

# RETAIL MARGINS ON TOMATOES

J. D. BROWN

M. E. CRAVENS

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER  
WOOSTER, OHIO

## CONTENTS

\* \* \*

Introduction.....	3
Methods.....	3
Description of Stores.....	4
Retail Margins and Related Information.....	5
Tube Tomatoes.....	5
Display Size.....	5
Price Trends and Retail Margins.....	6
Vine-Ripe Tomatoes.....	8
Display Size.....	8
Price Trends and Retail Margins.....	9
Greenhouse Tomatoes.....	9
Beginning of Sales.....	9
Grade-Size Choices.....	10
Display Size.....	11
Price Trends and Retail Margins.....	13
Factors Affecting Retail Margins.....	15
Summary and Conclusions.....	18

# Retail Margins On Tomatoes<sup>1</sup>

J. D. BROWN<sup>2</sup> and M. E. CRAVENS<sup>3</sup>

## INTRODUCTION

Increased attention has been directed to the study of marketing margins in recent years. The reporting of gross marketing margins on selected food items and on the "market basket" has resulted in considerable discussion and controversy.

Marketing margins represent the gross cost of performing the functions of marketing. Over extended periods of time, a marketing firm must cover all incurred costs and make a profit to remain in business. For shorter fiscal periods, this fact need not be true, particularly for individual food items. Margins vary, depending on the week-to-week market strategy of retailers.

The objectives of this report are: (1) to describe retail prices and retail margins (cents per retail unit and percentage of retail price spread between wholesale price and retail price) for greenhouse, tube, and vine-ripe tomatoes; (2) to analyze the influence of selected economic factors on weekly gross retail margins for these three types of tomatoes; and (3) to determine whether, in the aggregate, there are variations in margins which could adversely affect producers of greenhouse tomatoes.

## METHODS

The retail price and other retail data for this study were obtained from 214 Ohio food stores randomly selected to represent major Ohio markets. The study period began the week of March 27 and ended June 17, 1961. The stores were located in the following areas (number of stores in parentheses): Canton-Massillon (20), Cincinnati (20), Cleveland (40), Columbus (20), Dayton (20), Lima (10), Toledo (20), Youngstown (20), Central Ohio (30), Allen County (10), and Mahoning County (4). Grocery stores with less than two checkouts were omitted from the sample.

Each store was visited weekly between Thursday noon and Saturday noon by a trained enumerator. Observations were made each week

---

<sup>1</sup>Special thanks are due to Dr. C. R. Weaver, Dr. F. E. Walker, and Dr. R. R. Newberg of the Ohio Agricultural Research and Development Center for their technical advice and assistance and to the 214 retail food stores in Ohio which cooperated in this study.

<sup>2</sup>Former Graduate Assistant, Department of Agricultural Economics and Rural Sociology, The Ohio State University; now Assistant Economist, Department of Agricultural Economics, Georgia Experiment Station, Experiment, Georgia.

<sup>3</sup>Professor, Department of Agricultural Economics and Rural Sociology, The Ohio State University and Ohio Agricultural Research and Development Center.

**TABLE 1.—Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Store Type	Number	Percent
Corporate chain	99	46.3
Voluntary chain	65	30.4
Independent	50	23.4
Total	214	100.0

regarding the following: (1) greenhouse tomatoes, (2) tube tomatoes, (3) vine-ripe tomatoes, (4) head lettuce, (5) leaf lettuce, (6) bibb lettuce, and (7) cabbage. The following data were obtained for the seven products: display size, type of display (refrigerated or not), package (bulk or not), price per retail unit, grade and size, where grown and packed (if possible), size, shape, ripeness, quality and appearance, firmness, and type of advertising, if any. An enumeration of store characteristics was made at the end of the 12th week.

Gross retail margins were calculated in: (1) cents per retail unit and (2) margins in percentage of retail price. The cents margin was the difference between the wholesale price<sup>4</sup> and retail price. The percentage margin was calculated on the retail price.

#### DESCRIPTION OF STORES

Of the 214 retail food stores, approximately 46 percent were corporate chain stores (Table 1). In this sample, three regional or national corporate chains with 12 division warehouses serviced a total of 61 stores. There were 12 local corporate chains servicing 38 stores and 25 voluntary chain organizations were represented by 65 voluntary chain stores. With the 50 unaffiliated independent stores, the sample represented a minimum of 99 decision makers.

Of the 24 percent of the stores located in shopping centers, more than half had another retail food outlet as a direct competitor in the center. The greater majority (84 percent) of shopping center stores were corporate chain stores. Of the chain stores located in shopping centers, 64 percent were located near at least one other corporate chain store. The 76 percent of the stores not in shopping centers were randomly situated in neighborhoods and shopping areas other than shopping centers.

Forty percent of the stores were open for business between 71 and 80 hours per week. Stores open 60 to 80 business hours per week accounted for 68 percent of the stores.

<sup>4</sup>The wholesale price average consisted of a simple average of the Thursday and Friday reported prices of the previous week plus the Monday, Tuesday, and Wednesday reported prices of the present week as published daily in the Federal-State Market News Reports for Cleveland, Columbus, and Cincinnati.

**TABLE 2.—Customer Income by Store Type, 214 Ohio Retail Food Stores.**

Store Type	Customer Income					All Stores
	Low	Medium-Low	Medium	Medium-High	High	
	Percent					
Corporate chain	8	16	46	20	10	100
Voluntary chain	12	20	43	16	9	100
Independent	26	28	28	10	8	100

Of the 214 stores, 33 (15 percent) were open on Sundays. Thirty-two percent of the independent stores were open on Sundays. The average number of checkout counters per store was approximately four, with 61 percent of the stores having two, three or four checkouts.

**Customer Income<sup>5</sup>**

Slightly less than half of the corporate chain and voluntary chain store customers were classified as having medium income (Table 2). Customer income levels tended to be lower for the independent stores.

**RETAIL MARGINS AND RELATED INFORMATION  
TUBE TOMATOES**

Tomatoes packaged in a tube for retail sale are generally smaller in size than vine-ripe and greenhouse tomatoes. They are harvested at a mature green stage and shipped to the consuming areas in bulk packages to be ripened and repackaged, generally in tube containers. This tube usually contains three or four tomatoes weighing a total of 12-14 ounces.

Tube tomatoes are produced for the fresh market in highly specialized and concentrated production areas where growing conditions are favorable. Technological developments have contributed substantially to the production of mature green tomatoes in the southern and western fringes of the United States and in Mexico during the fall, winter, and spring seasons.

**Display Size**

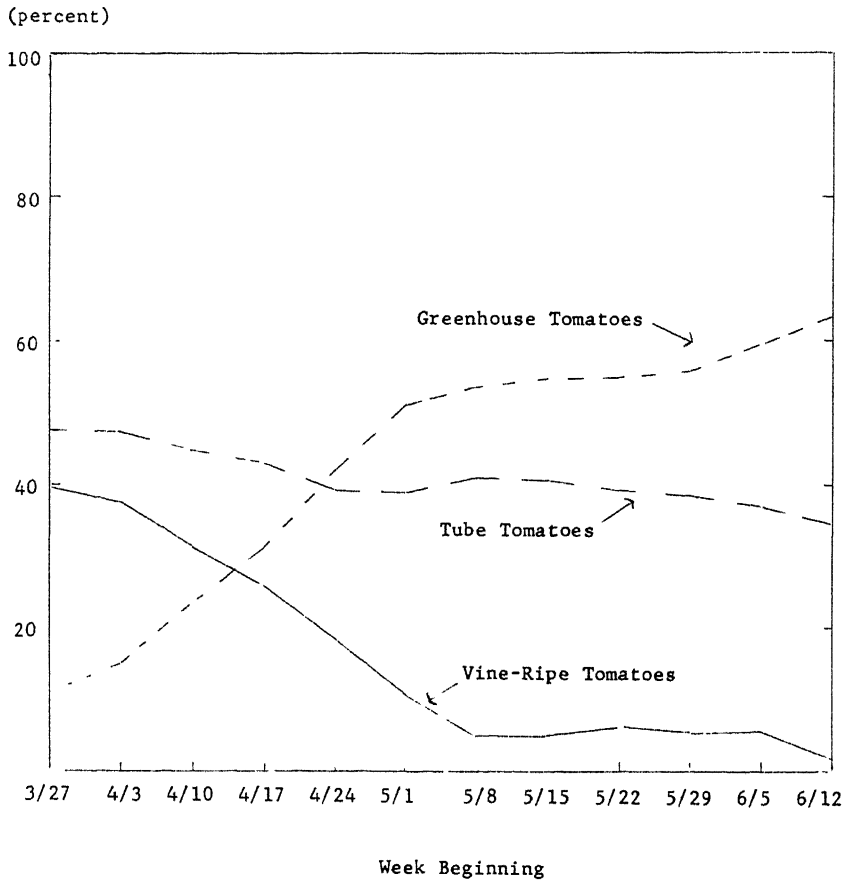
The percentage of tube tomatoes among all tomatoes displayed in retail stores declined only slightly from March 27 through June 17 (Figure 1). During this period, tube tomatoes accounted for 35 to 48 percent of total tomato display space. There was little change in the proportion of stores handling tube tomatoes during the study, since most stores displayed them each week of the study.

<sup>5</sup>Enumerators rated each store's customer-income level into five classes according to the customer's type of housing, clothing, and age of automobiles in area.

The average display size for the corporate chain, voluntary chain, and independent stores was 5.8 square feet, 3.6 square feet, and 3.0 square feet, respectively (Table 3). Variations about these average display sizes were large.

**Price Trends and Retail Margins**

Both retail and wholesale prices of tube tomatoes tended slightly downward during the March 27-June 17 period (Figure 2). The highest average wholesale price was approximately 22 cents per tube the week of April 3 and the lowest wholesale price was approximately 15 cents per tube the week of June 5. The average retail price per tube ranged between 25 cents and 31 cents.



**Fig. 1.—Percentage of tomato display area in tube, vine-ripe, and greenhouse tomatoes, March 27-June 17, 1961.**

Average retail margins in cents per tube were fairly constant from the beginning of the study period until the week of May 15, when the weekly average margin declined to its lowest level. From this point in the study through the last week, the cents-per-tube margin gradually rose to its previous level.

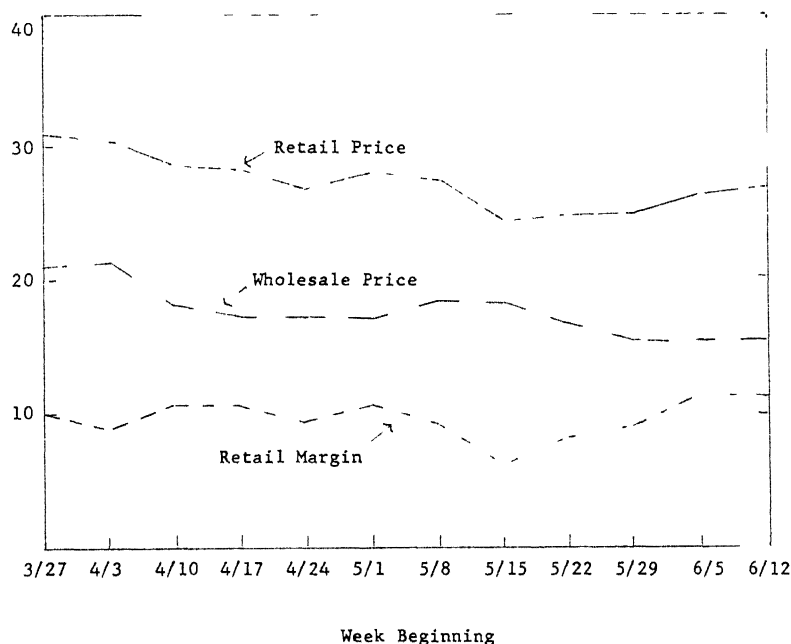
The average cents-per-tube margin for the corporate chain stores was 10.5 cents, for the voluntary chain stores 8.9 cents, and for the in-

**TABLE 3.—Display Size, Retail Price, and Retail Margins, Tube Tomatoes by Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Store Type	Average Display Size (sq. ft.)	Average Retail Price (cents)*	Gross Retail Margin			
			Cents per Tube*		Percent of Retail Price	
			Average	Standard Deviation	Average	Standard Deviation
Corporate chain	5.8	27.9	10.5	6.5	34.3	18.3
Voluntary chain	3.6	26.8	8.9	6.1	30.3	18.8
Independent	3.0	27.5	9.6	6.0	32.6	16.7

\*Cents per tube for tube tomatoes—usually 12-14 ounces each.

(cents per tube)



**Fig. 2.—Retail price, wholesale price, and retail margin for tube tomatoes, March 27-June 17, 1961.**

dependent stores 9.6 cents (Table 3). The respective percentage margins by store type were 34.3 percent, 30.3 percent, and 32.6 percent.

### VINE-RIPE TOMATOES

Vine-ripe tomatoes, as their name suggests, are harvested at a more mature stage and are usually considered more comparable in quality to greenhouse tomatoes than are tube tomatoes. Harvesting of vine-ripe tomatoes usually declines rapidly during the month of April and is relatively unimportant during the peak greenhouse harvest season in May and June.

#### Display Size

The proportion of vine-ripe tomatoes in the total tomato display area declined during the study period from 40 percent to less than 5 percent. Most of the decline occurred during the first 6 weeks. This decline occurred during the same period when greenhouse tomato dis-

(cents per pound)

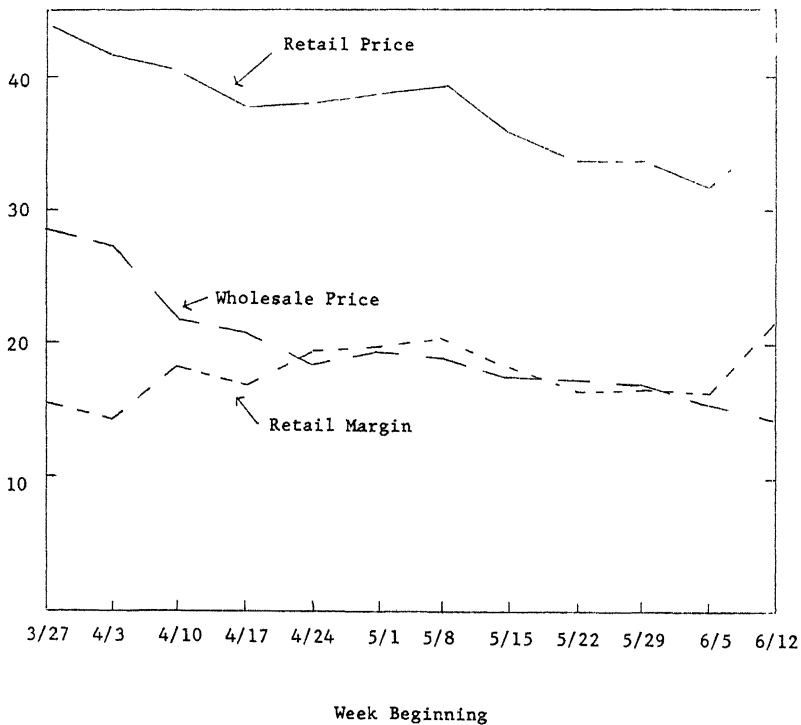


Fig. 3.—Retail price, wholesale price, and retail margin for vine-ripe tomatoes, March 27-June 17, 1961.



**TABLE 4.—Display Size, Retail Price, and Gross Retail Margins for Vine-Ripe Tomatoes by Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Store Type	Average Display Size (sq. ft)	Average Retail Price (cents)*	Gross Retail Margin			
			Cents per Pound		Percent of Retail Price	
			Average	Standard Deviation	Average	Standard Deviation
Corporate chain	6.7	39.1	16.6	8.9	39.8	19.4
Voluntary chain	3.5	40.4	17.8	9.3	41.1	22.5
Independent	3.3	39.2	16.7	10.5	40.8	19.4

\*Cents per pound.

plays were increasing and was usually a result of shifting from vine-ripe to greenhouse displays (Figure 1).

The average weekly display size by store type remained fairly constant during the 12-week study period. However, the number of vine-ripe tomato displays declined sharply.

#### **Price Trends and Retail Margins**

Weekly average cents-per-pound margins ranged between 15 and 22 cents (Figure 3). These margins increased between March 27 and May 8 and then declined.

Both percentage and cents-per-pound margins were higher for vine-ripe tomatoes than tube tomatoes (Tables 3 and 4). Percentage margins for vine-ripe tomatoes for corporate chain, voluntary chain, and independent stores were 39.8 percent, 41.1 percent, and 40.8 percent (Table 4).

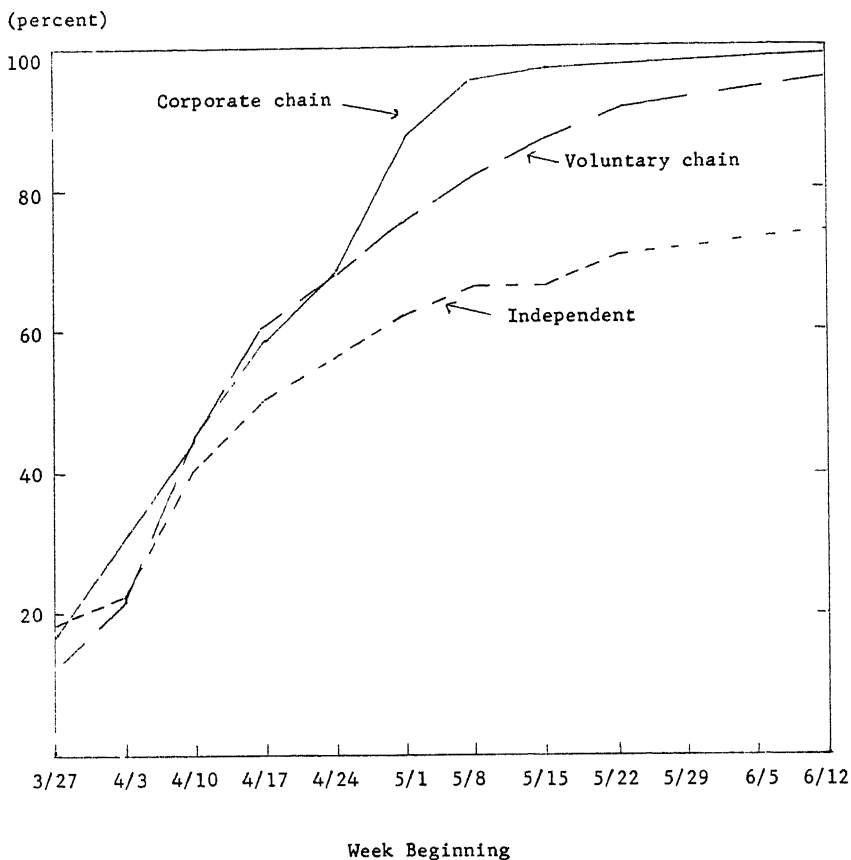
#### **GREENHOUSE TOMATOES**

Ohio is the leading state in producing greenhouse tomatoes. The highest concentration of greenhouse tomato production is in the Cleveland area, followed by the Toledo and Cincinnati areas.

Greenhouse vegetable production occurs during the season of the year when field production in Ohio is not possible. However, because of weather and particularly lack of sunshine, few greenhouse tomatoes are harvested during the January-March season. The major harvest is April-July, with a minor harvest in the October-December season.

#### **Beginning of Sales**

This study was started at the beginning of the 1961 spring greenhouse tomato harvest season. This was the last week in March. Insignificant amounts of greenhouse tomatoes were on the market before this date.



**Fig. 4—Weekly accumulation of percentage of total number of stores selling greenhouse tomatoes, March 27-June 17, 1961.**

Approximately 17 percent of the corporate chain stores, 12 percent of the voluntary chain stores, and 18 percent of the independent stores had greenhouse tomato displays the first week of the study (Figure 4).

At the time greenhouse tomatoes were first displayed, each store manager was asked why he did not sell greenhouse tomatoes earlier. Managers of 36 percent of all stores in the sample stated that greenhouse tomatoes were not available earlier from their suppliers and 29 percent felt the price was too high prior to the time they started.

#### **Grade-Size Choices**

Greenhouse tomatoes were displayed at least once by 203 or 95 percent of the 214 stores. The more popular grade-size choices within

**TABLE 5.—Number of Grade-Size Choices in Stores Handling Only Greenhouse Tomatoes by Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Store Type	Percentage of Stores with:			
	One Choice	Two Choices	Three Choices	Four Choices
Corporate chain	19	45	27	9
Voluntary chain	19	62	17	2
Independent	29	33	33	5
All Stores	21	48	25	6

the stores were U. S. No. 1 Medium, U. S. No. 1 Small (pac), and U. S. No. 2 Medium-Large.

Twenty-one percent of the stores displaying greenhouse tomatoes had only one grade-size choice during the study period (Table 5). More of the stores (48 percent) handled at least two grade-size choices of greenhouse tomatoes during 1 or more weeks of the 12-week period. Some 6 percent of the stores had four choices of greenhouse tomatoes on display for 1 or more weeks.

#### Display Size

As previously shown (Figure 1), the percentage of total display area in greenhouse tomatoes rose during the 12-week period. The proportion of greenhouse tomatoes in the display ranged between 10 and 64 percent. For the study period, greenhouse tomatoes averaged 49 percent of the total tomato display area, vine-ripe tomatoes averaged 15 percent, and tube tomatoes 36 percent.

U. S. No. 1 Medium grade tomatoes occupied slightly more than two-thirds of the total display of greenhouse tomatoes (Table 6). Corporate chain retailers were more likely to have U. S. No. 1 Medium and

**TABLE 6.—Allocation of Display Space for Greenhouse Tomatoes by Grade and Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Grades	Percentage of Total Display Space in Each Type of Store			Percentage of Total Space for All Grades
	Corporate Chain	Voluntary Chain	Independent	
U. S. No. 1-medium	73.3	17.8	8.9	67.8
U. S. No. 2-medium-large	48.6	39.0	12.4	13.2
U. S. No. 1-small (pac)	76.6	17.1	6.3	14.8
U. S. No. 1-large	69.0	24.6	6.4	2.8
U. S. No. 1-small	55.1	23.1	21.8	.6
Unclassified	54.1	27.5	18.4	.8
Percentage of Space	70.1	20.8	9.1	100.0

**TABLE 7.—Percentage Distribution of Weekly Retail Price Offerings for U. S. No. 1-Medium Greenhouse Tomatoes, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Week Beginning	Retail Price Interval					Proportion of Price Observations Ending in Nine
	20c-29c	30c-39c	40c-49c	50c-59c	60c-69c	
			Percent			
3/27	—	—	48	42	10	87
4/3	—	—	16	78	6	91
4/10	—	8	31	59	2	96
4/17	—	4	58	37	1	94
4/24	—	21	61	18	—	94
5/1	—	34	53	13	—	91
5/8	—	14	56	25	5	89
5/15	1	22	63	14	—	89
5/22	2	41	55	2	—	86
5/29	11	41	47	1	—	84
6/5	5	55	39	1	—	84
6/12	27	54	18	1	—	86

less likely to have U. S. No. 2 Medium-Large grades than were the other store types.

The average total display size for each store type remained fairly stable from week to week for each type of store. Thus, the increase in total display area for greenhouse tomatoes each week was due more to additional stores displaying greenhouse tomatoes than to larger displays per store selling them.

**TABLE 8.—Retail Price and Gross Retail Margins for Greenhouse Tomatoes by Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Grade and Store Type	Average Retail Price (cents)*	Average Gross Margin	
		Cents per Retail Unit*	Percent of Retail Price
U. S. No. 1-medium			
Corporate chain	45.6	13.8	30.3
Voluntary chain	46.7	14.7	31.5
Independent	46.2	14.2	30.7
U. S. No. 1-small (pac)			
Corporate chain	39.5	13.4	33.9
Voluntary chain	38.8	14.2	36.6
Independent	38.2	13.9	36.4
U. S. No. 2 medium-large			
Corporate chain	37.9	18.8	49.6
Voluntary chain	37.9	17.6	46.4
Independent	38.5	18.2	47.3

\*Cents per pound for U. S. No. 1-medium and U. S. No. 2 medium-large grades; cents per pac, 14-16 ounces, for U. S. No. 1-small (pac) grade.

### Price Trends and Retail Margins

Retail price observations on U. S. No. 1 Medium greenhouse tomatoes generally varied within a range of 30 to 59 cents per pound (Table 7). The most common price interval during the study was 40 to 49 cents per pound. Early in the season, the 50 to 59 cent price was most common and at the end of the season, the 30 to 39 cent price was most common (Table 7). Within these intervals, the retail prices ended for the most part in 9—39, 49, and 59 cents a pound.

Although greenhouse tomato prices declined as the season progressed, little variation occurred among the weekly retail margins in

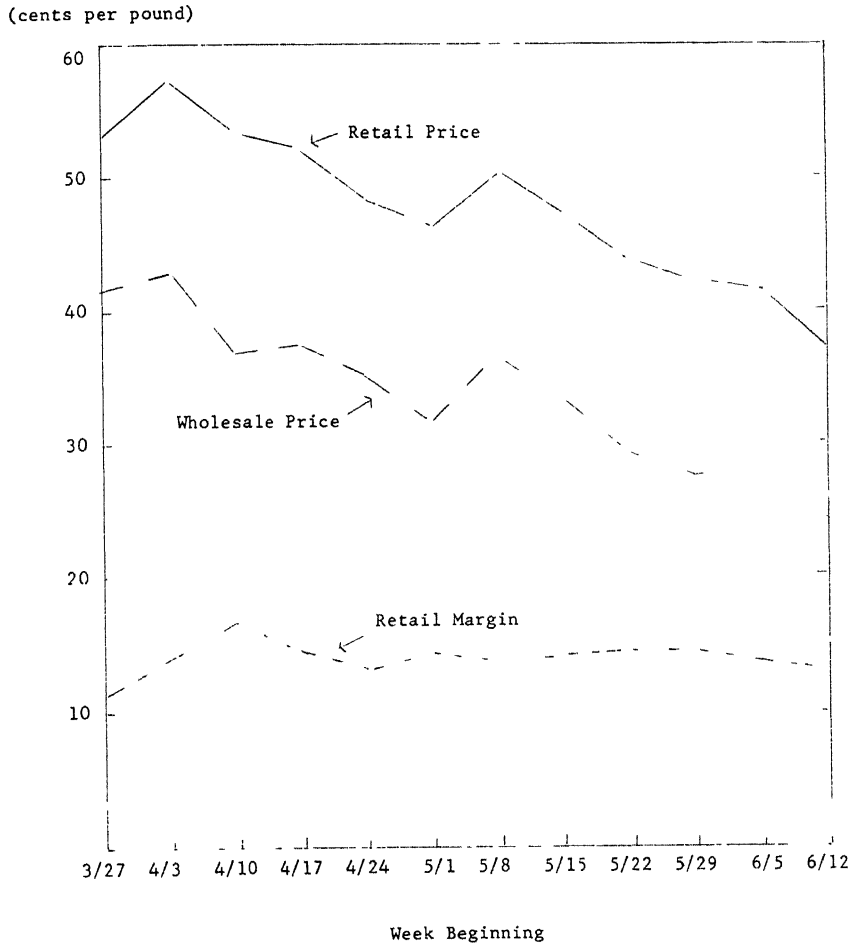


Fig. 5.—Retail price, wholesale price, and retail margin for U. S. No. 1 Medium greenhouse tomatoes, March 27-June 17, 1961.

cents per pound. This was particularly true for the U. S. No. 1 Medium and U. S. No. 1 Small (pac) grades (Figures 5, 6, and 7).

Differences among the three store types in average retail price and retail margins were not significant for any grade (Table 8). The largest difference among store types in average retail price was 1.1 cents for the U. S. No. 1 Medium grade between the corporate chain and voluntary chain stores.

The average percentage margin for all stores was approximately 30 percent for the U. S. No. 1 Medium tomatoes. The percentage margin for the U. S. No. 2 Medium-Large grade ranged between 46 and 50 percent of retail price.

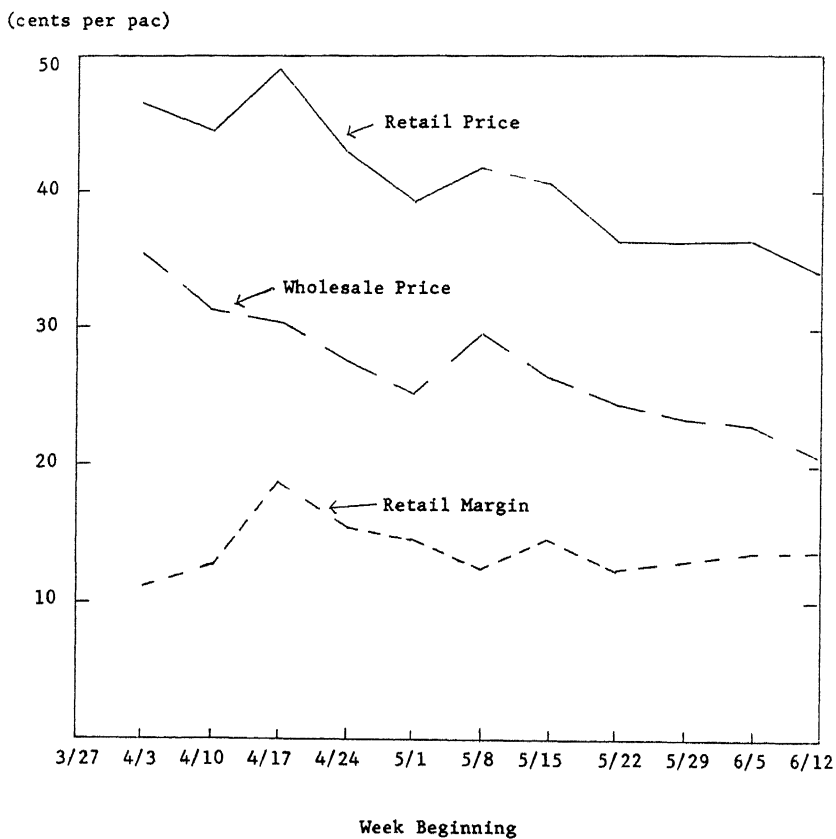
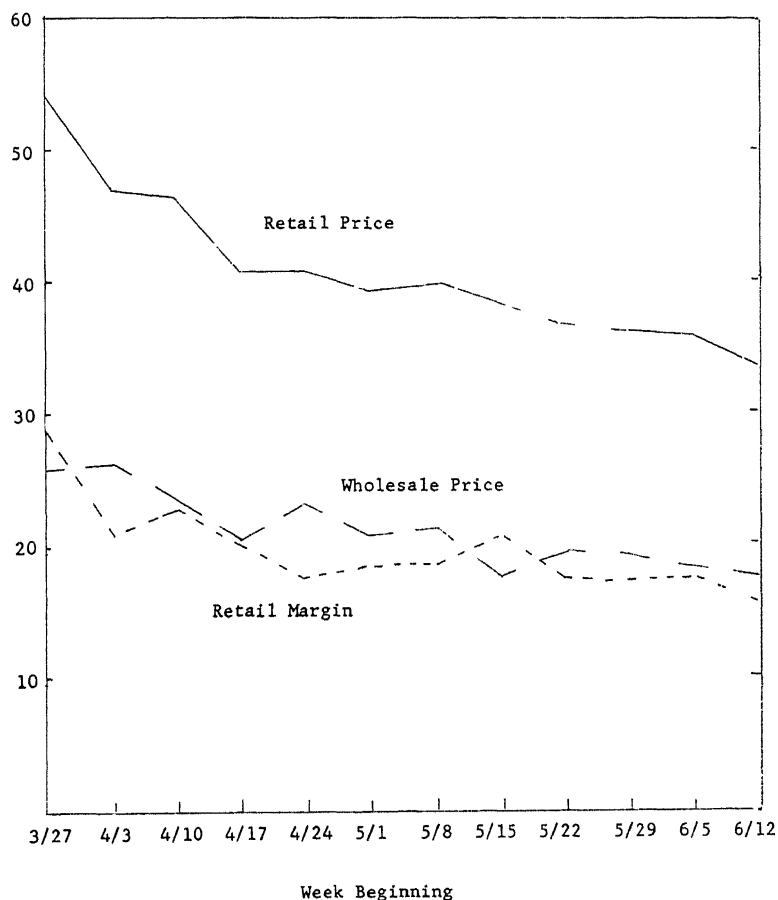


Fig. 6.—Retail price, wholesale price, and retail margin for U. S. No. 1 Small (pac) greenhouse tomatoes, March 27-June 17, 1961.

## FACTORS AFFECTING RETAIL MARGINS

Retail margins were determined by subtracting the local weekly wholesale price from the weekly observed retail price. These margins varied from week to week among the different stores. A portion of this variation among margins cannot be explained by wholesale price, store size, quality of the display item, and similar factors. For example, the use of particular popular retail prices like 29, 39, and 49 cents is associated with knowledge or reasoning that is outside of usual economic theory. Furthermore, observations of relatively low retail margins in individual stores or chains because of the decision to "special" this par-

(cents per pound)



**Fig. 7.—Retail price, wholesale price, and retail margin for U. S. No. 2 Medium-Large greenhouse tomatoes, March 27-June 17, 1961.**

ticular item for a particular week do not fit a pattern explainable by economic theory. Apparently the factors which lead retailers to put on special promotions are not such that all stores act the same, even among chain stores (note the small week-to-week variation in retail margins).

Newspaper advertising was associated with lowered margins. Compared with weeks when there was no advertising, retail margins for weeks with advertising averaged approximately 7 cents less per tube in all stores; margins for vine-ripe tomatoes were about 5.4 cents less per pound in chain and 4.5 cents in voluntary chain stores; for U. S. No. 1 Medium greenhouse tomatoes, margins were about 7 cents less per pound during weeks when advertised, regardless of type of store.

Percentage margins for tomatoes when advertised were about 25 percent less for tube, 12 percent less for vine-ripe, and 12 percent less for greenhouse than during weeks when no advertising was done. The type of store—corporate chain, voluntary chain, and independent—was considered separately in associating given factors to retail margins.

Several factors, logically associated with today's retailing practices, were assumed appropriate in explaining weekly changes in retail margins. Certain factors are believed important in relation to changes in retail margins.

For tube and vine-ripe tomatoes, the following factors were tested statistically against weekly retail margins (cents per retail unit and percentage of retail price): (1) display size, (2) quality, (3) customer income, (4) business hours, (5) wholesale price, (6) weekly change in wholesale price, (7) number of weeks of a continuous similar change in wholesale price, and (8) store size. Along with these factors, the following additional factors were tested statistically with retail margins for greenhouse tomatoes: (1) number of display choices, (2) type of display (refrigerated or not), (3) date started selling greenhouse tomatoes, (4) percentage of greenhouse tomatoes in total tomato display, (5) weekly change in wholesale price for each type of tomatoes, and (6) number of weeks of a continuous similar change in the wholesale price for each type of tomatoes.

From this statistical analysis, the weekly wholesale price was the most important factor associated with changes in retail margins per retail unit and as a percentage of retail price for tube and vine-ripe tomatoes. When the wholesale market price declined for a particular week, on the average, retailers took a higher retail margin; when the wholesale market price increased, the retail margin was lower. For each 1-cent increase in the wholesale price, the change in margin in the opposite direction ranged between .48 percent for U. S. No. 1 Medium



**TABLE 9.—Significant\* Relationships Between Weekly Wholesale Price and Percentage Retail Margins, by Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Product	Change in Percentage Margin Associated with a 1-cent Increase in Wholesale Price		
	Corporate Chain Stores	Voluntary Chain Stores	Independent Stores
		Percent	
Tube tomatoes	—2.03	—2.25	—3.12
Vine-ripe tomatoes	—1.66	—1.73	—1.34
Greenhouse tomatoes			
U. S. No. 1-medium	—0.62	—0.48	—0.99
U. S. No. 1-small (pac)	—1.76	—1.57	—2.50
U. S. No. 2-med.-large	—0.96	—3.06	—1.06

\*At the .10 level of probability or less.

greenhouse tomatoes in the voluntary chain stores to 3.12 percent for tube tomatoes in the independent stores (Table 9).

Higher retail margins tended to be associated with better quality (appearance) ratings for vine-ripe, U. S. No. 1 Medium greenhouse, and to a lesser extent for U. S. No. 2 Medium-Large greenhouse tomatoes.

Higher levels of customer income tended to be related to larger margins. This relationship tended to exist more among the voluntary chain and independent stores than among the corporate chain stores.

Retail margins were generally not related to display size and the number of business hours per week. Larger display sizes, however, were associated with smaller margins among corporate chain stores for vine-ripe tomatoes.

Among the voluntary chain and independent stores, larger store size tended to be associated with lower margins. However, for corporate chain stores, larger store size was generally associated with higher margins.

The influence of the actual week-to-week change in the wholesale price and the number of weeks of a wholesale price rise or decline were of little importance in explaining retail margins.

Whether the display was refrigerated or not and whether there was more than one display for greenhouse tomatoes, the influence on the retail margins for greenhouse tomatoes was not statistically significant.

An increase in the percentage of greenhouse tomatoes in a store's total tomato display was related to lower retail margins for greenhouse tomatoes. A 10 percent increase in the proportion of greenhouse tomatoes in a tomato display was associated with a decrease of .54 cent and

**TABLE 10.—Significant\* Relationships Between Percentage of Each Total Tomato Display in Greenhouse Tomatoes and Retail Margins, by Store Type, 214 Ohio Retail Food Stores, March 27-June 17, 1961.**

Greenhouse Tomatoes	Change in Retail Margin Associated with 10 Percent Increase of Greenhouse Tomatoes in Tomato Display					
	Corporate Chain Stores		Voluntary Chain Stores		Independent Stores	
	Cents margin	Percentage margin	Cents margin	Percentage margin	Cents margin	Percentage margin
U. S. No. 1-medium	— .54	— .91	— .34	— .42	†	†
U. S. No. 1-small (pac)	—0.96	—1.51	†	—2.70	†	†
U. S. No. 2-med.-large	†	†	— .55	†	†	†

\*At the .10 level of probability or less.

†Not significant at .10 level of probability.

.34 cent per pound, respectively, for the corporate chain and voluntary chain stores' margins for U. S. No. 1 Medium greenhouse tomatoes (Table 10). The corresponding influence on the retail margin for the two store types was a decrease of .91 percent and .42 percent.

Independent stores which started selling U. S. No. 1 Medium greenhouse tomatoes later in the season had lower than average retail margins. Among independent stores, a delay of 1 week in starting to sell U. S. No. 1 Medium greenhouse tomatoes meant a decrease in the cents-per-pound margin of 1.6 cents and a decrease of 2.9 percent in the retail margin.

### SUMMARY AND CONCLUSIONS

Wholesale and retail prices were measured weekly for 214 Ohio retail food stores for the period March 27 through June 17, 1961. The difference between the wholesale and the retail price was calculated for each store each week for each type of tomatoes. This was used as the retail margin for tomatoes in the store.

Three types of tomatoes were observed during the study period. These were designated as tube, vine-ripe, and greenhouse tomatoes. Tube tomatoes accounted for approximately 48 percent of the tomato display at the beginning and 35 percent at the end of the study period. Vine-ripe tomatoes accounted for 40 percent of the tomato display at the beginning and less than 5 percent at the end. Greenhouse tomatoes increased from 10 percent at the beginning to 60 percent at the end of the period.

Wholesale and retail prices for each type of tomatoes declined during the period studied, with the margin between the two remaining fairly constant in cents per pound. Percentage margins increased as the retail prices declined.

Other studies indicate that these changes in price and relative displays of the various types of tomatoes are seasonal in nature and occur more or less along this pattern each year.

Retail margins for each type of tomatoes remained more nearly constant from week to week than wholesale or retail prices. Retail margins remained more constant from week to week for greenhouse and tube tomatoes than for vine-ripe tomatoes. Retail margins for tube tomatoes were lowest, averaging about 10 cents per tube, and highest for vine-ripe tomatoes, averaging about 17 cents per pound. Retail margins on greenhouse tomatoes were: U. S. No. 1 Medium and U. S. No. 1 Small, about 14 cents per pound; U. S. No. 2 Medium-Large, about 18 cents per pound.

Although week-to-week variations in cents of retail margins on greenhouse tomatoes were small and generally random in nature, they were associated slightly with several measurable factors.

In both chain and voluntary chain stores, retail margins on greenhouse tomatoes were slightly but significantly reduced as the proportion of the display in greenhouse tomatoes increased.

Retail margins on medium greenhouse tomatoes were about 7 cents lower in each type of store for weeks when advertised in newspapers than when not advertised. Retail margins were about 2.5 cents a pound lower for medium greenhouse tomatoes when store promotions were in effect in chain stores. In independent stores, retail margins for greenhouse tomatoes were 4.1 cents higher during store promotions than when no promotion was in effect.

Other factors related to margins on medium greenhouse tomatoes at statistically significant levels were:

- Quality—for each higher rating (1 lowest--9 highest), the margin in voluntary chain stores increased 0.8 cent and in independent stores increased 1.0 cent per pound.

- Customer income—for each increase in rated income (low to medium or medium to high), the margin increased 1.1 cents in voluntary chain stores.

- Wholesale price of greenhouse tomatoes—for each 1-cent increase from 1 week to the next, the retail margin declined 2.2 cents in independent stores. Margins declined by 0.6 percent in chain, 0.5 percent in voluntary chain, and 1.0 percent in independent stores for each 1-cent wholesale price increase.

- Change in wholesale price of vine-ripe tomatoes—for the immediate week of the price change, a 1-cent increase in the wholesale price of vine-ripe tomatoes was associated with a decline of 0.5 cent margin

in medium greenhouse tomatoes in chain stores. However, where the vine-ripe price continued to increase over several weeks, a 1-cent increase in vine-ripe prices was associated with a 0.3 cent increase in the retail margin for greenhouse tomatoes.

Retail margins on U. S. No. 2 Medium-Large greenhouse tomatoes were higher and more variable than on U. S. No. 1 greenhouse tomatoes. Of all the variables observed, newspaper advertising had the greatest effect of any management decision on margins for U. S. No. 2 tomatoes. This was associated with a reduction in margins of 4.3 cents a pound in chain stores and 5.9 cents a pound in independent stores.

With each additional choice of greenhouse tomatoes on display, chain stores took an average of 3.8 cents per pound less margin on U. S. No. 2 tomatoes. For voluntary chain stores, an increase of 10 percent of the tomato display in greenhouse tomatoes was associated with a 5.5 cents per pound decrease in margin on No. 2 greenhouse tomatoes.

On the basis of the preceding analysis, some conclusions concerning margins are apparent and others are only inferred. Retail policies vary and some policies are much more closely related to retail margins than others.

In the first place, there were no significant week-to-week deviations in average retail margins for chain, voluntary chain, or independent food stores. Large variations occurred in stores of a particular chain division, among individual voluntary chain store groups, and among individual independent stores. However, on average these deviations cancelled each other out and average margins for all stores remained constant. Thus, the concern of some producers that retail prices (and margins) are varied from week to week to the detriment of market prices of tomatoes does not appear to be well founded. On average, prices at retail and those at wholesale move together.

The fact that the greatest reductions in margins occurred when tomatoes were advertised in newspapers is significant both statistically and from the standpoint of the advertising retailer and grower. Apparently retailers advertise when they are offering a retail price advantage to their customers and are taking a reduced margin. On the other hand, in-store promotions are used more often to encourage sale of greenhouse tomatoes during weeks when retail margins are average or higher than average.

The gross retail margin on U. S. No. 1 Medium greenhouse tomatoes, about 14.0 cents a pound, was low relative to that for competing vine-ripe tomatoes. The gross margin on greenhouse tomatoes of approximately 29 percent of the retail price was about the average gross margin in the retail fresh produce department at the time of the study.

The level of margins on fresh produce items is often criticized by fruit and vegetable producers. Gross margins on greenhouse tomatoes were about average in percentage of retail, did not fluctuate greatly from week to week in the 214-store sample, and appeared to be competitive with other tomatoes. This suggests that any improvement must come from sources other than gross margins or from the manipulation of these margins from week to week.

Possible sources of improvement from the grower standpoint include: improved knowledge of market supplies both before and after harvest; greater knowledge of market demands; reduction of spoilage and waste; improved, enlarged, and more centralized market organization to supply buyers more adequately throughout the season (more nearly equating current supply with current demand); and an information and promotion program aimed at improving knowledge about greenhouse tomatoes among retailers and consumers.

The Ohio greenhouse tomato industry is peculiarly suited to organized action and to coordinated selling activities. The industry is compact, with relatively few producers and a high percentage of well-informed, intelligent producers. The product is distinctive, at least at the wholesale level, and high in quality. The missing ingredient is the full recognition of the advantages of a more tightly knit industry-wide sales and marketing organization.