A PRICE ANALYSIS OF TOMATOES IN THE NETHERLANDS AS A TOOL FOR FRAMING MARKETING POLICY

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1. INTRODUCTION

In this paper an econometric price analysis of Dutch tomatoes will be presented. It is not only an effort at developing a tool of short run price forecasting. In fact, the analysis will be focussed on structural developments of the market. The plan of the paper is the following. In paragraph two a brief description of the market will be given. Some alternative models describing the relationships between the main factors affecting prices are proposed in the paragraph three. Estimation of the models is performed on the basis of time series data over the period 1950 - 1966. Results will be discussed in view of the marketing policy warranted in paragraph five. Finally some forecasts of prices will be made.

2. SOME CHARACTERISTICS OF THE MARKET

It will be necessary to investigate the main characteristics of the Dutch tomato market in order to specify the model properly.

Product. Tomatoes are grown to a great extent by small scale market gardeners. Nevertheless supply is rather homogeneous. Uniformity of supply is promoted by a grading system which is applied throughout the country. Dutch tomatoes are not sold under brand, but in foreign markets, especially in the Western-German market, they seem distinctive from competitive supply because of the uniform packaging and appearance.

Price. It is assumed, that Dutch tomato prices are determined by (a) size of Dutch supply, (b) supply of competing tomato producers, (c) shifts in demand because of increasing population, increasing per capita disposable income and changing eating habits.
Supply of substitutes does not seem of much relevance, especially since any typical substitute does not exist.

Promotion. Promotion of Dutch tomatoes is feasible because of the product characteristics mentioned. However, promotional efforts are relatively speaking still of limited importance in marketing policy.

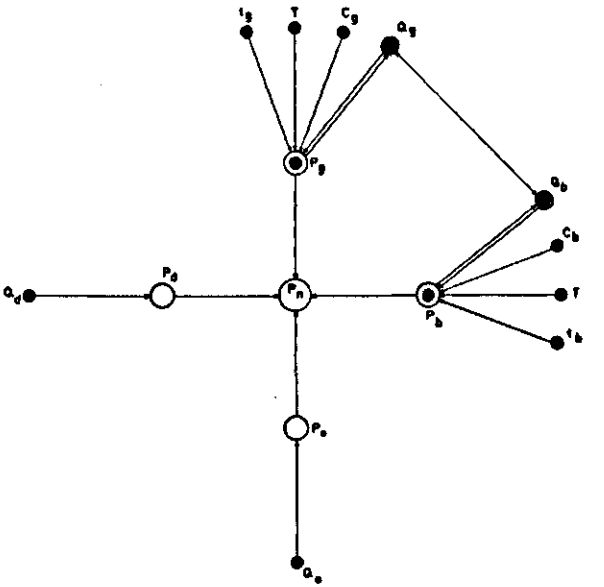
Distribution system. Practically all Dutch tomatoes are sold through co-operative auctions. In this way the supply of small growers is bundled to larger lots. Competition between wholesalers is necessary in the price formation at auctions. However, concentration in trade is changing market structure and it seems to diminish competition between buyers. Since the analysis will be based on data over the period 1950-1966, no specific attention will be paid to this recent development.

Seasonality. Harvesting of Dutch tomatoes starts at the end of April. Up till June supply of tomatoes from heated glasshouses prevails. In July and August tomatoes are picked in non-heated glasshouses. In May and June prices of tomatoes are much higher than in July and August. These features of the market demand a seasonal approach in analysing prices.

3. A MODEL FOR PRICE FORMATION OF DUTCH TOMATOES

3.1 Variables involved and functional relationships.
Relationships between the variables which seem relevant to the analysis of tomato prices are indicated in figure 1.

Figure 1. Main relationships, which are assumed to determine Dutch tomato prices.



Legend:

P_n: Average price of Dutch tomatoes.

P_g: Average price of Dutch tomatoes, exported to Western Germany.

P_b: Average price of Dutch tomatoes, exported to the U.K.

P_d: Average price of Dutch tomatoes sold in the domestic market.

P_o: Average price of Dutch tomatoes exported to other countries than Western Germany and the United Kingdom.

Q_g: Dutch exports of tomatoes to Western Germany.

Q_b: Dutch exports of tomatoes to the United Kingdom.

Q_d: Domestic consumption of fresh tomatoes.

Q_o: Dutch exports of tomatoes to other countries than Western Germany and the United Kingdom.

C_g: Competitive supply of tomatoes in Western Germany.

C_b: Competitive supply of tomatoes in the United Kingdom.

t_g: Average daily temperature in Western Germany.

t_b: Average daily temperature in the United Kingdom.

T : Trend variable.

Model 2

(2) $P_n = f_2 (Q_n, C_g, C_b, t_n, T, s_1, s_2, s_3)$

Both model (1) and model (2) neglect interdependency between exports and prices; this is justified in case the effect of changing prices in exportmarkets on Dutch exports is negligible. Competitive tomato supply in Western Germany and in the United Kingdom are included separately.

It can be established from the model how changes in production affect prices. Also the model shows the impact of competitive supply on prices.

Models 3, 4

(3.1) $P_g = f_{3.1} (Q_g, C_g, t_g, T, s_1, s_2, s_3)$

(3.2) $Q_g = f_{3.2} (P_g, Q_n, C_b, s_1, s_2, s_3)$

(4.1) $P_b = f_{4.1} (Q_b, C_b, t_b, T, s_1, s_2, s_3)$

(4.2) $Q_b = f_{4.2} (P_b, Q_n, C_g, s_1, s_2, s_3)$

Models 3, 4 provide information on the two exportmarkets, Western Germany and United Kingdom. Interdependency between exports and export prices of Dutch tomatoes is an important feature of the models. Interdependency between exports to the United Kingdom and exports to Western Germany has been excluded in view of some preliminary investigations. In order to take account of competition between Dutch exports to Western Germany and to the United Kingdom, supply of competitive producers in the Western German market, C_g, has been introduced in the export function (4.2) and vice versa.

3.2 Mathematical and statistical specification; estimation procedure. Model 1 is specified:

(1) $P_{n,i} = \alpha_o + \alpha_1 e_i + \alpha_2 C_{g,i} + \alpha_3 C_{b,i} + \alpha_4 t_i + \alpha_5 T + \alpha_6 s_1 + \alpha_7 s_2 + \alpha_8 s_3 + u_i$

It appears that only German and British exportmarkets will be analysed in detail. Price determining factors mentioned in paragraph two have been considered. The joint effect of increase of population, of increase of per capita disposable income and of changing eating habits is described by a trend variable; development of these variables during the period of analysis 1950-1966 shows a trend, which makes it impossible to measure their separate influence on tomato prices. Interdependency between tomato prices and Dutch exports in both markets has been taken into account: increasing Dutch exports will cet. par. lower prices, while increasing prices may stimulate exports.
Daily temperature is included as an explaining variable, in order to check the hypothesis that hot weather stimulates consumption of tomatoes. Exports to countries other than Western Germany and the United Kingdom are small and change at random. They will not be taken up in our analysis furthermore. Domestic consumption is small as compared to exports; its influence on the average price of Dutch tomatoes seems very limited and will not be measured either.
Relationships suggested in figure 1 will be estimated for three alternative models.

Model 1

(1) $P_n = f_1 (e, C_g, C_b, t_n, T, s_1, s_2, s_3)$

e: Total exports/Total production
s_1, s_2, s_3 : Dummy variables

In this rather simple model the effect of total production and exports on tomato prices has been expressed in their ratio, e. The interpretation of the trend, T, and temperature, t_n, has been given in paragraph two. Seasonal shifts are described by dummy variables, $s_1 \ldots s_3$. Easiness of handling is an attractive feature of the model. However, the information which can be derived from it is limited. At maximum this model can be used for short run forecasting of prices. It does not provide much information for guiding marketing policy.

$$i = 1....n \qquad E(u_i) = o, \quad E(u_i.u_j) = \begin{cases} \sigma^2 & \text{for } i = j \\ o & \text{for } i \neq j \end{cases}$$

Estimators of (1) by the method of least squares are best linear unbiased.
The assumption of linearity allows for changes of elasticity-coefficients of price with respect to exports and competitive supply. The absence of saturation level in linear functions does not seem severe in view of the continuous expansion of Dutch exports over the years 1950-1966.
Changes of consumer behaviour might very well influence the way of consumers' reactions on prices, which implies a change in the parameters of the funtions f_1 ....f_4 over time. Since no specific pattern of change of the parameters can be hypothesized, the analysis will be limited in this respect to estimation of the functions on the basis of data both over 1950-1966 and over 1957-1966.
Statistical specification of (2) is equal to (1).
Model (3) is specified:

$$(3.1) \quad P_{g,i} = \alpha_o + \alpha_1 Q_{g,i} + \alpha_2 C_{g,i} + \alpha_3 t_{g,i} + \alpha_4 T + \alpha_5 s_1 + \alpha_6 s_2 + \alpha_7 s_3 + v_i$$

$$(3.2) \quad Q_{g,i} = \beta_o + \beta_1 P_{g,i} + \beta_2 Q_{n,i} + \beta_3 C_{b,i} + \beta_4 s_1 + \beta_5 s_2 + \beta_6 s_3 + w_i$$

$$i = 1....n$$

$$E(v_i) = o, \; E(w_i) = o.$$

$$E(v_i.v_j) = \begin{cases} \sigma^2 & \text{for } i = j \\ o & \text{for } i \neq j \end{cases} \; ; \quad E(w_i.w_j) = \begin{cases} \sigma^2 & \text{for } i = j \\ o & \text{for } i \neq j \end{cases}$$

Since P_g and Q_g are assumed to be interdependent, (3.1) and (3.2) will be estimated by a simultaneous equations estimation procedure (°).
Equations (3.1) and (3.2) are overidentified; therefore the Two Stage Least Squares method will be used.

(°) For a discussion of simultaneous equations estimation procedures the reader is referred to e.g.: Johnston, J., Econometric Methods, New York 1963, p.231 and following.

Estimators by this method are consistent.
The statistical specification of (4) is equal to (3).

4. MODELS (1)....(4) WERE ESTIMATED ON THE BASIS OF:

A. Monthly data - May up till August - over the period 1950-1966 on the variables:

P_n: Average tomato price at Dutch auctions in Dutch guilders/100 Kg.
P_g: Average price of Dutch tomatoes, exported to Western Germany, free at border in Dutch guilders/100 kg.
P_b: Average price of Dutch tomatoes exported to the United Kingdom, free at border in Dutch guilders/100 Kg.
Q_n: Total supply of Dutch tomatoes at Dutch auctions (= total production) in 1000 tons.
Q_g: Dutch exports of tomatoes to Western Germany in grams per capita.
Q_b: Dutch exports of tomatoes to the United Kingdom in grams per capita.
e : Total Dutch exports of tomatoes as a percentage of total production.
C_g: Competitive supply of tomatoes in Western Germany in grams per capita.
C_b: Competitive supply of tomatoes in the United Kingdom in grams per capita.
t_n : Average daily temperature in the Netherlands (De Bilt) in centigrades.
t_g : Average daily temperature in Western Germany (Frankfurt) in centigrades.
t_b : Average daily temperature in the United Kingdom (Greenwich) in centigrades.

Sources: Statistical Office of the Central Bureau of the Auctions, at The Hague (non-published data); Statistische Jahrbücher, Wiesbaden, Germany. Annual Abstract of Statistics, London, United Kingdom.

B. Dummy variables:

$s_1 = 1$ in May, $s_1 = 0$ in other months
$s_2 = 1$ in June, $s_2 = 0$ in other months
$s_3 = 1$ in July, $s_3 = 0$ in other months

C. A trend:

T = 1 for 1950, T = 2 for 1951, etc.

5. ESTIMATES OF THE MODEL AND IMPLICATIONS FOR MARKETING POLICY.

A selection of estimates is presented in Table 1. Instead of discussing the value and statistical reliability of specific estimates it will be tried to highlight structural developments and their implications for marketing policy.

Table 1. Survey of some estimates of models (1)-(4.2), on the basis of monthly data on the period 1950-1966 and 1957-1966

Model [1]	(1)	(2)		(3.1)				(3.2)				(4.1)				(4.2)			
Period	1950-66	1950-66	1957-66	1950 - 1966		1957 - 1966		1950 - 1966		1957 - 1966		1950 - 1966		1957 - 1966		1950 - 1966		1957- 1966	
Estimates	May-August	May-August	May-August	May-August	May-June	May-August	May-June	May-August	May-June	May-August	May-June	May-August	May-June	May-August	May-June	May-August	May-June	May-August	May-June
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
$\hat{a}_o$	137.24587	116.24650	92.11555	31.83922	76.10885	10.21132	9.31155	-430.25574	249.92830	52.80844	107.48445	165.88078	102.48967	160.32354	160.43892	254.33270	-104.02522	-143.43720	-236.42901
$\hat{a}_1$	0.29010	- 1.99238	- 2.26725	- 0.23052	- 0.25082	- 0.20586	- 0.28901	1.70714	- 0.99049	- 0.62346	- 0.59908	- 0.15844	- 0.76740	- 0.45855	- 0.50569	- 1.21932	0.57282	0.78116	0.95141
$\hat{\sigma}_{\hat{a}_1}$ *	0.16219	0.27836	0.33123	0.11234	0.06295	0.03749	0.03934	0.96131	0.66377	0.79883	0.36124	0.06841	0.34415	0.17821	0.51675	1.46472	0.42587	0.46870	0.46330
$\hat{a}_2$	0.00044	0.01855	0.04190	0.00428	- 0.07669	- 0.01735	- 0.06601	12.54549	9.13112	9.10508	9.78054	-	-	-	-	1.25661	3.16782	3.36088	3.77510
$\hat{\sigma}_{\hat{a}_2}$ *	0.01593	0.01222	0.02631	0.01801	0.05005	0.02975	0.03889	1.11783	1.03074	1.06257	0.65284					1.10511	0.41389	0.63689	0.67373
$\hat{a}_3$	- 0.09446	- 0.09630	- 0.10785	-	-	-	-	0.28338	- 0.10749	0.05094	0.00225	- 0.11127	- 0.07115	- 0.15307	- 0.18014	- 0.23884	0.23358	0.08387	0.34405
$\hat{\sigma}_{\hat{a}_3}$ *	0.02787	0.01799	0.02790					0.13684	0.12962	0.11019	0.07546	0.06299	0.05757	0.03803	0.09647	0.14593	0.10358	0.06937	0.13275
$\hat{a}_4$	- 1.77732	1.99851	3.71384	2.70506	5.19959	4.84749	9.39312	-	-	-	-	1.04166	9.54910	3.42574	12.63343	-	-	-	-
$\hat{\sigma}_{\hat{a}_4}$ *	1.37560	1.17503	1.48902	1.79679	2.93954	1.83117	2.00495					2.32223	5.85581	3.40589	9.99583				
$\hat{a}_5$	- 2.44580	4.14836	4.75905	7.92782	8.55743	6.48735	10.09021	-	-	-	-	- 2.06050	7.60797	- 0.16333	0.00012	-	-	-	-
$\hat{\sigma}_{\hat{a}_5}$ *	0.71980	1.05901	1.62802	1.51258	2.27046	1.67206	1.96190					0.77492	5.21670	2.40224	8.70579				
$\hat{a}_6$	116.14845	96.62870	102.00229	109.37782	35.71101	99.47676	22.46089	-199.81614	-6.40939	11.45623	-42.17407	154.07481	87.56259	194.24087	105.17576	160.86485	28.40552	55.72375	64.82009
$\hat{\sigma}_{\hat{a}_6}$ *	9.21475	7.50056	9.10596	11.45233	14.14303	11.66573	10.91474	113.58506	23.47802	87.92631	16.69490	11.56693	25.13020	25.35953	55.81307	220.40778	28.56705	60.54937	24.17903
$\hat{a}_7$	68.52129	62.22764	69.35150	70.02863	-	70.73472	-	-106.14653	-	56.55269	-	100.01186	-	118.82775	-	86.67830	-	15.41877	-
$\hat{\sigma}_{\hat{a}_7}$ *	7.47630	5.40191	6.68575	7.18581		7.88842		77.42122		64.20411		7.04209		13.64799		132.22177		38.48773	
$\hat{a}_8$	23.84075	18.10904	15.08243	26.74158	-	29.44814	-	- 2.62193	-	48.98732	-	47.37278	-	43.35755	-	119.81292	-	- 24.08045	-
$\hat{\sigma}_{\hat{a}_8}$ *	5.82600	4.35314	6.16580	6.32041		7.51313		33.55223		29.03350		7.33071		8.07959		70.93247		27.86276	
R^2	0.9383	0.9560	0.9671	0.9362	0.8266	0.9510	0.8266	0.9635	0.9833	0.9573	0.9875	0.9355	0.7901	0.9361	0.8111	0.0855	0.7468	0.6820	0.7241
d [2]	1.57144	1.11397	1.91795	1.91868	2.11757	1.55817	2.03584	1.33963	3.05806	1.89510	2.57282	0.32233	1.60274	1.52813	2.38265	1.15833	3.12316	2.12706	2.72759
Number of data	68	68	40	68	34	40	20	68	34	40	20	68	34	40	20	68	34	40	20

1)

(1) : $P_n = a_o + a_1 e + a_2 C_g + a_3 C_b + a_4 t_n + a_5 T + a_6 s_1 + a_7 s_2 + a_8 s_3$

(2) : $P_n = a_o + a_1 Q_n + a_2 C_g + a_3 C_b + a_4 t_n + a_5 T + a_6 s_1 + a_7 s_2 + a_8 s_3$

(3.1): $P_g = a_o + a_1 Q_g + a_2 C_g + a_4 t_g + a_5 T + a_6 s_1 + a_7 s_2 + a_8 s_3$

(3.2): $Q_g = a_o + a_1 P_g + a_2 Q_n + a_3 C_b + a_6 s_1 + a_7 s_2 + a_8 s_3$

(4.1): $P_b = a_o + a_1 Q_b + a_2 C_b + a_4 t_b + a_5 T + a_6 s_1 + a_7 s_2 + a_8 s_3$

(4.2): $Q_b = a_o + a_1 P_b + a_2 Q_n + a_3 C_g + a_6 s + a_7 s_2 + a_8 s_3$

For interpretation of symbols the reader is refered to paragraph 4.

2) Durbin - Watson statistic.

5.1 The impact of Dutch exports upon prices.

(a) Price flexibility with respects to production - the reciprocal of the price elasticity of demand - is increasing in absolute value. It has become greater than one in July and August; recently it has reached a value of - 1.0 in June also; in May it is still below one, in absolute value (Table 2).

Table 2. Average price flexibility with respect to supply of Dutch tomatoes (reciprocal of price elasticity of demand) for 1957-66 and 1964-66

Period	1)	1957 - 1966				1964 - 1966			
		May	June	July	August	May	June	July	August
Price flexibility of:									
Average price with respect to Dutch production	2	-0.382	-0.804	-1.671	-2.711	-0.572	-1.309	-2.099	-3.074
Average export price W. Germany with respect to competitive supply in W. Germany	2	0.024 2)	0.037 2)	0.162 2)	0.192 2)	0.010 2)	0.027 2)	0.109 2)	0.132 2)
Average export price U. Kingdom with respect to competitive supply in U. Kingdom	2	-0.301	-0.517	-1.032	-1.557	-0.256	-0.497	-0.770	-1.279
Average export price W. Germany with respect to Dutch exports to W. Germany	4	-0.319	-0.820	-1.489	-2.191	-0.509	-1.132	-1.621	-2.173
	6	-0.285	-0.733	-1.329	-1.956	-0.455	-1.011	-1.447	-1.941
	7	-0.400	-1.029			-0.639	-1.419		
Average export price U. Kingdom with respect to Dutch exports to U. Kingdom	12	-0.148	-0.179	-0.204	-0.337	-0.195	-0.190	-0.232	-0.334
	14	-0.429	-0.519	-0.591	-0.974	-0.563	-0.551	-0.670	-0.966
	15	-0.473	-0.572			-0.621	-0.608		

1) Figures in this column refer to row four of Table 1 and indicate by which model price flexibilities have been calculated

2) Not statistically significant at the 5% level

This observation implies that expansion of production will cet. par. diminish total turnover in July and August. Therefore expansion of production in July and August should be in line with the autonomous growth of demand. Demand creation by promotion and effective competition with competing supplies may offer additional opportunities for expansion of production. Expansion of exports by price reduction does not seem very attractive in June either.

(b) Flexibility of export prices with respect to Dutch exports is for June, July and August larger in the Western German market than in the British market. (Table 2).

This observation seems in line with the larger Dutch share of the market in Western Germany as compared to the United Kingdom during these months. Also it might be the consequence of a more separated market for Dutch tomatoes in Western Germany as compared to the United Kingdom, because of greater distinctiveness of Dutch produce in the Western German market.

5.2 The impact of a trend in per capita income and eating habits on tomato prices.

Average Dutch tomato prices show cet. par. a positive trend during the period 1950-1966. Average prices of Dutch tomatoes exported to Western Germany show cet. par. a positive trend during the period 1950-1966 as well. With respect to the United Kingdom such a trend is weak and statistically unreliable. (Table 1).

The positive trend of Dutch tomato prices in the Western German market probably has been brought about by per capita increasing income and changing eating habits. On the basis of this trend the autonomous increase of demand can be projected.

The negligible trend of Dutch export prices in the United Kingdom suggests less room for expansion of demand by changing eating habits and increase of income than in Western Germany. Increase of Dutch exports in the United Kingdom market will have to rely more upon increase of market share than upon increase of market.

5.3 The impact of competitive supply on tomato prices.

Competitive supply in the United Kingdom market has a more pressing effect upon prices of Dutch tomatoes than competitive supply in the Western German market. (Table 2).

This observation is in agreement with general opinion in trade, that in the Western German market Dutch tomatoes are to a

large extent differentiated from other supply. It is much less the case in the United Kingdom; English growers and growers from Guernsey and Jersey supply a product rather similar to Dutch produce.
The observation seems in line too with the fact already mentioned that Dutch exports have a smaller share of the tomato market in the United Kingdom than in Western Germany.
So it seems that Dutch producers influence prices more by their own exports in the Western German market than in the United Kingdom market.

5.4 Factors determining size of Dutch exports.

(a) The size of exports to Western Germany and United Kingdom is predominantly determined by the size of total Dutch production.
(b) The influence of competitive supply in the Western German market does not seem of great influence on exports to the United Kingdom.
Mutatis mutandis the same holds true for exports to Western Germany.

5.5 Conclusion.
Since price has become a more delicate and a dangerous marketing instrument for expanding demand from June until August there is a need for increasing marketing efforts with respect to product, packaging, promotion and service to wholesalers and retailers. Such marketing policy may expand the market for Dutch tomatoes by creating new demand for tomatoes in Western Germany and by effective competition with other suppliers in the United Kingdom.
Only in May the total turnover will still increase if demand increases as a consequence of lower prices.

6. FORECASTING OF PRICES

One purpose of our statistical exercise was to develop a tool for forecasting future prices. The fit of the estimates (Table 1) seems promising in this respect. However, a good fit is by no means decisive since structural changes in the market may change the value of the parameters of the functions in the future. It may also be difficult to dispose of reliable future values of exogenous variables to forecast the endogenous variable, price.

Finally it should be stressed that the standard error of the forecasts also makes estimates less informative to a policy maker. Therefore experience in using the model should prove the usefulness of the model.

Table 3. Projections of the endogenous variables P_n P_f etc., for 1965, 1966 and 1967 as a percentage of the real value [1]

Projecting model [2]		(2) May - August				(3.1), (3.2), (4.1), (4.2) May - August					May - June				
		1950-64	1950-66	1957-64	1957-66	1950 - 1964	1950-66	1957-64	1957-66		1950-64	1950-66	1957 - 1964	1957-66	
Projection for the year		1966	1967	1966	1967	1965	1966	1967	1965	1967	1965	1967	1965	1966	1967
May:															
$(\hat{P}_n/P_{n-1}.100)$	$\hat{P}_n$	89.8	117.1	88.8	110.5										
	$\hat{P}_g$					107.6	100.8	108.8	102.8	105.9	116.3	104.9	110.0	89.5	106.5
	$\hat{Q}_g$					98.3	100.1	101.5	88.6	95.3	99.9	101.0	95.6	86.1	97.3
	$\hat{P}_b$					100.0	94.5	111.8	99.1	109.2	122.3	110.5	110.5	87.5	109.3
	$\hat{Q}_b$					82.2	78.4	105.4	94.7	126.9	86.2	119.2	93.0	110.4	129.8
June:															
$(\hat{P}_n/P_{n-1}.100)$	$\hat{P}_n$	99.0	97.5	113.8	96.3										
	$\hat{P}_g$					103.1	103.7	102.4	105.9	108.2	115.8	102.8	116.9	113.1	120.3
	$\hat{Q}_g$					92.9	101.0	103.6	90.0	101.4	92.8	101.8	94.9	101.2	102.5
	$\hat{P}_b$					98.4	96.1	115.6	95.4	112.1	124.2	120.1	113.0	115.3	121.1
	$\hat{Q}_b$					141.2	120.7	92.5	151.9	106.5	150.1	106.5	140.5	128.3	103.9
July:															
$(\hat{P}_n/P_{n-1}.100)$	$\hat{P}_n$	129.1	70.0	70.9	57.5										
	$\hat{P}_g$					93.5	107.1	92.7*	98.3	97.8*					
	$\hat{Q}_g$					102.1	102.7	102.9	95.8	99.3					
	$\hat{P}_b$					98.4	91.7	87.3*	99.5	125.2*					
	$\hat{Q}_b$					99.3	103.6	160.1	103.3	88.7					
August:															
$(\hat{P}_n/P_{n-1}.100)$	$\hat{P}_n$	157.5	101.4	162.5	96.0										
	$\hat{P}_g$					87.2	86.1	108.3*	91.4	105.6*					
	$\hat{Q}_g$					93.2	100.9	106.2	92.1	104.2					
	$\hat{P}_b$					105.3	115.9	76.0	107.3	91.6*					
	$\hat{Q}_b$					130.0	164.8	155.5	128.4	140.9					

[1] For interpretation of symbols the reader is referred to paragraph 4. Projections without asterisk are based on reduced form equations, projections with asterisk are based on structural equations.
[2] May-August 1950-64, May-August 1950-66, etc., refer to time-series on the basis of which the models (2), (3.1), etc. presented in paragraph 3, were estimated.

Estimates for 1965, 1966 and 1967 are compared with real prices and exports (Table 3); since only little information can be derived from one experiment, projections on the basis of an older study were added. Results look promising, but it should be kept in mind, that they are based on exact knowledge of the exogenous variables, which in practice will never be available.