J.M., J.A. CHALFANT, J.E. CHRISTIAN, E. MENG and N.E. PIGGOTT (1997), The California Table Grape Commissions Promotion Program: An Evaluation. Giannini Foundation Monograph No.43, Giannini Foundation of Agricultural Economics, University of California, Davis, November.

ALSTON, J.M., J.A. CHALFANT and N.E. PIGGOTT (1995), Demand Response and Returns to Incremental Advertising in the Australian Meat Industry. In: KINNUCAN, H.W., J.E. LENTZ and C.R., CLARY, *Economic Analysis of Meat Promotion,* Proceedings from the NEC-63 Conference, Denver, CO., June, Chapter 5.

NO AUTHOR (1999), Quartalsdaten der Bruttowerbeaufwendungen und Werbevolumina in den klassischen Werbemedien für Produkte und Dienstleistungen mit regionaler und überregionaler Bedeutung, *Media Perspektiven*, No. 2 and earlier issues.

BAYSTAT, Bayerisches Landesamt für Statistik und Datenverarbeitung, Statistisches Jahrbuch Bayern. München, various years.

BECKER, T. (ed.) (2000), Quality Policy and Consumer Behaviour in the European Union. Kiel, pp. 113-155.

BRESTER, G.W. and T.C. SCHROEDER (1995), The Impacts of Brand and Generic Advertising on Meat Demand. *American Journal of Agricultural Economics,* Vol.77, pp. 969-979.

BROWN, J.D. and F.L. SCHRADER (1990), Cholesterol Information and Shell Egg Consumption. *American Journal of Agricultural Economics*, Vol.72, pp. 548-555.

BSTMELF, Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten (Hrsg.) (1999), Regionale Vermarktung von Agrarprodukten und Lebensmitteln: Voraussetzungen, Strategien und Maßnahmen in Bayern. Dokumentation, RB-Nr. 08/99/22, München.

BSTMELF, Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten (1998), Qualitäts- und Prüfbestimmungen für Rinder und Rindfleisch zur Nutzung des Zeichens "Qualität aus Bayern – Garantierte Herkunft“(QHB). München, December 15.

BSTMELF, Bayerisches Staatsministerium für Ernährung, Landwirtschaft und Forsten (1996), Qualität aus Bayern – Garantierte Herkunft: Qualitäts- und Herkunftssicherungsprogramm für bayerisches Rind-, Kalb-, Schweine- und Lammfleisch. *Agrarpolitische Informationen*, Heft 13/96.

CAPPS, O., Jr. (1989), Utilizing Scanner Data to Estimate Retail Demand Functions for Meat. *American Journal of Agricultural Economics*, Vol.71, pp. 750-760.

CRANFIELD, J. and E. GODDARD, (1995), Advertising and Oligopoly Power in the North American Beef Processing Sector. In: KINNUCAN, H.W., LENTZ, J.E., and CLARY, C.R., *Economic Analysis of Meat Promotion,* Proceedings from the NEC-63 Conference, Denver, CO., June, Chapter 6.

ECKERT, S. (1998), Ökonomische Effekte von Lebensmittelskandalen: Das Beispiel BSE. (Arbeitsbericht des Instituts für Agrarpolitik und Marktforschung der JLU Gießen, Nr.25), Giessen.

EUROPEAN COMMISSION (ed.), (1998) Bovine Spongiform Encephalopathy (BSE) – Vademecum – Information for Consumers, 3rd edition. Brussels, October 16.

FORKER, O. D. and R. W. WARD (1993), Commodity Advertising: the Economics and Measurement of Generic Programs. New York.

FLEISCHPRÜFRING BAYERN e.V. (1999), Schlachtungen von QHB-Rindern in Schlachthöfen und Metzgereien in Bayern von November 1994 bis Dezember 1998. Unpublished information. Vierkirchen, October 27.

GIERE, A., R. HERRMANN and K. BÖCHER (1997), Ernährungsinformationen und Nahrungsmittelkonsum: Theoretische Überlegungen und empirische Analyse am Beispiel des deutschen Buttermarktes. *Agrarwirtschaft*, Vol. 46, pp. 283-293.

GLITSCH, K. (2000), Consumer Requirements for Fresh Meat: Results of the Survey. In: BECKER, T. (ed.), Quality Policy and Consumer Behaviour in the European Union. Kiel, pp. 113-155.

GRINGS, M. (1985), Ein Angebotsmodell für den Agrarsektor der Bundesrepublik Deutschland: Ökonometrische Schätzung auf der Grundlage der Dualitätstheorie. (Schriften zur angewandten Ökonometrie, Heft 15), Frankfurt.

HOFF, K. und R. CLAES (1997), Der Einfluß von Skandalen und Gemeinschaftswerbung auf die Nachfrage nach Rindfleisch: Eine ökonometrische Analyse. *Agrarwirtschaft*, Vol. 46, pp. 332-344.

KINNUCAN, H. W., S. R. THOMPSON and H.-S. CHANG (eds.)(1992), Commodity Advertising and Promotion, Ames.

PIGGOTT, N.E., J.A. CHALFANT, J.M. ALSTON and G.R. GRIFFITH (1996), Demand Response to Advertising in the Australian Meat Industry. *American Journal of Agricultural Economics*, Vol.78, pp. 268-279.

STATBUA, Statistisches Bundesamt (Hrsg.), Schlachtungen und Fleischerzeugung, Fachserie 3, Reihe 4.2.1. Wiesbaden, first quarter 1999 and earlier issues.

AGRARÖKONOMISCHE DISKUSSIONSBEITRÄGE

- DISCUSSION PAPERS IN AGRICULTURAL ECONOMICS -

1. Roland HERRMANN, The Differential Impact of Prices and Exchange Rates on Food Imports: An Econometric Analysis for Peru. Januar 1990, 16 Seiten.
   (überarbeitete Fassung erschienen in "Applied Economics", Vol.22 (1990), S.569-577)
2. Monika HARTMANN, Peter Michael SCHMITZ, Exchange Rates and EC Agriculture - International and European Monetary Challenges -. Juni 1990, 26 Seiten.
3. Carlo PRINZ, Rechtsgrundlagen und internationale Allokation der EG-Nahrungsmittelhilfe. Juni 1990, 33 Seiten.
   (erschienen in "Jahrbuch für Sozialwissenschaften - Zeitschrift für Wirtschaftswissenschaften", Bd. 42 (1991), H. 3, S.310-335)
4. Roland HERRMANN, Economic Effects of Financial Stabilization Schemes in the EC's Development Policy: STABEX, COMPEX and SYSMIN. September 1990. 49 Seiten.
   (gekürzte Fassung erschienen in SCHULZ, M. (Hrsg.), ACP-EEC: Partners in Cooperation. Breitenbach-Verlag, Saarbrücken, Fort Lauderdale, 1991, S.99-143)
5. Rainer MARGGRAF, Allokationseffizienz und Gerechtigkeit. September 1990, 19 Seiten.
6. Roland HERRMANN, Carlo PRINZ, Patricia SCHENCK, How Food Aid Affects Food Trade and How Food Trade Matters to the International Allocation of Food Aid. Dezember 1990, 30 Seiten.
   (etwas geänderte Fassung erschienen in "Journal of Economic Development", Vol.17 (1992), H.1 , S.71-98)
7. Peter H. ZACHÄUS, Der Einfluß gesamtwirtschaftlicher Entwicklungen auf den Agrarsektor Nigerias: Eine empirische Analyse mit dem Konzept der wahren Protektion. April 1991, 28 Seiten.
8. Roland HERRMANN, Werturteile und wissenschaftliche Agrarpolitik. April 1991, 22 Seiten.
   (etwas geänderte Fassung erschienen in "Agrarwirtschaft", Jg.40 (1991), H.7, S.199-206)
9. Michael FINUS, Ansätze zur Messung des Wertes von Umweltgütern in der Landwirtschaft: Methodische Grundlagen und einige Gedanken zur Anwendbarkeit in der Agrarpolitik. Juni 1991, 26 Seiten.
   (veränderte Fassung erschienen in "Agrarwirtschaft", Jg.41 (1992), H.12, S.367-374)
10. Peter WEHRHEIM, Ökonomische Effekte und Beispiele von Deficiency Payments im Agrarsektor: Ein Literaturüberblick. September 1991, 24 Seiten.
11. Patricia SCHENCK, Struktur und Bestimmungsgründe der Agrarprotektion - Food Crops versus Cash Crops. November 1991, 30 Seiten.
    (veränderte Fassung ist erschienen unter Patricia GORN in "Konjunkturpolitik", Jg.38 (1992), H.2, S.86-112)
12. Carlo PRINZ, Eine Erklärung der Verteilung von EG-Nahrungsmittelhilfe auf Entwicklungsländer: Quantitative Analyse für die Periode 1983-89. November 1991, 26 Seiten.
13. Alan MATTHEWS, The European Community's Banana Policy after 1992. Februar 1992, 28 Seiten.
14. Robert LINDE, Allokations- und Verteilungswirkungen des Wasserpfennigs. Dezember 1991, 18 Seiten.
15. Patricia GORN, Roland HERRMANN, Benedikt SCHALK, The Importance of Direct and Indirect Policies for Agricultural Protection in Developing Countries: Analysis of Time Series for Wheat, Rice and Coffee. Juli 1992, 40 Seiten.
    (revidierte und stark gekürzte Fassung ist erschienen unter dem Titel "The Pattern of Protection for Food Crops and Cash Crops in Developing Countries" in "European Review of Agricultural Economics", Vol.20 (1993), H.2, S.291-314)
16. Dietmar WEIß, Der internationale Preiszusammenhang im Lichte von Kointegrationsmodellen: Eine methodische Einführung am Beispiel des "law of one price" bei agrarischen Rohstoffen. September 1992, 39 Seiten.

17. Francis M. KAI-KAI, The Food Price Dilemma: Welfare Analysis of Rice Policy in Sierra Leone in the 1980s. Juni 1993, 18 Seiten.

18. Matthias SCHLUND, Transportsubventionen für Exportgetreide als Instrument der kanadischen Agrarpolitik: Geschichte, Darstellung und ökonomische Bewertung. Juni 1993, 23 Seiten.
(veränderte Fassung erschienen in "Zeitschrift für Kanada-Studien", Jg.14 (1994), H.1, S.139-152)

19. Roland HERRMANN, Ökonomische Wirkungen traditioneller und neuer agrarpolitischer Instrumente in Kanada. Juli 1993, 67 Seiten.
(überarbeitete und stark gekürzte Fassung erschienen unter dem Titel "Agrarpolitik in Kanada - Beschreibung, Wirkungsanalyse und Lehre aus den dortigen Erfahrungen für die agrarpolitische Reformdiskussion" in "Berichte über Landwirtschaft", Jg.72 (1994), S.295-326)

20. Peter WEHRHEIM, The Integration of the EFTA Member States, Sweden, Finland, Norway, Austria and Switzerland into the EC: Impacts on Agriculture. August 1993, 22 Seiten.

21. Roland HERRMANN, Methoden zur Messung von Agrarprotektion. September 1993, 15 Seiten.
(etwas geänderte Fassung erschienen in "WiSu"-Das Wirtschaftsstudium", Jg.22 (1993), H.10, S.861-874)

22. Marie Leigh LIVINGSTON, Designing Water Institutions: Market Failures and Institutional Response. November 1993, 25 Seiten.

23. Charlotte HAGNER, Nachfrage nach Produkten des ökologischen Landbaus - Stand der Literatur und Ergebnisse einer ökonometrischen Nachfrageanalyse für Müsliprodukte. Januar 1994, 45 Seiten.
(überarbeitete und stark gekürzte Fassung erschienen unter dem Titel "Die Nachfrage nach Müsliprodukten - Gibt es eine zusätzliche marginale Zahlungsbereitschaft für die Eigenschaft "Bio"?" in "Agrarwirtschaft", Jg.43 (1994), H.10, S.362-368)

24. Roland HERRMANN und Dietmar WEIß, A Welfare Analysis of the EC-ACP Sugar Protocol. Februar 1994, 33 Seiten.
(veränderte und gekürzte Fassung erschienen in "The Journal of Development Studies", Vol.31 (1995), No.6, S.918-941)

25. Roland HERRMANN, Ausmaß und Struktur der Agrarprotektion im weltweiten Vergleich. Juni 1994, 16 Seiten.
(etwas geänderte Fassung erschienen in "WiSu - Das Wirtschaftsstudium", Jg.23 (1994), H.4, S.377-386)

26. Patricia GORN, Der politische Markt für Agrarprotektion - Theoretische Erklärung und empirische Schätzungen im internationalen Querschnittsvergleich. Juli 1994, 27 Seiten.
(eine veränderte und gekürzte Fassung erschienen in "Agrarwirtschaft", Jg.43 (1994), H.12, S.430-442)

27. Roland HERRMANN und Hellen OMMEH, Exchange Rate Devaluation and the Contribution of Agriculture to the Current Account: The Case of Kenya. August 1994, 30 Seiten.
(leicht veränderte Fassung erschienen in "Quarterly Journal of International Agriculture (Zeitschrift für ausländische Landwirtschaft)", Vol.34 (1995), No.1, S.6-31)

28. Ernst-August NUPPENAU, Land Reform and Government Expenditures for Emerging Small-Scale Farmers: A Mathematical Analysis of Optimal Timing. März 1995, 22 Seiten.

29. Charlotte HAGNER, Instrumente zur Förderung des ökologischen Landbaus und der Extensivierung in der Landwirtschaft. März 1995, 44 Seiten.

30. Nikolaus GOTSCH, Roland HERRMANN und Günter PETER, Wie beeinflußt eine Spezialisierung der Entwicklungsländer auf Agrarexporte die Armutssituation? Dezember 1995, 50 Seiten.
(leicht veränderte Fassung erschienen in "Berichte über Landwirtschaft", Bd.74 (1996), S.298-326)

31. Jörg FÜHRER, Regionenspezifische Akzeptanz des Hessischen Kulturlandschaftsprogramms. Empirischer Befund und ökonomische Bestimmungsfaktoren. Januar 1996, 33 Seiten.

32. Roland HERRMANN, Axel REINHARDT und Christel ZAHN, Wie beeinflußt die Marktstruktur das Marktergebnis? - Ein empirischer Test am Beispiel von Produktinnovationen in der Ernährungswirtschaft. Januar 1996, 26 Seiten.

(etwas veränderte und gekürzte Fassung erschienen in "Agrarwirtschaft", Jg.45 (1996), H.4/5, S.186-196)

33. Nikolaus GOTSCH, Future Biological-technological Progress in Cocoa: Results of a Delphi Survey. März 1996, 40 Seiten.
(ein Teil wurde veröffentlicht unter dem Titel "Cocoa Crop Protection: An Expert Forecast on Future Progress, Research Priorities and Policy with the Help of the Delphi Survey" in "Crop Protection", Vol.16 (1997), No.3, S.227-233)

34. Charlotte HAGNER, Tee und Baumwolle aus kontrolliert biologischem Anbau - Wie hat sich der Markt in Deutschland entwickelt? Mai 1996, 37 Seiten.

35. G. Cornelis VAN KOOTEN, Jennifer WOHL und Arlene ELLS, Fuzzy Measures for a Fuzzy Concept: A New Approach to Nonmarket Valuation. Juni 1996, 27 Seiten.

36. G. Cornelis VAN KOOTEN, Benefits of Improving Water Quality in Southwestern British Columbia: An Application of Economic Valuation Methods. Juli 1996, 15 Seiten.

37. Claudia RÖDER, Zum Zusammenhang von Wissen und Ernährung - eine empirische Analyse. September 1996, 34 Seiten.
(veränderte Fassung ist erschienen unter dem Titel "Nahrungsmittelnachfrage, Ernährungsqualität und die Rolle von ernährungsbezogenen Einstellungen und Wissen" in "Zeitschrift für Gesundheitswissenschaften", Jg.7, Heft 1, S.53-74)

38. Roland HERRMANN, Economic Implications of the New European Banana Market Regime: The Case of Germany. November 1996, 26 Seiten.

39. P. Michael SCHMITZ und Michaela HOFFMANN, Landwirtschaft und Makroökonomie - Abbildung ausgewählter Zusammenhänge mit einem VAR-Modell. November 1996, 29 Seiten.

40. Roland HERRMANN, The Distribution of Product Innovations in the Food Industry: Economic Determinants and Empirical Tests for Germany. Dezember 1996, 22 Seiten.
(etwas veränderte Fassung erschienen in "Agribusiness - An International Journal", Vol.13 (1997), No.3 (May/June), S.319-334)

41. Manfred WIEBELT, Allgemeine Wirtschaftspolitik und Agrarsektorentwicklung in Entwicklungsländern - Eine allgemeine Gleichgewichtsanalyse. Februar 1997, 31 Seiten.
(als erweiterte Fassung erschienen unter dem Titel "Wie beeinflußt die allgemeine Wirtschaftspolitik die Landwirtschaft? Transmissionsmechanismen und ihre quantitative Bedeutung" in "Berichte über Landwirtschaft", Band 75 (1997), Heft 4, S.515-538)

42. Kerstin PFAFF und Eva BEIMDICK, Der internationale Teemarkt: Marktüberblick, Protektionsanalyse und Entwicklung ökologisch erzeugten Tees. Februar 1997, 38 Seiten.

43. Anke GIERE, Roland HERRMANN und Katja BÖCHER, Wie beeinflussen Ernährungsinformationen den Nahrungsmittelkonsum im Zeitablauf? Konstruktion eines Ernährungsinformationsindexes und ökonometrische Analyse des deutschen Butterverbrauchs. Mai 1997, 44 Seiten.
(gekürzte und geänderte Fassung erschienen unter dem Titel "Ernährungsinformationen und Nahrungsmittelkonsum: Theoretische Überlegungen und empirische Analyse am Beispiel des deutschen Buttermarktes" in "Agrarwirtschaft", Jg.46 (1997), Heft 8/9, S.283-293)

44. Joachim KÖHNE, Die Bedeutung von Preisverzerrungen für das Wirtschaftswachstum der Reformländer in Mittel- und Osteuropa. September 1997, 16 Seiten.

45. Christoph R. WEISS, Firm Heterogeneity and Demand Fluctuations: A Theoretical Model and Empirical Results. September 1997, 16 Seiten.

46. Roland HERRMANN und Claudia RÖDER, Some Neglected Issues in Food Demand Analysis: Retail-Level Demand, Health Information and Product Quality. Oktober 1997, 27 Seiten.
(überarbeitete Fassung erschienen in „Australian Journal of Agricultural and Resource Economics“, Vol.42, No.4, 1998, S.341-367)

47. Timothy JOSLING, The WTO, Agenda 2000 and the Next Steps in Agricultural Policy Reform. Mai 1998, 46 Seiten.

48. Kerstin PFAFF, Marktstruktur- und Preisasymmetrieanalyse der Fleischbranche in Mittelhessen. September 1998, 60 Seiten.

49. Kerstin PFAFF und Marc-C. KRAMB, Veterinärhygiene- und Tierseuchenrecht: Bedeutender Standortnachteil für Erzeuger und Schlachthöfe in Hessen? Oktober 1998, 22 Seiten.

50. Axel REINHARDT, Determinanten der Investitionsaktivitäten der Ernährungsindustrie. Empirische Ergebnisse für die deutsche Fruchtsaftindustrie. Dezember 1998, 34 Seiten.

51. Roland HERRMANN, Claudia RÖDER und John M. CONNOR, How Market Structure Affects Food Product Proliferation: Theoretical Hypotheses and New Empirical Evidence for the U.S. and the German Food Industries. Februar 1999, 58 Seiten.

52. Roland HERRMANN und Richard SEXTON, Redistributive Implications of a Tariff-rate Quota Policy: How Market Structure and Conduct Matter. März 1999, 60 Seiten.

53. Stanley R. THOMPSON und Martin T. BOHL, International Wheat Price Transmission and CAP Reform. Juni 1999, 11 Seiten.

54. Michaela KUHL und P. Michael SCHMITZ, Macroeconomic Shocks and Trade Responsiveness in Argentina – A VAR Analysis. Juni 1999, 19 Seiten und Anhang.

55. Roland HERRMANN, Johannes HARSCHE und Kerstin PFAFF, Wettbewerbsnachteile der Landwirtschaft durch unvollkommene Märkte und mangelnde Erwerbsalternativen? Juni 1999, 17 Seiten.
(etwas gekürzte Fassung erschienen in "Zeitschrift für Kulturtechnik und Landentwicklung", Heft 5/6, 1999, S.282-288)

56. Stanley R. THOMPSON und Wolfgang GOHOUT, CAP Reform, Wheat Instability and Producer Welfare. August 1999, 15 Seiten.

57. Silke SCHUMACHER, Nachwachsende Rohstoffe in Hessen: Analyse und Bewertung anhand des Fallbeispiels Raps. August 1999, 24 Seiten.

58. Ernst-August NUPPENAU, Nature Preservation as Public Good in a Community of Farmers and Non-Farm Residents: Applying a Political Economy Model to Decisions on Financial Contributions and Land Allocation. August 1999, 40 Seiten.

59. Stanley R. THOMPSON, Roland HERRMANN und Wolfgang GOHOUT, Agricultural Market Liberalization and Instability of Domestic Agricultural Markets: The Case of the CAP. März 2000, 18 Seiten. (erschienen in "American Journal of Agricultural Economics", Vol. 82 (2000), No. 3, S. 718-726)

60. Roland HERRMANN, Marc KRAMB und Christina MÖNNICH, The Banana Dispute: Survey and Lessons. September 2000, 29 Seiten.

61. Roland HERRMANN, Stephanie KRISCHIK-BAUTZ und Stanley R. THOMPSON, BSE and Generic Promotion of Beef: An Analysis for 'Quality from Bavaria'. Oktober 2000, 18 Seiten.